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Robert A Caldwell
Major professor

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By

Matthew Paul Novak

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ABSTRACT

DESIRE FOR CONTROL AND THE EFFICACY OF STRESS MANAGEMENT IN BASIC TRAINING

By

Matthew Paul Novak

Four hundred and nine recruits entering Army basic training volunteered to participate in a study that examined the effects of a two-session stress management intervention on anxiety. Desire for control was also examined as a predictor of change in anxiety and as a possible moderator variable on the relationship between stress management and anxiety. Results indicated that the stress management intervention was ineffective, that desire for control was not related to changes in anxiety, and that desire for control did not moderate the relationship between stress management and anxiety. Possible reasons for these findings were discussed, as were suggestions for future research.

This work is dedicated to my best friend, my partner, my love, Nadine,

who has supported me more than she could know,

who proved to me that God cares for me, and each and every one of us.

Thank you, My Love.

I look forward to a long and happy life with you.

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A professor here at Michigan State University once pointed out to me that although we celebrate successes such as dissertations and doctoral degrees as achievements that we have attained individually, in actuality we would be unable to accomplish them without the assistance and support of many, many people. Were I to acknowledge all who have supported and helped me in completing this journey, this section would be nearly as long as the work itself. I feel truly blessed that I am able to make such a statement. This said, I would like to acknowledge some who stand out as I look back on the road that has brought me here.

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And, finally, to God, who has been with me throughout all of my travels, and who reveals his presence through people like those listed above. To you goes my greatest gratitude. Thank you.

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Introduction

In their landmark work, *Stress, Appraisal, and Coping*, Lazarus and Folkman (1984) revolutionized human stress research by suggesting that stress was not a reaction to an event or the event itself, but rather an interaction between the individual and the potentially stressful situation. They argued that this interaction was influenced by characteristics of the stressful event (the stressor), the individual's perception of the demands of the event, and the resources available to cope with that event. To date, research has produced significant evidence to support this model. Research has also supported that interventions such as training in relaxation, problem-solving, and cognitive restructuring techniques can decrease stress by assisting individuals in changing their perceptions either of the demands of the stressor or of the resources available.

Lazarus and Folkman's (1984) model further suggested that an individual's perception of events is affected by persistent characteristics inherent to the individual, including personality factors. Again, research has provided significant evidence in support of this supposition. To date, however, few studies have examined the impact of such intrinsic factors on the efficacy of stress management interventions. This study was designed, therefore, to examine the effects of a personality variable on the effectiveness of such an intervention.

A New Conceptualization of Stress

Earlier in the last century, the most popular conceptualizations identified stress as either a non-specific reaction to "stressful" events (Cannon, 1932; Selye, 1956) or the "stressful" events themselves. Both conceptualizations assumed that certain events were stressful to all individuals experiencing them, while the former also assumed that all organisms respond to stress in the same way. Research did not support either of these concepts: it seemed that so-called "stressful" events were not always stressful, and that individuals differed greatly in their reaction to events that they deemed stressful.

In an effort to address these problems, Lazarus and Folkman (1984) proposed a model of stress that was based on the interaction between the individual and their environment. They defined stress as "a relationship between the person and environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well being" (p. 21). This new model suggested that there are individual and group differences in the degree and kind of reaction to stressors. For the first time, stress was identified as relative.

Research has supported this conceptualization of stress. In reviewing the literature, Thompson (1981) reported that events appear to become stressful if the person believes that the harm or cost involved will overtax the person's abilities to cope with such an event, or if the outcome is not desirable enough to outweigh these costs. One's perceptions of the demands of the situation and of their ability to cope with that situation are therefore paramount in determining whether an event is stressful.

Lazarus and Folkman (1984) suggested that individuals engage in a two-part process of analysis, or "appraisal," to determine if an event is stressful. The first part of

the process, primary appraisal, is a fairly automatic process during which an individual decides if an event is: 1) irrelevant, 2) meaningful, but benign or positive, or 3) meaningful and threatening. Events that are deemed irrelevant have no implication for the person's well-being, and are therefore not stressful. Events that are meaningful, but benign, tend to preserve or enhance well-being, even though the individual often experiences some apprehension in response to the stressor. Such events might be seen as mildly stressful, but do not threaten to overwhelm the individual's ability to cope. Events that are deemed meaningful and threatening may damage the person's physical or psychological self, that is, they may cause harm or loss. Alternately, such events may present the potential for gain and growth, and are thus seen as challenges. Lazarus and Folkman pointed out that threat and challenge are not mutually exclusive and often coexist.

The second part of the process, secondary appraisal, occurs if the event is perceived as meaningful and threatening. In this part of the process, the individual identifies if they have the capacity to manage the perceived discrepancy between the demands of the situation and the resources available to meet the situation. That is, the individual must decide what can be done to cope with the stressor, which of those options is available, and which strategy is most likely to accomplish the desired outcome.

Coping

Coping, as defined by Lazarus and Folkman (1984), is a person's "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 178). They divided coping into two types, problem-focused and emotion-focused. Problem-focused coping is intended to concretely reduce the demands of the situation or increase the resources available to deal with it. Examples of problem-focused coping are instrumental and informational control. Emotion-focused coping is intended to moderate the individual's affective response to the stressor. Examples of emotion-focused coping are acceptance and cognitive reappraisal. Following is evidence supporting the usefulness of several coping strategies: instrumental control, informational control, and cognitive control.

Instrumental control

Miller (1979a) defined instrumental control as an active or passive attempt to escape or avoid an aversive event, or to mitigate its impact by decreasing its intensity or its probability. When people have direct control over an aversive event, they tend to show lower levels of stress-related variables such as anxiety (see Miller, 1981 and Seligman, 1975 for reviews).

"In some situations, [however,]...increasing the amount of control the individual has over traumatic events may be impractical or even impossible" (Burger & Arkin, 1980, p. 490). In such situations, individuals may use a number of strategies to maintain a sense of control, such as ameliorating, avoiding, or adjusting to the consequences of a

threatening event (Thompson, Sobolew-Shubin, Galbraith, Schwankovsky, & Cruzen, 1993).

Thompson and her colleagues (1993) found evidence to support this supposition in their study of control in cancer patients. They found that cancer patients with a higher level of perceived control adjusted more successfully than those who did not. Of particular interest, they also found that it was not as important that the patients controlled the central outcome (i.e., whether they recovered from cancer), but rather that they could influence consequences of the event (e.g., daily emotions and physical symptoms). The authors came to several conclusions: 1) Instrumental control of circumstances related to the primary stressor (rather than the stressor itself) appears to help one maintain a sense of control when faced with a mainly uncontrollable event, 2) perceptions of control may be adaptive even when an individual is unable to exert entirely successful coping responses, and 3) psychological adjustment to stressful events is "played out at the level of routine events of everyday life" (Thompson, et al., 1993, p. 301).

Langer and Rodin (1976) provided support for the benefits of circumstantial instrumental control in their study of nursing home residents. Residents who were offered choices and responsibility demonstrated increased alertness and more active participation in available activities, and expressed a better general sense of well-being, compared to those who were not. These positive changes occurred even though this increase in control had no direct impact on their living situation or the illness that caused them to reside in the nursing home.

Research into the relative effects of life events versus daily hassles has also lent support to the idea that adjustment to stressful events may take place on the level of daily

routine events. This body of research has strongly suggested that the fewer the number and intensity of changes in routine events secondary to major life stressors, the less impact on one's level of stress those events have (Cox et al., 1984; DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982; Gannon, Banks, Shelton, & Luchetta, 1989; Gannon, & Pardie, 1989; Holahan, Holahan, & Belk, 1984; Weinberger, Hiner, & Tierney, 1987).

Informational control

Another means of coping with stressful events is informational control. Information about a stressor usually takes one of two forms: Information about the onset of the stressor and information about the nature of the stressor (Miller, 1981).

Research with both objective and subjective measures of stress has suggested that providing predictability reduces stress. Pervin (1963) found that providing predictability of the onset of electric shock was associated with a significantly lower level of anxiety than unpredictability of the same. Seligman (1975) examined the effects of unpredictable shock and found that it was related to conditioned emotional responses and strong galvanic skin responses. Finally, Glass and Singer (1972) found that autonomic reactivity to uncontrollable or unpredictable noxious stimuli (noise) tended to be higher than to controllable or predictable noise.

Information about the nature of a stressor also appears to be stress reducing. Leventhal, Brown, Shacham, and Engquist (1979) investigated the effects of providing subjects with information about the sensations they would experience during a cold pressor test. Subjects who were so informed reported lower levels of distress than those who were uninformed or who were told about symptoms of general bodily arousal. Similar results were found by providing subjects experiencing experimentally induced

ischemic pain with a description of the sensations often experienced (Johnson, 1973). The informed subjects also had more accurate expectations about the painful experience than those who received only a description of the procedure.

Evidence supporting the stress-reducing impact of information is not limited to laboratory conditions. Miller's (1981) review of literature found that individuals generally demonstrate less anticipatory arousal when stressful events are predictable versus unpredictable. Ludwick and Neufeld (1988) found similar results in reviewing the literature on the effects of providing information to patients undergoing noxious medical procedures. They found that information about such events generally results in lower behavioral measures of discomfort and adjustment.

Several explanations have been presented as to why information is stress reducing. The most logical is that providing an individual with information lessens the impact of a stressor because it makes escape or avoidance of the stressor possible (Glass & Singer, 1972; Miller, 1981). When information does not allow direct control of the stressor, however, information about the onset of a stressor may reduce stress because the individual who knows what to expect can attend less to the danger than the individual who does not (Miller, 1981; Seligman, 1975). Similarly, Leventhal and colleagues (1979) suggested that information about the onset of a stressor may reduce stress by minimizing uncertainty, surprise, and startle.

Information about the nature of a stressor may also be useful in forming accurate expectations about stressful events (Ludwick & Neufeld, 1988), thereby increasing one's sense of control. Additionally, information may encourage the individual to focus on the informational properties of a noxious stimulus, which results in a decreased emotional

response to the stressor (Leventhal et al., 1979). Finally, information "may allow the subject to exert some degree of cognitive control over the threatening stimulus" (Averill, O'Brien, & DeWitt, 1977, p. 414). This appears to be especially true if the stressor is complex or ambiguous.

Cognitive control

Cognitive control is the ability to use thought processes and strategies to modify the impact of a stressor (Sarafino, 1994). It can involve diversion of attention, redefinition of an event, restructuring one's thoughts about an event, emotional detachment, and calming or positive self-talk. Cognitive control can also involve focusing on "accepting the situation, especially if actively working to effect change does not seem feasible" (Thompson, Nanni, & Levine, 1994, p. 545).

As with instrumental and informational control, cognitive control appears to be effective in helping individuals cope with stressful situations. For instance, Holmes and Houston (1974) found that subjects exposed to a threat (painful electric shock) showed smaller increases in stress when they used the cognitive strategies of redefinition and emotional detachment than when they did not. These coping techniques worked both during anticipation of the shock and during the event itself.

Cognitive strategies also seem to be effective means of coping with real-life stressors. For instance, in coping with early-stage breast cancer, Carver et al. (1993) found that lower distress was predicted by use of the cognitive control techniques of acceptance and humor. A review of the literature by Thompson (1981) indicated that cognitive control appears to have a universally positive effect on the experience of an aversive event: lessening anticipatory anxiety, reducing the impact of the aversive event,

and improving post-event effects. The studies reviewed included research areas as diverse as pain, final exams, and post-operative stress.

Cognitive control appears to work by changing the way an event is perceived, that is, through reappraisal of the event, even if no changes are made in the objective situation (Lazarus & Folkman, 1984). Individuals may change the meaning of a situation. They may focus on the positive aspects of a stressor or make comparisons to other situations. Alternately, people may engage in self-deception strategies such as denial and avoidance. Other cognitive strategies include reducing ego involvement, developing new (and perhaps more realistic) standards of behavior, and finding alternative channels of gratification. Abrams and Ellis (1994) made a similar argument. They suggested that cognitive control impacts stress by changing the nature of an individual's beliefs about or expectations of an event.

