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College Student Depression During the Persian Gulf War

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COLLEGE STUDENT DEPRESSION DURING
THE PERSIAN GULF WAR
BY
GLENN WOLFNER

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
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IN
PSYCHOLOGY

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Abstract

This study attempts to determine whether a convenience sample of 38 college students participating in a study of reactions to the Persian Gulf War show systematic patterns of change in their depressive cognitions. In a similar study, Teixeira and Valentino (1991) found that students at a large northeastern state university had 9% more depressive cognitions at the out-break of Persian Gulf hostilities (January, 1991) than four months previously. Studies in Israel (i.e., Hobfoll et al., 1989) found that depression was markedly higher in the months during the Israel-Lebanon War (1982) than in months preceding or following hostilities. Both of these studies employed a between-subjects design that is at risk of not accurately detecting some of the small but systematic changes predicted. The hypotheses of this study are that students in a repeated-measures design will have higher depression scores during the weeks of the most active conflict in the Gulf, and that a stress inoculation training program will mitigate the predicted changes. The results show that students had almost 40% higher scores on the Beck Depression Inventory during the Persian Gulf War than after the cease-fire, and that the stage of the war accounts for 25% of the variance in depression scores. The designed stress inoculation training had no measurable effect.

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Preface

This thesis was written in APA style, as required by the Publication Manual of the American Psychological Association, Third Edition, except where needed deviations are required by the Statement on Thesis Preparation and Instructions for Thesis Defense, University of Rhode Island.

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College Student Depression During the Persian Gulf War

The purpose of this study is to determine whether a global, pervasive, psychosocial stressor, such as the Persian Gulf War, has a measurable emotional effect on bystanders/non-participant observers. The dependent measure for this study is the Beck Depression Inventory (BDI). In addition, the effectiveness of Donald Meichenbaum's Stress Inoculation Training is evaluated for its ability to mitigate the predicted depressive reactions to this stressor. Finally, recommendations are made for future research in this area.

Introduction

Chronology of the Persian Gulf War

At just after midnight on August 2 [1990], the air temperature in the southern Iraqi desert was 105 degrees, but that didn't prevent 120,000 crack combat troops from swinging into high gear . . . By 2 p.m., just eight hours after the shooting began, the Iraqis had secured the capital [of Kuwait] (Duffy, 1990, p.20-21)

In a few hours, Iraqi President Sadaam Hussein had successfully invaded the small nation of Kuwait. Concerns about the ramifications of this incident escalated worldwide. President Bush demanded Sadaam Hussein's immediate withdrawal of troops from Kuwait. Simultaneously, the United Nations embarked upon a stepwise response, from initial requests of withdrawal, to economic sanctions, and finally approval for military resolution to the situation. This was the pre-combat phase of the war.

In order to understand the unfolding events and the effect that they had on American college students halfway around the world, we must first examine the psychohistorical foundation for this crisis. During August, 1990, an estimated 8,870 reservists were called-up, with another 38,000 to follow in September. And while the risks of war were played down in much of the media, the Time magazine article that reported the above call-up featured a two column picture of a C-5A cargo plane that crashed in West Germany killing nine reservists (Church, 1990a, p.32). The same day that the above story appeared (9/10/91), U.S. News and World Report told readers:

U.S. News has learned that the Joint Chiefs of Staff and the National Security Council have concluded that a full-scale war against Iraq, with its almost certain use of chemical weapons, could cost 20,000 to 30,000 American casualties. (Roberts, 1990, p.26)

Indeed, fear of possible American deaths permeated the press, albeit in subtle tones. Psychohistorians argue that the media are capturing the fantasies and fears of the nation at-large. If this holds true, then Americans were much more concerned about the costs of the war than was commonly discussed. In contrast to the wars in Korea and Vietnam, CNN and other networks were now providing detailed reports of the military build-up as well as speculation by experts about the projected "cost" of the war.

A uniquely psychohistorical phenomena¹ emerged in October 8, 1990 issue of Time magazine. The cover picture is of a sad looking child; the accompanying title reads, "Do we care about our kids? The sorry plight of America's most disadvantaged minority: its children"

(Johnson, J., Ludtke, M., & Riley, M.,1990). Inside that edition, next to a menacing picture of Sadaam Hussein, readers learn:

Nowadays the talk is mainly about when, not if, there will be war. House Armed Services Committee chairman Lee Aspin said last week the Bush Administration appeared to be "looking more and more favorably on the war option. (Beyer, 1990, p.26)

This contrast between expendable youth and imminent military battles is something psychohistorians would be unlikely to dismiss as coincidence. They might say that viewing youth as expendable is a necessary precursor to committing to war. Alternately, they might say that America is in a crisis, as demonstrated by the plight of its youth, and a war is apt to refocus public perception on more acceptable topics about which we have the illusion of being able to solve. Either way, the state of children in America and the War in the Gulf are inextricably connected from this theoretical viewpoint. The increase of such images suggest that America was getting ready for war.

One change that occurred throughout the Fall and early Winter, 1991, was a wave of patriotism that included a proliferation of American flags, a public outpouring of patriotic sentiment (as shown by public opinion polls), yellow ribbons symbolizing support for the troops on many trees, and even the repainting of road markings with red/white/blue stripes replacing the formerly double striped yellow center line. Patriotism as well as President Bush's popularity was high in the polls. By November 19, 1990, approximately 200,000 American troops were in the Persian Gulf, with that estimate likely to double in coming weeks (Church, 1990b, p.48).

Although human casualties were one concern, the economic cost of the war, at an estimated one billion dollars a day, was contrasted against a nationwide series of failing Saving and Loan institutions. Locally, state budget deficits in Rhode Island and other New England States presented a bleak economic picture. This contrast became a personal reality for many members of the University of Rhode Island community when, on January 1, 1991, Governor Sundlun, closed all of the state's credit unions due the collapse of their state sponsored insurance company. Unlike banks in Rhode Island, most credit unions did not have federal insurance and participated only in the state's depositor insurance plan, an ailing system that collapsed during the same time period that Kuwait was occupied. Credit unions accounted for many of the local financial institutions and a credit union was the only type of bank on the University of Rhode Island's (URI) Kingston campus.

President Bush repeatedly stated that if Iraqi troops did not unconditionally withdraw from Kuwait by January 15, 1991, the U.S. would soon follow with military action. The United States Congress approved this position, giving the President permission to use whatever force he felt was necessary (the House vote was 250:183; the Senate vote was 52:47; in Lacayo, 1991, p.32). At 4:50 p.m EST on Wednesday January 16, 1991, the first of 4000 Allied air sorties started bombing targets in Iraq, an initial campaign that would eventually span four days. A little more than one hour later, Iraq launched Scud missiles, hitting targets in Tel Aviv and Haifa (Church, 1991a, p.21). This marked the beginning of the air-only phase of the War. Diplomatic efforts to resolve the conflict

continued through this phase, including economic sanctions as provided for by United Nations resolutions.

In the early morning hours of February 24, 1991 (8 p.m., February 23, 1991, EST), allied forces, led by the United States, engaged Iraqi soldiers in a ground battle. As Time magazine told readers in their lead story the following week, "In a battle for the history books, the allies break the Iraqi army, quickly, totally and at unbelievably low cost," in approximately 100 hours (Church, 1991b, p.25). This was the air and ground phase of the War. The allies suffered losses, including 149 killed, 238 wounded, 81 missing and 13 POW's. The Iraqis lost an estimated 