Stress Management Interventions

One of the most important outcomes of Lazarus and Folkman's (1984) conceptualization of human stress was that one's stress level could be lowered by providing an individual with the means to change their perception of the resources available to cope with the stressful event. Thus, the idea that one could learn techniques to reduce or manage stress (i.e., stress management) was finally grounded in theory.

As described by Lazarus and Folkman (1984), the function of stress management fits Baron and Kenny's (1986) definition of a mediator. An individual's use of stress management techniques varies with an increase in potential stressors, and acts to lower the impact of these potential stressors on one's perceived level of stress. Furthermore,

effective use of such stress management techniques decreases the direct impact of the potential stressors on one's perceived level of stress.

Research has demonstrated the effectiveness of stress management interventions as diverse as progressive muscle relaxation (see Bernstein & Carlson, 1993, for a review), autogenic training (Linden, 1993, for a review), cognitive restructuring, problem solving, time management, assertiveness training, exercise (see Fillingim & Blumenthal, 1993, for reviews), and enhancing social support. (For a comprehensive review of many stress management techniques, see Matheny, Aycock, Pugh, Curlette, & Silva-Cannella, 1986.)

One stress management technique that has been oft cited in the literature is Meichenbaum's (1985) Stress Inoculation Training (SIT). According to Meichenbaum (1993), "SIT is a flexible, individually tailored, multifaceted form of cognitive-behavioral therapy" (p. 378), which is based on the Lazarus and Folkman's (1984) transactional concept of stress. It is designed to facilitate adaptive appraisals, enhance one's repertoire of coping responses, and nurture confidence in and utilization of the individual's coping responses (Meichenbaum & Cameron, 1983). SIT fosters changes in three domains: 1) the client's behavior, 2) self-regulatory activity (i.e., self statements, images, and feelings that interfere with adaptive functioning), and 3) cognitive structures (i.e., assumptions and beliefs that give rise to habitual ways of perceiving oneself and the world) (Meichenbaum, & Cameron).

SIT consists of three overlapping phases (Meichenbaum, 1993). In Phase 1, Conceptualization, subjects learn to better understand the nature of stress and its effects on them and to appreciate the role their appraisal of stressful events and their own coping abilities plays in the stress they experience. They also receive information that

normalizes their stress reactions, and means to reframe these reactions. *Phase 2, Skills* Acquisition and Rehearsal, focuses on acquiring coping skills and rehearsing *these skills.* During this phase, subjects are provided with training in stress management *skills (e.g.,* relaxation techniques and cognitive restructuring). Alternately, subjects receive assistance in identifying skills they already have and removing factors that may inhibit the use of these skills. In Phase 3, Application and Follow-Through, subjects are assisted *in finding opportunities to* apply the coping skills and encouraged to apply the skills as *practiced in Phase 2.*

SIT has been used to successfully treat a wide variety of situation specific stressors, including *test anxiety*, public speaking anxiety, life transitions, medical conditions, and dental procedures (Meichenbaum, 1993). It has also been used to provide certain groups (e.g., teachers, police officers, and Marine Corps drill instructors) with stress management skills. Treatment via SIT has ranged from 20 minutes to several sessions and has been effective prophylactically (see Meichenbaum, 1993; Meichenbaum, & Cameron, 1983; and Saunders, Driskell, Johnston, & Salas, 1996 for reviews).

Coping Is Not Always Effective

Although coping skills often appear to assist people in reducing stress, this is not always the case. Lazarus and Folkman (1984) suggested that, at times, "an appraisal of controllability can...heighten threat" (p. 80). Indeed, some research has suggested that increasing the coping mechanisms available has no impact on stress experienced, or actually increases stress.

Strentz and Auerbach (1986) subjected individuals to a simulated captivity (i.e., a simulated hostage situation). Subjects who were provided training in problem-focused

coping reported significantly higher anxiety levels and showed more behavioral disturbance than those trained in emotion-focused coping. The authors noted, however, that this was a relatively short-term stressor and that using such avoidant techniques to cope with long-term stressors is usually counter-productive. This argument has been supported elsewhere (see Suls & Fletcher, 1985, for a meta-analysis).

Averill (1973) reviewed the literature and identified no consistent relationship between information about the onset of a stressor and reactivity to that stressor. For example, Pervin (1963) found that subjects who were warned about an impending aversive event demonstrated an increase in anxiety, although to a lesser degree than those subjects who received no warning. Johnson (1973) found that, while providing information to subjects about to experience a laboratory-induced ischemic event reduced self-reported distress, such information did not systematically affect perception of the danger of the event or the level of reported fear. Similarly, Miller (1979b) found that persons who chose to monitor information regarding the onset of a pending electric shock reported higher subjective arousal, and demonstrated higher objective arousal, than those who distracted themselves.

Information about the nature of the stressor likewise does not always have a positive effect. Langer, Janis, and Wolfer (1975) found that preparatory information presented alone did not reduce post-operative stress, and actually increased pre-operative anxiety. Similarly, information given to women undergoing colposcopy led to increased self-reports of anxiety (Miller & Mangan, 1983). In their review, Ludwick and Neufeld (1988) reported that information about noxious medical procedures positively affected behavioral measures of discomfort and adjustment, while self-reported levels of anxiety

were not significantly affected. In further casting doubt on the beneficial effects of information, they suggested that the behavioral changes may have resulted from contamination of the information about the procedure by information about how the patients should behave during the procedure.

Several researchers have suggested that increasing control increases stress because it draws attention to the stressor. Burger, McWard, and LaTorre (1989) suggested that increasing control causes a person to focus more attention on the aversive aspects of a situation. Rothbart and Mellinger (1972) stated that attending to danger signals appears to raise awareness of the threat, makes the signal and the accompanying threat more salient, and, thus, increases anxiety. Miller and Mangan (1983) suggested that providing information increases arousal because it forces the person into the psychological presence of danger that often cannot be avoided.

The research cited above provides support for Folkman's (1984) statement that "believing that an event is controllable does not always lead to a reduction in stress or to a positive outcome, and believing that an event is uncontrollable does not always lead to an increase in stress or to a negative outcome" (p. 839). In part, this appears to be due to the nature of the stressor.

Situational variables

As noted earlier, Lazarus and Folkman (1984) suggested that situational variables have an impact on the relationship between coping and stress. In one study (Folkman & Lazarus, 1980), they found that people tended to use both problem- and emotion-focused coping strategies for almost all stressors. However, the type of situation appeared to have an effect on the strategy that was predominantly used. When people believed they could

instrumentally affect a situation, or when they believed they would benefit from more information, they tended to use problem-focused coping. In contrast, when they believed that they could not instrumentally affect the situation, they tended to use emotion-focused coping.

Miller (1979a) proposed a similar idea with her Minimax Hypothesis. She predicted that some situations favor relinquishing control, such as when giving control to another reduces the perception of future danger, while others do not. Her review found evidence to support this.

Burger and his colleagues (1989) have also provided evidence supporting this idea. In their study, some subjects were led to believe that an assistant was no more competent in drawing blood than they were. These subjects reported less anxiety when they were informed that they had the option to self-administer this aversive event.

Research investigating the impact of information on stress has shown similar dichotomies. Miller (1981) proposed that uncontrollable events likely support coping strategies such as distraction better than controllable events, because exercising control necessitates one to direct attention to the aversive situation which, in the case of uncontrollable events, unnecessarily raises one's stress level. Reviews by Suls and Wan (1989) and Thompson (1981) have supported this hypothesis. Both reviews reported that avoidant approaches appear to have benefits for decreasing stress in situations in which no behavioral response is available, while vigilant strategies reduce stress if there is a behavioral response available.

Additionally, the type of information provided about the event appears to have an effect on the stress on experiences. It appears that providing individuals with information

only about the stressful event does not reduce stress, while describing what sensations to expect does (see Suls & Wan, 1989, and Thompson, 1981, for reviews).

Individual variables

In addition to situational variables, Lazarus and Folkman (1984) also suggested that factors intrinsic to the individual impact the use of coping techniques. To date, the research supports this hypothesis.

Research has indicated that people tend to prefer direct control over stressful events (see Miller, 1981 for a review) and to prefer to have information about stressful events (see Averill, 1973; Lanzetta & Driscoll, 1966; Miller, 1979b; Miller, 1981; Pervin, 1963; Seligman; 1975 for reviews). This is not surprising given the generally stress reducing nature of the coping mechanisms cited earlier in this manuscript. Several studies have suggested, however, that persons often decline opportunities for control, even when having control is guaranteed to stop, or prevent the experience of a stressor.

Lanzetta and Driscol (1966) found that, while subjects generally prefered to have information about a pending stressor, no matter what the nature of the outcome or their ability to affect it, a significant minority of subjects preferred to have no information. This is true even when such information would allow them to avoid or terminate the stressor.

Averill and Rosenn (1972) presented subjects with the means of terminating a stressor (electric shock), and found that a significant minority of subjects chose to avoid warning information that would allow them to exercise such control. Furthermore, even with an increase in the cost of not exercising control (i.e., an increase in shock intensities), 23% of subjects still chose to ignore warning signals.

Similarly, Averill et al. (1977) found that even when receiving a warning allowed 100% avoidance of a stressor (electric shock), 20% of subjects still preferred to have no warning. In contrast, they found that even when an avoidance response was completely ineffective, 35% preferred to receive a warning signal.

Perhaps, then, some people avoid opportunities for control because such avoidance reduces stress. Research has suggested, however, that this is not always the case. Averill et al. (1977) found that when a warning allowed 100% avoidance of a stressor, those subjects who chose to have no warning showed higher stress reactions than those who chose to attend to the warning. Similarly, Averill (1973) found that, although many studies supported the notion that control reduces stress, many of these studies also reported a considerable minority (typically 10-20%) that showed an increase in stress with control. Perhaps at times, therefore, "providing subjects with an avoidance response will not necessarily lead to reduced stress, and...may actually be an added source of conflict for some" (Averill & Rosenn, 1972, p. 139).

Personality and Coping

Research has suggested that personality factors related to coping, such as preference for control, are relatively stable (Stone & Neale, 1984). Several researchers have identified personality variables that appear to be related to this preference and to differing levels of anxiety when provided with means of control. Those with differing preferences for control have carried several labels, including sensitizers versus avoiders (Delong, 1970; as cited in Averill, 1973), and blunters versus monitors (Miller, 1981). Research has shown that these variables are often related to the styles of coping

individuals tend to use (Anderson, 1977; Miller, 1979b, 1987; Strentz & Auerbach, 1986).

Desire for control

Burger and Cooper (1979) proposed that some individuals prefer both information about stressful events and control over them. They termed this personality factor Desire for Control. According to the authors, persons high in Desire for Control are assertive, decisive, and active. They seek to influence others when such influence is advantageous, and attempt to manipulate events to ensure desired outcomes in an attempt to avoid unpleasant situation or failures. In contrast, persons low in Desire for Control are nonassertive, passive, and indecisive. They are less likely to attempt to influence others and may prefer to abdicate decision-making to others.

Research has supported the validity of this construct. Burger (1992) identified that persons high in Desire for Control were more likely to rely on active, problem-oriented coping strategies, such as trying harder, obtaining information, and seeking advice. They often engaged in collecting information and considering their many options for dealing with the situation. When given a choice, persons high in desire for control will choose to exercise control, even if it means inflicting pain on themselves. For example, Burger et al. (1989) gave subjects the choice to self-administer a blood draw or to let a lab assistant do so. Those subjects high in Desire for Control were less likely to relinquish control than those low on this dimension, unless relinquishing control would undoubtedly result in less risk than keeping control, such as when the lab assistant was obviously more proficient at drawing blood than the subject.

Other researchers have identified trends similar to those of Burger and his colleagues. Ashford and Black (1996) found that individuals high in Desire for Control sought more information, socialized more, networked more with interdepartmental colleagues, negotiated more job changes, and were more likely to put a positive frame around their situations than individuals low in Desire for Control. Aspinwall and Taylor (1992) found that Desire for Control affected coping styles in college students. Those with a high Desire for Control were less likely to use avoidant coping strategies, and more likely to use active coping strategies and to seek out social support. The type of coping strategy used affected adjustment to college, with those using more active strategies and those seeking social support adjusting better.

Similar to the findings related to preference for control, those high in Desire for Control tend to have higher levels of stress and to express more anxiety than those who prefer to avoid such control, especially when the situation threatens their control (Burger, 1999). These higher levels of anxiety, however, appear to be short-lived.

Burger (1992) found that people high in Desire for Control show greater physiological reactivity and become more upset when under stress. Their tendency to use active, problem-focused coping techniques, however, often resulted in an eventual lowering of anxiety. In general, therefore, high Desire for Control individuals report lower levels of distress and higher levels of well-being than their low Desire for Control counterparts (Burger, 1999). Burger (1992) found that Desire for Control was negatively correlated with both trait anxiety (r = -.37) and state anxiety (r = -.22 to -.38). Thus, those individuals "who actively search for the danger [may be]...willing to tolerate short-

term increases in anxiety or fear for the possible benefit of being able to avoid harm and reduce fear in the long run" (Rothbart & Mellinger, 1972, p. 138).

This proactive approach to life appears to have other benefits as well. Persons high in Desire for Control generally report higher levels of psychological adjustment and higher levels of psychological well-being (Cooper, Okamura, & McNeil, 1995). However, these trends appear to be in part related to the ability of the high Desire for Control person to use their preferred coping style.

Matching style to coping technique

Given that individuals tend to have preferences regarding exercising certain coping strategies, what effect does encouraging one to use their non-preferred style have on their stress level? Folkman (1984) suggested that this mismatch may lead to distress. Similarly, Wallace and Bergeman (1997) proposed a "goodness of fit" model. This model suggests that the match between personal characteristics and characteristics of the situation is important in determining outcomes. Research has supported this idea.

Wallace and Bergeman (1997) studied elderly men and women and found that a mismatch between one's perception of control and Desire for Control was related to depression. Likewise, Wilkinson and Chamove (1992) studied Desire for Control and perceived control in psychiatric outpatients, and found that higher levels of anxiety were associated with large discrepancies between these two dimensions.

Auerbach, Martelli, and Mercuri (1983) studied the effects of specific information about dental extraction surgery versus general information about the dental clinic and a list of dental instruments. They found that the most important factor in determining adjustment to surgery was the match between specificity of information provided and

individual's preference for information. Subjects with a high preference for information adjusted better to surgery when they received specific versus general information, while those with low preference for information adjusted slightly better when they received general versus specific information. This finding, however, was significant only for the high preference subjects.

Martelli, Auerbach, Alexander, and Mercuri (1987) examined the effects of providing problem-focused or emotion-focused coping skills to patients about to undergo oral surgery. They found that state anxiety levels were higher for subjects who had a low preference for information and who were placed in the problem-focused intervention condition. Similar, although non-significant, differences in anxiety were found with the emotion-focused intervention, with high preference for information subjects showing higher anxiety levels. Patients who were provided with an intervention that matched their preference for information also demonstrated better adjustment to the surgery, and reported less pain, than those who were provided with non-matching interventions.

Ludwick-Rosenthal and Neufeld (1993) studied patients undergoing catheterization. They found that when desire for information was matched to preparatory information level, patients showed less behavioral anxiety, engaged in more problem-focused coping, and engaged in less emotion-focused coping than patients whose desire for information was unmatched with preparatory information. Further, they found that for information avoiders, problem-focused coping was negatively affected if they were provided with too much information, while the opposite was true for information seekers. Similar patterns have been noted in much of the literature in this area (see Auerbach, 1989; Auerbach & Kilmann, 1977; and Ludwick & Neufeld, 1988 for reviews).

Findings similar to those reported above have been found when examining specific personality dimensions, such as locus of control (Auerbach, Kendall, Cuttler, & Levitt, 1976; Strentz & Auerbach, 1986) and blunting (Miller & Mangan, *1983*). Some research has suggested that those who prefer information have higher fear and tension scores, and higher levels of physiological arousal, than those who do not, even when provided with the information they desire (Miller, *1979b*; 1980; 1987). It is unclear, though, if their stress levels would have been even higher if they were not allowed to engage in their preferred style.

Desire for Control shows similar patterns. If one's Desire for Control is not matched with the associated coping style, an increase in stress appears to ensue. Logan et al. (1991) found that dental patients with a high Desire for Control and a low level of perceived control reported higher levels of distress than other patients. Baron, Logan, and Hoppe (1993) replicated this research and expanded on it. They provided dental patients awaiting root canal procedures with instructions to focus on sensory versus emotional stimuli. Only those patients who were classified as having a high Desire for Control and a low perception of control in dental situations reported less pain when instructed to focus on sensory stimuli. In contrast, patients with a low Desire for Control and a low perception of control who received sensory-focus instructions reported more pain than those who received emotion-focus instructions.

Further evidence comes from a study by Law, Logan, and Baron (1994). They categorized dental patients on Desire for Control and perceived control, and then randomly assigned them to a 20-minute Stress Inoculation Training (Meichenbaum, 1985) or a filler condition. They found that SIT was effective in reducing pain and

distress, and increasing control, only in those patients who had a high Desire for Control and a low level of perceived control.

Wallston and his colleagues (1991) found an interesting twist related to these results. They offered choice of anti-emetic agent (one of two medications or relaxation therapy) to cancer patients awaiting the start of chemotherapy. Choice, when combined with a moderate Desire for Control, had a statistically significant impact on both anxiety and negative mood. Similar, although non-statistically significant, results were found with regard to reported nausea. There was no statistically significant effect for this intervention among those with either a high or low Desire for Control. The authors speculated that those patients high in Desire for Control may not have been offered enough choice, and those patients low in Desire for Control may have been offered too much or the choice may have been irrelevant to them.

This research strongly suggests that "consideration of (control-related) patient characteristics is crucial in predicting how they will react to therapeutic interventions" (Baron & Logan, 1993, p. 196). Such personality variables serve as moderator variables as described by Baron and Kenny (1986), in that they are variables that may affect the relationship between the use of stress management techniques and one's perceived stress level. Stress management interventions, therefore, may be more effective if one takes into account an individual's Desire for Control (Wallace & Bergeman, 1997). Law and his colleagues (1994) have even suggested that the use of stress management interventions as a pretreatment for all persons facing a stressor is ill advised.

Research such as that cited in this section may explain the lack of efficacy cited in the stress management literature. Research into the efficacy of stress management in

adjusting to significant life changes is not well developed. The research that has been done is rife with methodological problems and has shown equivocal results. One such life transition is entering military basic training.

Military Basic Training

Military basic training is an extremely stressful time for most individuals. It is an introduction to a very foreign environment with tasks and ways of performing those tasks that are quite unique to the military. It is designed to prepare recruits for combat by intentionally taxing their resources and assisting them to adapt to stressful environments in which they have little or no control (Rosebush, 1998).

Although new recruits often expect difficult physical training, they often do not expect the psychological stress of adjusting to a foreign environment and the concomitant anxiety and worry (Novaco, Cook, & Sarason; 1983). Few recruits have been in an organization that requires immediate and unquestioning obedience, uses equipment and procedures whose primary purpose is to intentionally inflict lethal harm on other human beings, and will potentially expose them to situations that will threaten their well-being (Novaco et al.). Thus, "the new recruit is immediately taxed with the difficult demands of social, psychological, and physical adjustment inextricably entailed in basic training" (Novaco et al., p. 379).

Their first encounter with this psychological stress is typically at the hands of the drill instructors, and their appraisals of basic training are often based on their reactions to these drill instructors (Novaco et al., 1983). Drill instructors are tasked with reforming recruits from individuals with little or no knowledge of military methods or culture into

members of a team who will unquestioningly obey orders without hesitation. As a result, recruits are often forced to take a passive role with little or no opportunity to request additional information or clarification, and with little opportunity to gain much in the way of feedback concerning coping styles and problem-solving strategies (Novaco et al.). What feedback the trainees do get is frequently in the form of negative reinforcement and punishment, which is experienced as aversive by many.

Given the novelty and intensity of the change most recruits experience on entering the armed forces, the initial phase of basic training is often "quite traumatic" and may be the "point of maximum stress for most recruits" (Novaco et al., 1983). This period is marked by many disbalancing and unfamiliar events and surroundings.

Subjective reports from recruits have supported that the early portion of basic training is the most stressful (Clemons, 1996). Objective evidence has paralleled these reports. Magyar, Lukacs, Mod, Alfoldi, and Arato (1986) reported that 24% of trainees had abnormal dexamethasone suppression tests (DSTs), a physiological measure related to stress, within 2 days of the beginning of training. One month later, however, only 4% of trainees showed abnormal DSTs. Similarly, Vickers, Hervig, Poth, and Hackney (1995) found cortisol levels, another physiological measure related to subjective reports of stress, were highest in the early part of basic training. This finding corresponded to subjective reports from the trainees.

Basic training is intended, however, not only to intentionally tax the coping resources of the recruit, but also to "facilitate personal adjustment to the military way of life and to provide those skills necessary for adequate coping with future demands" (Novaco et al., 1983). Recruits are provided, however, with little information about what

to expect from basic training, as well as little formal education in how to cope with the new circumstances they encounter. As noted earlier, providing information and coping skills often assists persons to more effectively cope with such situations.

Several authors have suggested that the military must provide military personnel with realistic expectations and anticipatory guidance regarding stress reactions, in addition to good training and strong leadership (Armfield, 1994; Clemons, 1996; Novaco et al., 1983; Rosebush, 1998). Novaco and his colleagues (1983) suggested that briefings designed to meet these criteria should include informing the individuals that they will likely experience fear, assisting them in preparing for the fear, and encouraging them to concentrate on the tasks at hand. Research investigating the effects of such interventions in other situations has supported their efficacy (e.g., Milroy, 1991).

Although there has been a siren call for interventions such as those described above, few studies have examined the use of stress management techniques in basic training. Of the studies done, none of the studies has directly measured the impact of such interventions on dimensions of stress, but rather have looked at adaptation and graduation rates. Although these outcomes may be related to stress responses, they may also be affected by several other factors. Additionally, the research done to date has several methodological flaws that prevent drawing solid conclusions.

Georgoulakis, Bank, and Jenkins (1981) identified trainees who were "vulnerable to attrition" from basic training based on their scores on a screening measure. Of this group, those who were provided preventive counseling (either by assignment of the mental health clinic, by referral by command, or by self-referral) showed a higher graduation rate than those who did not (83.5% v 60.0%; χ^2=22.3 (1 *df*), $p < .001$). There

are significant methodological problems with this study, however. First, this intervention was administered to a subset of trainees. Therefore, any effects cannot be generalized to the trainee population as a whole. Second, the intervention was provided individually and was not standardized. Therefore, it is difficult to identify the potential cause of the increased graduation rate.

A study conducted by Gerwell and Fiedler (1990) addressed the latter of these problems. They applied a stress management intervention based on Meichenbaum's (1985) Stress Inoculation Training (SIT) to a group of Air Force trainees. These recruits had been evaluated by the mental health clinic at the request of the recruits' military commanders and deemed to have no disqualifying psychiatric conditions but "some degree of coping problem." Thus, they were deemed capable of returning to duty. All recruits were offered the group intervention, but participation was determined by approval of the recruits' commanders. Most group participants attended two to four sessions. Almost twice as many group participants graduated versus those who did not attend group (71.1% versus 36.4%, $p < .005$).

As with the study cited previously, this investigation had significant methodological flaws. First, the effects of the intervention may have been inflated due to potential selection biases. For example, the commanders may not have allowed recruits who they had decided to discharge to attend the group. Alternately, commanders who did not allow recruits to attend may also have created a training atmosphere that was related to a higher discharge rate. Second, as with the Georgoulakis et al. (1981) study, the sample was a subset of all trainees, and, therefore, generalization to the trainee population as a whole is impossible.

Even though the two studies cited above support the idea that stress management interventions have a positive effect on trainees, there is some evidence to suggest that such interventions are not always effective. Cigrang, Todd, and Carbone (2000) provided a two-session stress management intervention to Air Force recruits similar to that of Gerwell and Fiedler (1990). As with Gerwell and Fiedler, they looked to reduce attrition in trainees deemed at risk. Contrary to Gerwell and Fiedler, however, they found no significant difference in attrition rates between treatment and control groups. As with the previous two studies, this study focused on a sample of trainees who were identifiably different from the general basic training population.

Novaco and his colleagues (1983) performed an investigation that addressed this latter issue. They administered a one-session stress management intervention (again based on Meichenbaum's SIT model) to Marine Corps recruits. They introduced the recruits to the stressors they would face and provided means of coping with these stressors. Instruction included acknowledging and normalizing the distress typically experienced by trainees, providing detailed information about basic training (including the role of training personnel, expectations of trainees, and ingredients for successful performance), promoting an adaptive cognitive orientation, and offering adaptive and effective coping techniques. Contrary to the previously cited studies, this study did not assess attrition rate. The authors found an increase in efficacy expectations across training tasks, less trouble adjusting to the demands of the drill instructors, and an increase in perceptions of control.

All but the study by Novaco et al (1983) used outcome measures that are at best indirectly related to stress (i.e., attrition from basic training). Thus, it remains unclear if

these brief stress management interventions impacted stress in addition to attrition. Additionally, none of these studies accounted for personality variables that might moderate the effectiveness of stress management interventions. As noted earlier, matching such interventions to the individual's preferred coping style is important in maximizing the effects of such interventions. This study, therefore, was designed to test whether a brief stress management intervention had a differential impact on reducing the stress in those with a high versus a low desire for control. Explicitly stated, the hypotheses are as follows:

Hypothesis 1: The research cited above suggested that people high in Desire for Control often demonstrate a higher level of anxiety than those low in Desire for Control when faced with a novel situation, which is then followed by a rapid reduction in this anxiety once they have begun to exert control. Hypothesis 1, therefore, proposed that among untreated recruits, those high in Desire for Control would show higher levels of anxiety at the beginning of basic training, and lower levels two weeks later, than those low in Desire for Control.

Hypothesis 2: A brief stress management intervention would have no significant direct effect on anxiety at Time 2 compared to those who were not so treated.

Hypothesis 3: Level of Desire for Control would moderate the impact of the stress management intervention. That is, those recruits high in Desire for Control would show lower levels of anxiety two weeks after a stress management intervention when compared to untreated recruits who were also high in Desire for Control. In contrast, those recruits low in Desire for Control would show higher

levels of anxiety two weeks after treatment with stress management than those recruits low in Desire for Control who were not so treated. (See Figure 1 for a graphic representation of Hypothesis 3.)

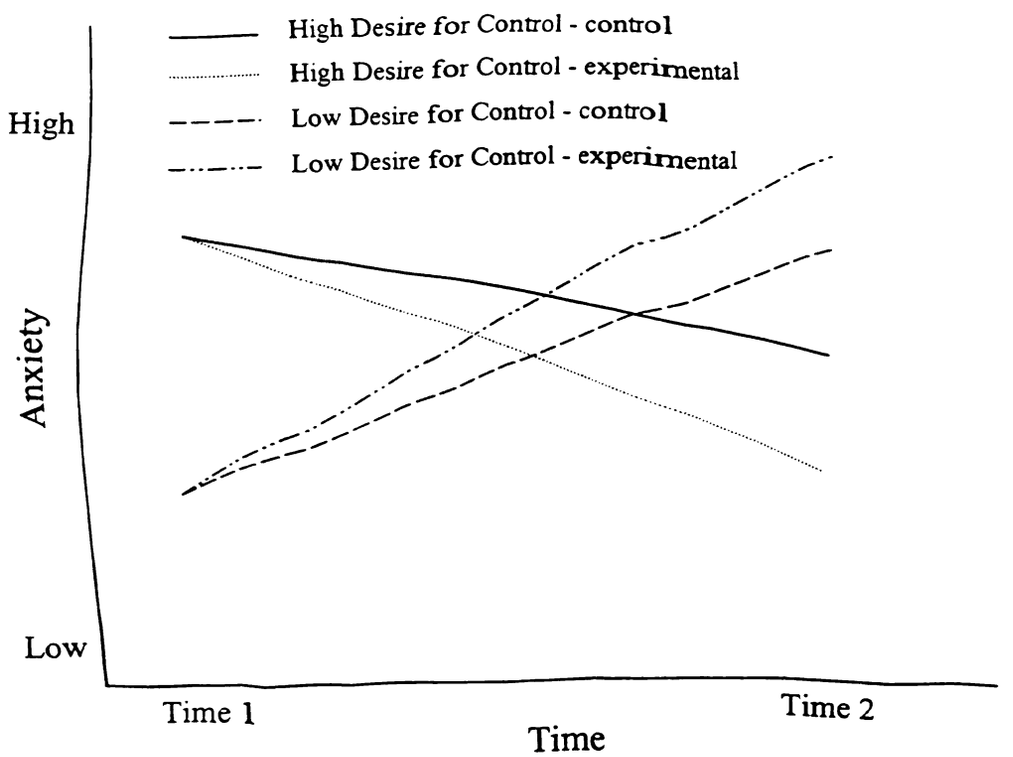

Figure 1. Graphic representation of the expected results of Hypothesis 3, with anxiety as a function of Desire for Control and experimental condition.

Method

Subjects

Subjects for this study were solicited from trainees processing through the 43rd Adjutant General Battalion Reception Station, Fort Leonard Wood, Missouri. The study was presented to prospective participants in an auditorium holding between 150 and 400 trainees. Participation in this study was voluntary. Participants were offered no compensation nor coerced in any manner to participate. The informed consent form used for this study was approved by the Brooke Army Medical Center/Wilford Hall (Air Force) Institutional Review Board, and made it very clear that participation was voluntary and had no impact on any aspect of a recruit's training or career (see Appendix A for this document). At the time recruits were initially presented with the study, they were given an opportunity to ask questions. The author answered all such questions, as long as the answers to such questions would not have, in the opinion of the author, interfered with the validity of the results. To decrease the probability that trainees might feel coerced, the author then left the auditorium and another military officer, dressed at the time in civilian clothes, presented the informed consent form. This individual answered further questions, again as long as they would not interfere with the outcome, and reiterated that participation was voluntary and that their decisions about participation would have no impact on their training. Since a sizable minority (sometimes approaching half of those to whom the project was presented) chose not to participate, it appears that many of the recruits accepted that participation was voluntary.

Of the trainees approached, the majority agreed to participate. An exact percentage is impossible to compute since data on the number of persons the study was

presented to are not available. Only those trainees who later went to basic training with infantry units, specifically, those of the 3RD Training Brigade, were accepted for participation in this study. This limitation was imposed in order to minimize the effects of different training environments. (Several units at Fort Leonard Wood combine basic training with training in the soldiers' specific occupational specialty. These units often provide training in a different manner due to this difference in their missions.) Additionally, only trainees who had been at the Reception Station for less than one week were included in this study. Anecdotal evidence suggested that the longer a trainee stays at the Reception Station awaiting transfer to their training unit, the more likely they will experience increased anxiety and decreased morale. Including trainees with stays longer than one week might have created a confound that would have been difficult to control.

Not all of those who agreed to participate, and who met the criteria above, completed the study. There were various reasons for this attrition from the volunteer pool. The reasons included, but were not limited to, the following: First, due to administrative or medical reasons, some participants were not transferred from the Reception Station to their training units in the week following the initial assessment. Second, even though personnel at the Reception Station were instructed to provide only those recruits bound the for the 3rd Training Brigade, many recruits who were bound for other training units were included in the groups to which the project was presented. Third, some participants dropped out of, or were released from, basic training. Trainees do not complete basic training for a variety of reasons, including behavioral problems, motivational problems, emotional distress, injury, and recurrence of pre-existing physical or psychiatric conditions. Fourth, some participants were started anew in basic training

due to injuries or behavioral issues. Including these individuals might have introduced a confound as anecdotal evidence suggested that such events tends to affect the affective state and motivation of such individuals. Finally, some participants were routed to companies in the 3rd Training Brigade that were not included in the study. The data from these "lost" participants were unrecoverable. By the time it was discovered that they had been assigned to a different company, the group they belonged to had completed the study and the time frame for the second part of the intervention (if applicable) and post-intervention data collection had passed.

Given the importance of sample size to the sensitivity of an experiment in detecting treatment differences, an attempt to identify an appropriate sample size was warranted. A power analysis was not possible, however, due to the unique nature of both the situational stress (i.e., a relatively lengthy and pervasive stressor) and the outcome measure proposed (i.e., a measure of perceived stress). Research related to this study has either investigated short-term stressors (e.g., dental surgery), or used outcome measures that are probably less sensitive than the anxiety measure proposed in this study (e.g., attrition from basic training). Given that this study used an outcome measure that was ostensibly more sensitive than that used in prior studies on basic training, it seems reasonable to conclude that a sample size similar to those studies would provide sufficient power to realize a treatment effect. That research reported treatment effects with sample sizes ranging from 269 to 530 (M = 412), and cell sizes ranging from 119-265. Therefore, a sample of 400, with a cell size of 200, was selected as a target when the study began.

The final sample consisted of 409 recruits. The treatment group consisted of 224 trainees from three companies. The control group had 185 trainees, again from three companies. While the number in the control group was somewhat less than the goal, the shortfall was deemed to be less significant than extending the study and adding a possible confound related to seasonal variations in the recruit populations.

The sample had a mean age of 19.72 with a standard deviation of 3.40. The modal age was 18. The sample was almost equally split along gender lines; males comprised 46.2% of the sample, while females comprised 53.8%. In this sample, 19.6% identified themselves as African-American, 3.7% as Asian/Pacific Islander, 11.2% as Hispanic, 1.0% as Native American, 62.1% as White, and 2.4% as "other." The sample was predominantly single (90.5%), with 7.1% married, 2.2% divorced, and 0.2% separated. The mean education rate was 12.56 years with a standard deviation of 1.19. The mode for years of education was 12. At the time this manuscript was written, no demographic data regarding the trainee population at Fort Leonard Wood or in the US Army were available, so comparisons were not possible.

Procedure

After choosing to participate, volunteers signed the informed consent (see Appendix A). They then completed a questionnaire consisting of basic demographic information (name, social security number, age, sex, race, marital status, and education), the Desirability for Control Scale, and the state portion of the State-Trait Anxiety Inventory (STAI) (see Appendix B).

Upon completion of this questionnaire, participants were assigned to either the treatment or control condition based on the company they were to train with. Participants

were blind to their assignment in either the experimental or control condition until after they completed the initial questionnaire. Although this means of assigning participants introduced the risk of confounding variables related to personalities and approaches taken by the training personnel in these units, that risk was considered smaller than the risk of participants in the experimental condition cross-training participants in the control condition.

Four weeks after completing the initial questionnaire, participants completed the state portion of the STAI once again. After completing this survey, they were debriefed about the nature of the experiment, given a chance to ask questions, and thanked for their participation.

Measures

The S-Anxiety (or Y-1) scale of the State-Trait Anxiety Inventory (STAI, Spielberger, 1983) is a 20-item self-report measure designed to measure feelings of apprehension, tension, nervousness, and worry in the present moment. Subjects rate each item on a four-point Likert scale (1 = "not at all", 4 = "very much so"). Half of the items are worded to reflect positive valence, while the other half reflect negative valence. The negative valence items are reverse scored before summing the responses.

The STAI has been normed on college students, adults, and military recruits. For this study, pre-intervention mean scores for the STAI were 44.02 (SD = 12.68) for males, and 46.10 (SD = 13.22) for females. At post-intervention, the mean scores were 45.44 (SD = 11.88) for males, and 45.21 (SD = 13.11) for females. These values are similar to those reported by the measure's author for military recruits (M = 44.05, SD = 12.18 for males; M = 47.01, SD = 14.42 for females).

Test-retest reliability for the S-Anxiety scale among college students was low (r = .33, range = .16-.62) (Spielberger, 1983). A low level of test-retest reliability, however, is expected in an instrument that is designed to reflect the effects of situational factors on anxiety. Test-retest reliability for this sample (r = .38) was comparable to that reported by the author. As reported by the author, internal consistency (Cronbach's alpha) among military recruits was very good (α = .93 for males; α = .95 for females). For this sample, internal consistency was comparable to that reported by the author (α = .93 for males; α = .94 for females). Operational validity for this scale also appears to be very good. Research has suggested that perceptions of psychological stress and relaxation training cause statistically significant changes in the expected direction on S-Anxiety scale scores.

The Desirability for Control scale (Burger & Cooper, 1979) is a 20-item self-report measure designed to measure a general desire for control. Subjects rate each item on a seven-point Likert scale (1 = "This statement doesn't apply to me at all", 7 = "This statement always applies to me"). Fifteen items are written with a positive valence (i.e., the direction of higher desire for control), while five items have a negative valence, and are reverse scored before summing the responses.

The mean score for Desire for Control for this sample (M = 102.23, SD = 12.69) was similar to that reported by the authors of the measure (M = 99.1, SD = 11.80). The scale has an internal consistency (Cronbach's alpha) of .80. This value was comparable to that found in this study (α = .73). It has a reported test-retest reliability of .75 (Burger & Cooper, 1979). Research has indicated that it is minimally correlated with the Rotter Internal-External Scale (r = -.19) and the Marlowe-Crowne Social Desirability Scale (r = .11) (Burger & Cooper).

Treatment Protocol

Treatment consisted of two 45- to 60-minute group interventions (*see Appendix C* for outlines of these sessions). The interventions were based on those used previously by researchers examining stress management in military recruits (Cigrang et al., 2000; Gerwell & Fiedler, 1990; Meichenbaum & Cameron, 1983). The instructor (the author of this study) used the Socratic method to provide recruits in the experimental condition with information about the purpose and nature of basic training, the role of the drill instructors, common experiences in basic training (i.e., typical activities), and reactions typically experienced by recruits. The classes also provided training in how to recognize signs of stress, cognitive and behavioral coping skills, and information regarding the importance of social support and spirituality. One session was conducted immediately after completing the questionnaires, prior to the participants shipping to their training units. The second session was conducted two weeks later, approximately nine days after they arrived at their training units.

Results

Initial examination of the raw data revealed several missing data. No one participant was missing more than four items, nor more than two items per measure. Missing data were also infrequent listwise (less than four or 0.7% per item) in all cases but one. The exception was item 20 on the pre-intervention STAI. Slightly more than five percent (5.1%) of the participants did not respond to this item. These missing data appeared to be due to the format of the answer sheet rather than an issue related to the item itself, since all participants responded to this item at post-intervention. Given that this item was only one of 20 in the measure, it seemed that the impact of replacing these missing data with the mean for this item would be small. All missing data except marital status and race were therefore replaced with their respective means. Replacing marital status and race with their mean was illogical since these were categorical variables. Since the impact of these missing data on the following analysis would have been negligible (only one case, 0.2%, was missing for each), they were left blank.

Once the issue of missing data was addressed, relationships between variables were analyzed to identify possible confounds. To begin this process, continuous variables were entered into a correlation matrix (See Table 1). Of concern for this investigation, age and education were negatively correlated with pre-intervention STAI, and education was positively associated with Desire for Control scores.

Table 1.
Pearson correlations between continuous variables. (Two-tailed significance is noted in parentheses. N = 409.)

	Age	Education	Desire for Control	Pre-intervention STAI	Post-intervention STAI
Age	1.000	.609** (.000)	.058 (.245)	-.118* (.017)	.058 (.244)
Education		1.000	.104* (.035)	-.114* (.021)	-.051 (.308)
Desire for Control			1.000	-.179** (.000)	-.100* (.044)
Pre-intervention STAI				1.000	.383** (.000)
Post-intervention STAI					1.000

* $p \leq .05$; ** $p \leq .01$

Relationships between continuous variables (age, education, Desire for Control, and pre- and post-intervention STAI) and categorical variables (sex, marital status, race, experimental condition) were evaluated via ANOVAs (see Appendix D). The only significant connection of concern for this study was between Desire for Control and race (see Table 2). This relationship was analyzed using a Student-Neuman-Kuels post-hoc comparison (see Table 3). This test resulted in two overlapping subsets. The "other" group appeared to be a significant outlier. Since it contained only 10 participants, this group was deleted from the analysis, and another ANOVA with a Student-Neuman-Kuels post-hoc comparison was performed. Again, the ANOVA identified significant differences (see Table 4), but the post-hoc comparison was non-significant and resulted in only one subset (see Table 5).

Table 2.
ANOVA of Desire for Control X Race.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4507.483	5	901.497	5.939	.000
Within Groups	61173.984	403	151.796		
Total	65681.467	408			

Table 3.
Post hoc comparison of Desire for Control X Race using Student-Newman-Keuls procedure [a,b]. (Means for groups in homogeneous subsets are displayed.)

Race	N	Subset for alpha = .05	
		1	2
Other	10	93.40	
Hispanic	46	98.07	98.07
Asian/Pacific Islander	15	101.13	101.13
White	254	101.50	101.50
African-American	80		107.93
Native American	4		109.00
Sig.		.329	.152

a Uses Harmonic Mean Sample Size = 13.191.
b The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Table 4.
ANOVA of Desire for Control X Race less "other" category.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3707.399	4	926.850	5.993	.000
Within Groups	60937.584	394	154.664		
Total	64644.982	398			

Table 5.
Post hoc comparison of Desire for Control X Race (less "other" category) *using Student-Newman-Keuls procedure*[a,b]. Means for groups in homogeneous subsets *are displayed.*

Race	N	Subset for alpha = .05
Hispanic	46	98.07
Asian/Pacific Islander	15	101.13
White	254	101.50
African-American	80	107.93
Native American	4	109.00
Sig.		.134

a Uses Harmonic Mean Sample Size = 14.091.
b The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Further review of the data, however, suggested two racial subgroups based on Desire for Control mean scores; the first group consisted of African-Americans and Native Americans, and the second group Caucasians, Hispanics, and Asian/Pacific Islanders. Although there was no significant difference between these two groups based on the post-hoc comparison, this finding was likely the result of the higher standard of the post-hoc test, combined with the relatively small samples of several of the racial groups. To assure, therefore, that race would not confound the data analysis, this variable was controlled for in all successive analyses in which Desire for Control was a variable. In these instances, race was transformed into a dichotomous variable and participants were assigned to each group passed on the split identified above. The "other" group was dropped from any analysis in which Desire for Control was a factor.

Finally, categorical variables were compared to one another via chi-square analysis using SPSS' crosstab function (see Appendix E). These analyses revealed no significant relationships of concern for this investigation.

After having identified possible confounding factors, the dependent variable was computed. Since all of the hypotheses in this study were concerned with change in anxiety from pre- to post-intervention, post-intervention STAI scores were subtracted from the pre-intervention STAI scores. This difference score was used as the dependent variable in the succeeding analyses.

Hypothesis 1 purported that among untreated participants, Desire for Control would be negatively related to changes in STAI scores from pre- to post-intervention. The data set was culled, therefore, of those in the treatment condition before conducting the following analysis. Given that education and age were correlated with STAI scores, and race related to Desire for Control, these variables were entered first into a multiple regression to control for their possible confounding influence. Then Desire for Control scores were entered as the independent variable. Results are posted in Table 6.

Results from the multiple regression were consistent with some of the results reported earlier in this manuscript. Age was a significant predictor of the STAI difference scores ($\beta = -.275$, $p < .01$, *Adjusted* $R^2 = .020$), as was education ($\beta = .221$, $p < .05$, Δ *Adjusted* $R^2 = .024$). Race was not a predictor of the dependent variable ($\beta = -.119$, $p = .11$, Δ *Adjusted* $R^2 = .004$). Contrary to Hypothesis 1, Desire for Control was not predictive of the STAI difference score ($\beta = -.109$, $p = .14$, Δ *Adjusted* $R^2 = .006$). (Given that race was not a significant predictor of the STAI difference score, another analysis was conducted with this variable dropped from the equation. This new analysis did not lead to Desire for Control becoming a significant factor).

Table 6.
Multiple regression results for Hypothesis 1. (Dependent Variable: STAI Difference Score)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		c	Std. Error	Beta		
1	(Constant)	12.632	5.563		2.271	.024
	Age	-.591	.273	-.159	-2.164	.032
2	(Constant)	-9.403	10.909		-.862	.390
	Age	-1.086	.343	-.293	-3.167	.002
	Education	2.534	1.084	.216	2.338	.020
3	(Constant)	-6.738	11.062		-.609	.543
	Age	-1.041	.344	-.281	-3.028	.003
	Education	2.448	1.083	.209	2.260	.025
	Race	-3.304	2.446	-.098	-1.351	.178
4	(Constant)	4.380	13.382		.327	.744
	Age	-1.020	.343	-.275	-2.973	.003
	Education	2.587	1.084	.221	2.387	.018
	Race	-3.986	2.482	-.119	-1.606	.110
	Desire for Control	-.124	.084	-.109	-1.466	.144

Hypothesis 2 proposed that the stress management intervention would have no impact on the change in anxiety versus those who were not so treated. Analysis for this hypothesis was conducted through multiple regression with the entire sample. Age and education were entered first to control for their possible confounding influence. Then, pre-intervention STAI scores were entered to control for the influence of initial anxiety on the results. Finally, experimental condition (treatment versus none) was entered. Results are posted in Table 7.

Again, age was a significant predictor of STAI difference scores ($\beta = -.155, p < .01$, *Adjusted* $R^2 = .023$), although education was not ($\beta = .098, p = .05, \Delta$ *Adjusted* $R^2 = .000$). Pre-intervention STAI scores was a significant predictor of STAI difference scores

($\beta = .568, p < .01$, Δ *Adjusted* $R^2 = .320$). As predicted, experimental condition had no significant impact on change in anxiety ($\beta = -.047, p = .24$; Δ *Adjusted* $R^2 = .000$).

Table 7.
Multiple regression results for Hypothesis 2. (Dependent Variable: STAI Difference Score)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	12.883	4.088		3.152	.002
	Age	-.663	.204	-.159	-3.243	.001
2	(Constant)	7.008	7.397		.947	.344
	Age	-.812	.258	-.195	-3.152	.002
	Education	.702	.737	.059	.953	.341
3	(Constant)	-30.488	6.622		-4.604	.000
	Age	-.630	.212	-.151	-2.975	.003
	Education	1.161	.605	.097	1.919	.056
	T1STAI	.623	.044	.571	14.102	.000
4	(Constant)	-29.448	6.679		-4.409	.000
	Age	-.648	.212	-.155	-3.053	.002
	Education	1.176	.605	.098	1.943	.053
	T1STAI	.620	.044	.568	14.018	.000
	Treatment	-1.344	1.147	-.047	-1.171	.242

Hypothesis 3 suggested that Desire for Control would moderate the impact of the stress management intervention. That is, recruits high in Desire for Control would show lower levels of anxiety two weeks after a stress management intervention when compared to untreated recruits who were also high in Desire for Control, while recruits low in Desire for Control would show higher levels of anxiety two weeks after treatment with stress management than recruits low in Desire for Control who were not so treated.

The sample for this analysis was the entire sample, less those participants self-identified as "other" on the race dimension. Analysis was conducted via multiple regression with age, education, and race entered first to control for their potential

confounding effects. Pre-intervention STAI was then entered to control for the effects of initial state anxiety on the dependent variable. Next, experimental condition was entered, followed by Desire for Control. Finally, an interaction term (Treatment X Desire for Control) was entered into the regression analysis. Results of this analysis are posted in Table 8.

Age was again a significant predictor of changes in state anxiety (STAI difference scores) (β = -.157, p < .01; *Adjusted* R^2 = .024). Education and race were once again not predictors of STAI difference scores (β = .100, p = .05; Δ *Adjusted* R^2 = .000; β = -.016, p = .71; Δ *Adjusted* R^2 = -.003). (A second analysis of the data was completed less the above non-significant covariants. This analysis revealed no significant differences in the predictive ability of the independent and moderator variables. The data reported below are, therefore, based on the original analysis.) Pre-intervention STAI scores were again a significant predictor of the dependent variable (β = .580, p < .01; Δ *Adjusted* R^2 = .329).

As found in the analysis for Hypothesis 2, treatment was not a significant predictor of the outcome variable (β = .110, p = .74; Δ *Adjusted* R^2 = .000). Contrary to prediction, neither Desire for Control nor the interaction term (treatment X Desire for Control) was found to contribute to the predictive ability of this multiple regression model (β = .044, p = .47; Δ *Adjusted* R^2 = -.001; β = -.148, p = .65; Δ *Adjusted* R^2 = -.002).

Table 8.

Multiple regression results for Hypothesis 3. (Dependent Variable: STAI Difference Score)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	13.083	4.129		3.168	.002
	Age	-.672	.206	-.161	-3.255	.001
2	(Constant)	6.533	7.480		.873	.383
	Age	-.835	.258	-.200	-3.233	.001
	Ed	.777	.740	.065	1.050	.294
3	(Constant)	6.583	7.610		.865	.388
	Age	-.834	.259	-.200	-3.220	.001
	Ed	.776	.742	.065	1.047	.296
	Race	-6.354E-02	1.725	-.002	-.037	.971
4	(Constant)	-30.624	6.735		-4.547	.000
	Age	-.636	.212	-.153	-3.004	.003
	Ed	1.211	.605	.101	2.001	.046
	Race	-.833	1.407	-.024	-.592	.554
	T1STAI	.628	.044	.578	14.167	.000
5	(Constant)	-29.802	6.795		-4.386	.000
	Age	-.651	.212	-.156	-3.067	.002
	Ed	1.218	.605	.102	2.013	.045
	Race	-.716	1.413	-.021	-.507	.613
	T1STAI	.625	.044	.575	14.067	.000
	Treatment	-1.069	1.159	-.038	-.922	.357
6	(Constant)	-32.639	8.392		-3.889	.000
	Age	-.650	.212	-.156	-3.060	.002
	Ed	1.191	.608	.100	1.961	.051
	Race	-.533	1.449	-.015	-.368	.713
	T1STAI	.630	.045	.579	13.933	.000
	Treatment	-1.043	1.161	-.037	-.898	.370
	Desire for Control	2.723E-02	.047	.024	.577	.564
7	(Constant)	-34.840	9.731		-3.580	.000
	Age	-.654	.213	-.157	-3.073	.002
	Ed	1.191	.608	.100	1.958	.051
	Race	-.547	1.451	-.016	-.377	.706
	T1STAI	.630	.045	.580	13.926	.000
	Treatment	3.128	9.373	.110	.334	.739
	Desire for Control	4.933E-02	.068	.044	.722	.470
	Interaction Term	-4.067E-02	.091	-.148	-.448	.654

Discussion

Similar to Burger (1992), this study found that Desire for Control was negatively correlated with state anxiety at both pre- and post-intervention. Contrary to other data reported by Burger (1992, 1999), however, the results of this study indicated that higher levels of desire for control were unrelated to decreases in anxiety over time among military recruits undergoing basic training.

Why might those high in Desire for Control have shown lower state anxiety at both assessments, and no reduction in anxiety over time? Burger (1999) reported that the high initial levels of anxiety among high Desire for Control individuals typically occur when they feel threatened. Perhaps basic training did not threaten the sense of control of those who desired it.

There are several possible reasons why high Desire for Control recruits may not have felt threatened during the initial phases of basic training. First, high Desire for Control individuals tend to actively seek control (Burger and Cooper, 1979). Perhaps high Desire for Control recruits were more active in their decision to join the military, as opposed to recruits low in Desire for Control who may have been swayed by recruiters or others to join. This active and thoughtful choice may have given the high Desire for Control recruits a greater sense of felt control and, thus, a lower sense of threat.

Second, people high in Desire for Control tend to use better coping strategies (Burger, 1992) and take control during stressful situations (Burger et al., 1989). Those high in Desire for Control may have prepared better for their basic training experience, perhaps through gathering information about basic training experiences and coping resources prior to arriving at the reception station. Alternately, high Desire for Control

recruits may have more quickly adapted to the stresses of basic training by gathering information about pending stressors and how to cope with them shortly after arriving at the Reception Station. Finally, high Desire for Control recruits may have used cognitive restructuring strategies that made potentially threatening events seem less so.

Future research would do well to examine the relationship between Desire for Control and state anxiety prior to leaving for basic training, to ascertain if their anxiety is higher before traveling to basic training. Future research might also examine how Desire for Control is related to the thoughts and perceptions that recruits have about basic training and their decision to join the military. Finally, future research might collect information regarding the varying coping mechanisms used by recruits and examine their relationships to Desire for Control.

Similar to the findings of Cigrang et al. (2000) in their study of Air Force trainees, the stress management intervention used in this study had no statistically significant impact on state anxiety. Although this finding ran contrary to the results of several other studies (Georgoulakis et al., 1981; Gerwell & Fieldler, 1990; Novaco et al., 1983), it was predicted. Based on the robust findings of researchers at the University of Iowa (Baron & Logan, 1993; Baron et al., 1993; Law et al., 1994; Logan et al., 1991), Desire for Control was hypothesized to moderate the effect of stress management training on anxiety. Unexpectedly, this hypothesis was also not supported.

Perhaps the simplest explanation for these results is that brief stress management interventions are not effective in reducing stress among basic trainees, even when taking into account possible moderating factors such as Desire for Control. Before accepting such a conclusion, however, one should consider other explanations.

First, the intervention used in this study was provided in a significantly different manner than in most of the studies examining the effects of stress management on military trainees. This study applied the intervention in large groups ranging in size from approximately 50 to 250. One study provided stress management in individual sessions (Georgoulakis et al., 1981). Others have used groups as small as six on average (Cigrang et al., 2000) to groups averaging 15 (Gerwell & Fielder, 1990). One could argue that the psychological distance created by larger groups might dilute the effects of the intervention. The results of the study conducted by Novaco and his colleagues (1983) argue against this explanation. They presented their stress management intervention via videotape and in groups averaging 70 (a Marine Corps platoon). Both the size of these groups and the means of presenting the instruction would likely make the psychological distance similar to that of this study. Certainly no firm conclusions can be made from these facts. Further research is needed to identify which facets of the delivery of stress management interventions to military trainees affects their efficacy.

Second, Lefcourt (1982) (as cited in Baron & Logan, 1993) and Thompson et al. (1993) suggested that individuals interested in investigating Desire for Control should use situation-specific measures of this construct. The aforementioned research that supported Desire for Control as a moderating variable (Baron & Logan, 1993; Baron et al., 1993; Law et al., 1994; Logan et al., 1991) used such a situation-specific measure of Desire for Control, the Iowa Dental Control Index, rather than a broad measure, such as the Desirability for Control Scale. The use of such situation-specific measures was further supported when Logan et al. (1991) conducted a side-by-side comparison of these two measures. They found that only the situation-specific measure supported the moderating

effect of Desire for Control. If a desire for control measure specific to military basic training had been used in this research, perhaps the results would have supported the hypothesis. Future research is needed to develop and investigate the usefulness of such a measure.

Third, as noted earlier, research has suggested that matching the provided information and coping skills training to the situation is important in reducing an individual's level of stress (e.g., Auerbach, 1989; Martelli et al., 1987; Wallace & Bergeman, 1997; Wilkinson & Chamove, 1992). While the stress management techniques and information presented in this study had face validity, and were based on techniques used in previous research with military recruits, other techniques and information may have been more appropriate to, and useful in, this situation. Future research might examine the effectiveness of other interventions, perhaps through side-by-side comparisons. Future research might also use manipulation checks to determine if the interventions used are perceived as useful and if the techniques taught are used.

For the fourth possible explanation, one must again turn to the research of the University of Iowa group (Baron et al., 1993; Law et al., 1994; Logan et al., 1991). Their results indicated that stress management decreased stress only for those participants with a high Desire for Control and a low level of perceived control. Research has suggested that people often find a sense of control by exercising control in areas only peripherally related to the situation (Thompson et al, 1993). Although one could successfully argue that the basic training environment severely limits one's control, perceived control was not assessed in this study. Perhaps trainees with a high Desire for Control found means of exerting control in areas that were unrelated directly to the stress of basic training.

Such activities may have included tending more closely to their uniforms or personal space (wall lockers), or volunteering for tasks. Future research should examine perceived control, coping mechanisms used, and the relationship of the use of these coping mechanisms to dimensions such as Desire for Control.

Before closing this portion of the discussion section, one other issue needs to be addressed. While this study was being conducted, Krueger (2001) raised the specter of a longstanding philosophy of science debate, that is, the logic of the null hypothesis significance test. Participants of this debate argue largely one of two sides. The first camp holds that testing of the null hypothesis remains a useful tool, promotes scientific knowledge in psychology, and is necessary because it limits capitalization on chance occurrences (Brand, 2002; Guenther, 2002). The second camp rejects the use of null hypothesis testing and advocates use of effect sizes and confidence intervals. They argue that such testing allows identification of smaller effect sizes, and easier and more meaningful compiling of data across studies that investigate similar phenomena, thereby decreasing the possibility that meaningful results will not be overlooked (Hofmann, 2002; Schmidt & Hunter, 2002). This debate is certainly well beyond the scope and purpose of this study. This issue, however, is pertinent since one of this study's hypotheses, namely Hypothesis 2, predicted no effect. One could successfully argue that the statistical deck is stacked in favor of such a finding, and that support for this finding, therefore, was meaningless.

The purpose of putting forth such a hypothesis, though, was as a stepping stone to Hypothesis 3, which suggested that the lack of support for the effects of the stress management intervention was because of a third, moderating variable, namely Desire for

Control. Although not stated explicitly, the prediction of no effect was thought to be the result of a collapsing of groups across conditions. Stated more directly, if data from participants high and low in Desire for Control were collapsed into one group, then their proposed opposite effects would cancel each other. Ultimately, there was no support for this latter hypothesis (Hypothesis 3), and so a re-examination of the data from the second hypothesis may be in order. And, this is one point on which the opposing camps of the aforementioned debate seem to agree, science, especially in areas such as psychology, benefit greatly from replication of studies and aggregation of such evidence.

In the interest of furthering science, it seems logical to discuss briefly some interesting relationships that were found to exist between experimental and demographic variables. Some of these relationships have been described in the literature, while others have not.

Age was negatively associated with anxiety. In the normative data regarding the State-Trait Anxiety Inventory, Spielberger (1983) reported that there was a drop in mean state anxiety scores with age. This drop was small and Spielberger did not report whether it was statistically significant. A search of the literature revealed no other research reporting this connection.

A decrease of anxiety with age makes intuitive sense. Anxiety is typically a concern about possible misfortunes. As an individual gathers years, and therefore experience, it seems that they would have a more secure sense of their ability to avoid or cope with these misfortunes. This may be particularly true when examining samples such as that used in this study. The majority of the sample was 18 years old, and, one might assume, had little opportunity to experience life beyond the relatively safe confines of

home and high school. Perhaps living outside of this "safety zone," as many of those even a year or two older likely have, creates a greater sense of self-efficacy and, therefore, security.

Education was negatively associated with state anxiety. A search of the literature using the keywords "education" and "state anxiety" revealed no research to explain this connection. Several explanations for this correlation seem reasonable. First, education may provide an individual with greater coping skills. While this seems to make sense on one level, there is no evidence to suggest that one or two more years of education would provide greater experience than the same amount of time spent working and living independently. Perhaps the older, less educated military recruit is less likely to have lived independently than the more educated ones. While the stereotype of the older, less educated recruit tends to be that of an underachieving individual who still lives with their parents, there is currently no evidence available to support this idea.

Alternately, this correlation may be spurious. Research has demonstrated a significant positive relationship between education and intelligence (cf. Kaufman, 1990). Research has also indicated a negative correlation between intelligence and anxiety (Calvin, Koons, Bingham, & Fink, 1955; Taylor, 1955). Perhaps, therefore, it is intelligence that predicts anxiety, and education is merely a covariant of intelligence. This seems to make sense since persons with greater intelligence are likely to have greater coping skills available to them, given that intelligence is related to a greater ability to adapt to new circumstances.

On the other hand, the connection between education and anxiety may reflect the aforementioned correlation of age and anxiety. The US Army attempts to recruit more

educated individuals with the lure of money to pay off college loans. Perhaps greater age among military recruits is associated with greater education even more so than with the population at large. This explanation, however, assumes that one or more of the hypothesized explanations of the correlations between age and anxiety are true.

Education was also positively associated with Desire for Control. Smith and her colleagues (Smith, Wallston, Wallston, Forsberg, & King, 1984) found similar although somewhat higher correlations than the one found in this study (.22-.29 versus .10). The higher correlations they found are likely related to the greater range and variability of education in their sample (Study 1 $X = 13.92$, $SD = 2.63$; Study 2 $X = 16.41$, $SD = 2.53$). Such correlations make intuitive sense, as people higher in Desire for Control would be more likely to seek opportunities for control, such as gaining more education. A search of the Desire for Control literature revealed no research that has directly investigated this connection, or proposed any explanations for the connection.

Although of questionable statistical significance in this research, Desire for Control was statistically related to race. The ANOVA used to investigate the connection between these variables indicated a significant connection, but the post-hoc comparison did not. Several of the racial groups reported in this study had small numbers when compared to the numbers representing other racial groups. Although there were no data available when this manuscript was written, the study's sample appeared to be different in racial make-up from the trainee population, with more Whites and fewer African-Americans and Hispanics. The non-significant post-hoc comparison therefore may have been the result of attenuation. Perhaps if the sample size had been larger, or if the racial

groups were proportional to population numbers, the relationship between race and Desire for Control would have remained significant in the post-hoc comparison.

If there is a difference in Desire for Control among different racial groups, it is unclear why African-Americans and Native Americans would score higher on this dimension than Caucasians, Hispanics, and Asian/Pacific Islanders. One possible explanation is that this finding is an artifact related to the population from which the sample was drawn. Perhaps those individuals from these two racial groups who join the military use it as a means of increasing their sense of personal control, while other racial groups have other, more accessible and desirable options to increase control, such as attending college. Explanations such these are certainly speculative. None of the studies reviewed for this manuscript reported any connection between race and Desire for Control. Perhaps there were no reportable differences in those studies, or perhaps their samples were too homogeneous to warrant a comparison. Further research is needed to clarify this issue.

Before closing, it seems prudent to discuss possible confounds that went uncontrolled in this study. First, the nature of this study certainly gives rise to the question that participants may have self-selected on pertinent dimensions. Those that volunteered may have had a greater Desire for Control and therefore availed themselves of the opportunity to gain more control via the stress management instruction. Volunteers may have had greater anxiety, and volunteered on the chance that they would learn techniques to decrease it. Alternately, they may have self-selected based on other, untested dimensions that were related to the experimental variables. Although the similarity of scores between this sample and the normative samples of the measures used

argues against these explanations, they remain possibilities. Second, as with all research, any of the findings reported in this manuscript may have been the result of sampling error. It is impossible to make statements about the representative nature of the sample since demographics of the population from which the sample was drawn were not available. Replication would certainly be useful in addressing this issue.

In summary, the predicted outcomes of this research were not supported. The results suggested that desire for control has no impact on change in anxiety for military recruits. The results also suggested that brief stress management interventions are ineffective in reducing anxiety levels among military recruits, and that Desire for Control, measured generally, has neither a direct, nor a moderating, influence on anxiety. The only significant predictors of decreases in anxiety identified by this study were age, education, and anxiety at the outset of basic training.

As with most research, this study raised many more questions than it provided answers. While several explanations for the unexpected findings were presented, the data collected did not allow empirical tests of these hypotheses. Replication and extension of this research would prove valuable in answering the questions raised herein.

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APPENDICES

Appendix A
Informed Consent

BROOKE ARMY MEDICAL CENTER/WILFORD HALL MEDICAL CENTER
INFORMED CONSENT DOCUMENT
(Revised: 19 Aug 99)

Desire for Control and the Efficacy of Stress Management in Basic Training

You are being asked to consider participation in this research study. The purpose of this study is to investigate the effects of personality on the effectiveness of a stress management program designed to reduce the anxiety often experienced in basic training.

This study will enroll 400 participants at Fort Leonard Wood, Missouri, over a period of two (2) months. If you chose to participate, you will be required to participate in a minimum of two assessment sessions. You have been selected to participate in this study because you are entering basic training and will be assigned to the 3rd Training Brigade for basic training.

This study may also require you to participate in a two-session stress management class, depending on the group to which you are assigned. Stress management interventions such as those used in this study have been used in many studies similar to this one. No negative effects have been noted in previous studies. Side effects noted in other studies have included a mild increase in anxiety for some participants after attending the stress management class.

RANDOMIZATION OF STUDY PARTICIPANTS: As a participant, you will be assigned to one of two (2) groups (stress management class or no stress management class) based on the training unit to which you will be assigned for basic training. The training units that will receive the stress management class have been decided randomly. Randomization is a process like flipping a coin and means you will have an equal chance of being assigned to either of the two groups.

PROCEDURES: As a participant, you will undergo the following procedures: 1) During the first assessment session (today) you will be required to provide information about your age, sex, and marital status, and to complete two questionnaires. One questionnaire will inquire about symptoms of anxiety you may be currently experiencing. The other questionnaire will inquire about your preference for control. 2) Approximately three (3) weeks from today, you will be asked to again complete the questionnaire asking about anxiety symptoms. Although you are free to decline to answer any questions you find objectionable, it is important for the purpose of this study that you answer as many questions as possible.

If you are assigned to the stress management condition, you will also be required to participate in two stress management classes. One session will occur today immediately

after you have completed the questionnaires described earlier. The other will occur one week later. During this intervention, you will be taught methods and means that may assist you in coping with basic training and that may reduce your level of stress and anxiety.

After completing the anxiety questionnaire the second time, you will be briefed about details of this study and will be allowed to ask questions about it.

RISKS OR DISCOMFORTS: There are no known risks associated with the procedures used in this study. Some who have gone through similar stress management training, however, have noted an increase in their anxiety level. Generally, those who have experienced this increase in anxiety have reported that it is short-lived and mild in intensity.

BENEFITS: This study is intended to benefit you and those who follow you in basic training. At this time, stress management training is not commonly used with trainees. When such training has been used in the past, it has shown mixed results. The investigator has designed this study to learn if factors that have not been accounted for in past research may impact the effectiveness of such stress management training.

There is no guarantee or promise that you will receive any benefit from this study. However, as a result of participating in this study, you may experience a reduction in anxiety during basic training compared to those who do not receive a similar stress management class. This may increase the ease with which you make it through basic training.

PAYMENT (COMPENSATION): You will not receive any compensation (payment) for participating in this study.

CONFIDENTIALITY OF RECORDS OF STUDY PARTICIPATION: Records of your participation in this study may only be disclosed in accordance with federal law, including the Federal Privacy Act, 5 U.S.C. 552a, and its implementing regulations. DD Form 2005, Privacy Act Statement-Health Care Records, contains the Privacy Act Statement for the records. By signing this document, you give your permission for information gained from your participation in this study to be published in medical literature, discussed for educational purposes, and used generally to further medical science. You will not be personally identified in such publications or discussions; all information will be presented as anonymous data.

Complete confidentiality cannot be promised, particularly for military personnel, because regulations may require that information regarding your health be reported to appropriate medical or command authorities. In addition, your records may be reviewed by the U.S. Food & Drug Administration (FDA), other government agencies, and the BAMC/WHMC Institutional Review Boards.

ENTITLEMENT TO CARE: Federal laws and regulations govern your entitlement to medical and dental care and/or compensation in the event of injury. If you have questions about your rights as a research subject or if you believe you have received a research-related injury, you may contact the

Brooke Army Medical Center Protocol Coordinators, 210-916-2598 or BAMC Judge Advocate, 210-916-2031.

Or

CPT Bartee, Fort Leonard Wood Judge Advocate General, 573-596-0630.

Participation in this study does not alter your ongoing medical benefits as a military beneficiary, and you will continue to receive any needed medical treatment should you experience illness or injury as a result of this study. In the event of injury resulting from the investigational procedures, the extent of medical care provided is limited and will be within the scope authorized for DoD health care beneficiaries.

STATEMENT OF GOOD FAITH: The investigator cannot guarantee or promise that you will receive benefits from this study; however, the investigator will keep you informed of any serious complications that may result from your participation in this study.

You will not be informed of results of the tests performed during this study.

VOLUNTARY PARTICIPATION: By signing below, you acknowledge and affirm the following: 1) The decision to participate in this study is completely voluntary on your part. No one has coerced or intimidated you into participating in this project. You are participating because you so choose. 2) CPT Novak has adequately answered any and all questions you have about this study, your participation, and the procedures involved. 3) All oral and written information and discussions about this study have been in English, a language in which you are fluent. 4) A copy of this form has been given to you.

CPT Novak, the principal investigator, or a member of Behavioral Medicine Division staff (596-0522), will be available to answer any questions concerning procedures throughout this study. If significant new findings develop during the course of this study that may relate to your decision to continue participation, you will be informed.

You may withdraw this consent at any time and discontinue further participation in this study without affecting your eligibility for care or any other benefits to which you are entitled, or impacting your standing in the military. Should you choose to withdraw, you must inform CPT Novak.

CPT Novak, the principal investigator of this study, may terminate your participation in this study at any time if he feels this to be in your best interest.

Your consent to participate in this study is given on a voluntary basis.

VOLUNTEER'S SIGNATURE FMP / VOLUNTEER'S SSN DATE

VOLUNTEER'S PRINTED NAME

ADVISING INVESTIGATOR'S SIGNATURE DATE PHONE #

Matthew P. Novak, MA, CPT, MS
PRINTED NAME OF ADVISING INVESTIGATOR

WITNESS' SIGNATURE DATE
(Must witness ALL signatures)

PRINTED NAME OF WITNESS

Appendix B

Pre-intervention Questionnaire Including:
Demographic questions, Desirability for Control Scale,
and S-Anxiety scale from the State-Trait Anxiety Inventory©

Thank you for choosing to participate in this study. To begin, we need to collect some information. Please carefully follow the instructions provided below. If you have any questions, please ask the person giving you this survey.

On this sheet, please provide the following information. Please note that any identifying information (that is, name and social security number) is being collected only to allow us to match your scores from this survey with the scores of the survey you will take in approximately four weeks.

Last Name, First Name: _____

Social Security Number: _____

Age: _____

Number of Years of Education: _____

On the answer sheet provided, please fill in your name. Then, in the shaded (purple) signature area on the answer sheet, please write your social security number. Finally, use the answer sheet to answer the following questions using the scale at the top of each section. Please do not write any further on this survey.

1. Sex: Mark "A" for Male, or "B" for Female.
2. Marital Status: Mark "A" for Single, "B" for Married, "C" for Separated, or "D" for Divorced.
3. Race: Mark "A" for African-American, "B" for Asian/Pacific Islander, "C" for Hispanic, "D" for Native American, "E" for White, or "F" for Other.

Please continue on the next page.

The Desirability for Control Scale

Below you will find a series of statements. Please read each statement carefully and respond to it by expressing the extent to which you believe the statement applies to you. For all items, a response from 1 to 7 is required. Use the number that best reflects your belief using the scale below. Mark your choices in the appropriate spaces on the answer sheet.

1 = The statement doesn't apply to me at all.
2 = The statement usually does not apply to me.
3 = Most often, the statement does not apply.
4 = I am unsure about whether or not the statement applies to me.
5 = This statement applies more often than not.
6 = This statement usually applies to me.
7 = This statement always applies to me.

4. I prefer a job where I have a lot of control over what I do and when I do it.
5. I enjoy political participation because I want to have as much of a say in running government as possible.
6. I try to avoid situations where someone else tells me what to do.
7. I would prefer to be a leader rather than a follower.
8. I enjoy being able to influence the actions of others.
9. I am careful to check everything on an automobile before I leave for a long trip.
10. Others usually know what is best for me.
11. I enjoy making my own decisions.
12. I enjoy having control over my own destiny.
13. I would rather someone else take over the leadership role when I'm involved in a group project.
14. I consider myself to be generally more capable of handling situations than others are.
15. I'd rather run my own business and make my own mistakes than listen to someone else's orders.
16. I like to get a good idea of what a job is all about before I begin.
17. When I see a problem, I prefer to do something about it rather than sit by and let it continue.
18. When it comes to orders, I would rather give them than receive them.
19. I wish I could push many of life's daily decisions off on someone else.
20. When driving, I try to avoid putting myself in a situation where I could be hurt by someone else's mistake.
21. I prefer to avoid situations where someone else has to tell me what it is I should be doing.
22. There are many situations in which I would prefer only one choice rather than having to make a decision.
23. I like to wait and see if someone else is going to solve a problem so that I don't have to be bothered with it.

Please continue on the next page.

Self-Evaluation Questionnaire©
(S-Anxiety Scale from STAI)

A number of statements which people have used to describe themselves are given below. Read each statement and then choose the appropriate number to indicate how you feel *right now*, that is, *at this moment*, using the following scale. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best. Mark your choices in the appropriate spaces on the answer sheet.

1 = not at all
2 = somewhat
3 = moderately so
4 = very much so

24. I feel calm.
25. I feel secure.
26. I am tense.
27. I feel strained.
28. I feel at ease.
29. I feel upset.
30. I am presently worrying over possible misfortunes.
31. I feel satisfied.
32. I feel frightened.
33. I feel comfortable.
34. I feel self-confident.
35. I feel nervous.
36. I am jittery.
37. I feel indecisive.
38. I am relaxed.
39. I feel content.
40. I am worried.
41. I feel confused.
42. I feel steady.
43. I feel pleasant.

You have completed this survey. Please wait for further instructions.

Appendix C

Outline of Stress Management Protocol

Session 1

I. Orientation to the course - This is a two-session course designed to give you information about basic training, and help you to identify coping skills to assist you in coping with the stresses associated with basic training. This course is interactive and requires your participation. As with all such classes, you will get more benefit from the course if you participate and use the skills we will discuss.

II. Ground rules
   A. Pay attention
   B. No sleeping
   C. Stay on task

III. Define Stress
   A. What is stress – what comes to mind?
   B. What stresses do you expect in BT? *Drill Sergeants, getting yelled at, PT, being away from home, being expected to do everything perfectly, etc.*
   C. Redefine stress – Stress is interaction between individual and environment. Discrepancy between the perceived demands of the situation and the perceived resources available.
   D. What resources do you have available to cope with stress of BT? *Battle Buddies, not taking it too seriously, good physical health, self-confidence, motivation, knowing that many others have been through the same and done fine, doing the best you can, etc.*
   E. Summarize – Stress is possible outcome of balance between demands and resources available.
      1. Lots of demands and few resources results in...? *overwhelm, anxiety, stress*
      2. Few demands and lots of resources results in...? *boredom, no challenge*
      3. Lots of demands and a good amount of resources results in...? *feeling challenged, good stress*
   F. Purpose of class – provide you with means to help increase your resources to cope with the stresses you will encounter in BT.

IV. Symptoms of stress – Ask for signs of stress. Categorize into the following:
   A. Physical
   B. Emotional
   C. Behavioral
   D. Cognitive
   E. Good news/Bad news - Symptoms are connected to each other. If experience symptoms in one area, probably will in others. If decrease symptoms in one, will probably decrease symptoms in others.

V. Deep Breathing
   A. Fight or Flight
      1. Why does your body get geared up?
      2. Problems
         a. stress reaction is same for non-life threatening events as life threatening
         b. interferes will ability to perform
         c. over time can cause physical damage
   B. Focus on breathing
      1. Want to shut down fight/flight response
      2. Key is to change breathing
      3. Breathing exercise
      4. Practice is important - When in training might you find time to practice?

VI. Cognitive Restructuring - ETFR Model- What other part of the stress response might you change to reduce stress? Thinking
   A. Ask for something someone likes to do that others might not
   B. Fit into ETFR model
      1. Want to shut down fight/flight response
      2. Event
      3. Thought
      4. Feeling
      5. Response
   C. Changing thought changes experience
   D. Example of stress already experienced in BT
   E. Example of new challenge which may be encountered in BT
   F. Summarize - While may have no control over demands of BT, do have control over how we think about these events.

VII. Briefly Present Utility and Importance of Social Support and Spirituality
   A. Ask for something someone likes to do that others might not
   B. Both may help provide sense of support
   C. Both may alleviate loneliness/sense of isolation
   D. Both may provide source of info to assist with coping

VIII. Present Expectation of Graduation

IX. Review and Homework
   A. Presented with breathing exercise, means of changing thinking, and importance of social support/spirituality.
   B. Need to practice/use these to make them more effective. Change happens by small steps, not big leaps. May not seem like much, but benefits will be greater over time.

Session 2

I. Ask about the challenges they thought they would face in BT and the challenges they are actually facing.

II. Review coping techniques presented in Session 1.
   A. Ask how they have worked – Discuss successes and challenges
   B. Problem solve to assist soldiers with using technique

III. Discuss Importance of Continued Use and Practice of Stress Management Techniques

IV. Reinforce Expectation of Graduation

V. Questions?

VI. Remind Group of Follow-Up Testing

Appendix D

ANOVAs and Post-Hoc Analyses

Table D1.

Results of ANOVAs investigating connection between Sex and continuous variables.

		Sum of Squares	df	Mean Square	F	Sig.
Age	Between Groups	15.850	1	15.850	1.372	.242
	Within Groups	4700.815	407	11.550		
	Total	4716.665	408			
Education	Between Groups	5.470E-03	1	5.470E-03	.004	.950
	Within Groups	576.528	407	1.417		
	Total	576.533	408			
Desire for Control	Between Groups	266.624	1	266.624	1.659	.198
	Within Groups	65414.843	407	160.724		
	Total	65681.467	408			
Pre-Int STAI	Between Groups	437.422	1	.437.422	2.599	.108
	Within Groups	68486.911	407	168.273		
	Total	68924.333	408			
Post-Int STAI	Between Groups	5.170	1	5.170	.033	.856
	Within Groups	64193.509	407	157.724		
	Total	64198.680	408			
STAI Difference	Between Groups	537.705	1	537.705	2.680	.102
	Within Groups	81654.906	407	200.626		
	Total	82192.611	408			

Table D2.
Results of ANOVAs investigating connection between Race and continuous variables.

		Sum of Squares	df	Mean Square	F	Sig.
Age	Between Groups	151.849	5	30.370	2.681	.021
	Within Groups	4564.816	403	11.327		
	Total	4716.665	408			
Education	Between Groups	4.440	5	.888	.626	.680
	Within Groups	572.093	403	1.420		
	Total	576.533	408			
Desire for Control	Between Groups	4507.483	5	901.497	5.939	.000
	Within Groups	61173.984	403	151.796		
	Total	65681.467	408			
Pre-Int STAI	Between Groups	820.956	5	164.191	.972	.435
	Within Groups	68103.376	403	168.991		
	Total	68924.333	408			
Post-Int STAI	Between Groups	715.352	5	143.070	.908	.476
	Within Groups.	63483.328	403	157.527		
	Total	64198.680	408			
STAI Difference	Between Groups	24.419	5	4.884	.024	1.000
	Within Groups	82168.192	403	203.891		
	Total	82192.611	408			

Table D3.
Results of Student-Newman-Keuls test of Race X Age.[a,b]

	N	Subset for alpha = .05	
Race		1	2
Asian/Pac Islander	15	18.07	
African-American	80	19.14	
Hispanic	46	19.76	
Other	10	19.80	
White	254	19.92	
Native American	4		24.00
Sig.		.618	1.000

Means for groups in homogeneous subsets are displayed.
a Uses Harmonic Mean Sample Size = 13.191.
b The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Table D4.
Results of Student-Newman-Keuls of Race X Desire for Control.[a,b]

	N	Subset for alpha = .05	
Race		1	2
Other	10	93.40	
Hispanic	46	98.07	98.07
Asian/Pac Islander	15	101.13	101.13
White	254	101.50	101.50
African-American	80		107.93
Native American	4		109.00
Sig.		.329	.152

Means for groups in homogeneous subsets are displayed.
a Uses Harmonic Mean Sample Size = 13.191.
b The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Table D5.
Results of ANOVAs investigating connection between Marital Status and continuous variables.

		Sum of Squares	df	Mean Square	F	Sig.
Age	Between Groups	2305.001	3	768.334	129.029	.000
	Within Groups	2411.665	405	5.955		
	Total	4716.665	408			
Education	Between Groups	50.985	3	16.995	13.097	.000
	Within Groups	525.548	405	1.298		
	Total	576.533	408			
Desire for Control	Between Groups	109.046	3	36.349	.225	.879
	Within Groups	65572.421	405	161.907		
	Total	65681.467	408			
Pre-Int STAI	Between Groups	212.475	3	70.825	.417	.741
	Within Groups	68711.858	405	169.659		
	Total	68924.333	408			
Post-Int STAI	Between Groups	526.365	3	175.455	1.116	.342
	Within Groups	63672.315	405	157.216		
	Total	64198.680	408			
STAI Difference	Between Groups	441.915	3	147.305	.730	.535
	Within Groups	81750.697	405	201.854		
	Total	82192.611	408			

Table D6.
Results of ANOVAs investigating connection between Experimental Condition and continuous variables.

		Sum of Squares	df	Mean Square	F	Sig.
Age	Between Groups	21.818	1	21.818	1.891	.170
	Within Groups	4694.847	407	11.535		
	Total	4716.665	408			
Education	Between Groups	.300	1	.300	.212	.646
	Within Groups	576.233	407	1.416		
	Total	576.533	408			
Desire for Control	Between Groups	176.103	1	176.103	1.094	.296
	Within Groups	65505.364	407	160.947		
	Total	65681.467	408			
Pre-Int STAI	Between Groups	173.719	1	173.719	1.028	.311
	Within Groups	68750.613	407	168.920		
	Total	68924.333	408			
Post-Int STAI	Between Groups	37.697	1	37.697	.239	.625
	Within Groups	64160.983	407	157.644		
	Total	64198.680	408			
STAI Difference	Between Groups	373.265	1	373.265	1.857	.174
	Within Groups	81819.346	407	201.030		
	Total	82192.611	408			

Appendix E
Crosstabs

Table E1.
Results of Chi-Square Test on Crosstab of Sex X Experimental Condition[a,b].

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.246	1	.620		
Continuity Correction	.157	1	.692		
Likelihood Ratio	.246	1	.620		
Fisher's Exact Test				.690	.346
Linear-by-Linear Association	.245	1	.620		
N of Valid Cases	409				

a Computed only for a 2x2 table
b 0 cells (.0%) have expected count less than 5. The minimum expected count is 85.49.

Table E2.
Results of Chi-Square Tests for Crosstab of Race X Experimental Condition[a].

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.852	5	.232
Likelihood Ratio	7.027	5	.219
Linear-by-Linear Association	.520	1	.471
N of Valid Cases	409		

a 3 cells (25.0%) have expected count less than 5. The minimum expected count is 1.81.

Table E3.
Results of Chi-Square Tests for Crosstab of Marital X Experimental Condition[a].

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.144	3	.105
Likelihood Ratio	6.648	3	.084
Linear-by-Linear Association	4.412	1	.036
N of Valid Cases	409		

a 4 cells (50.0%) have expected count less than 5. The minimum expected count is .45.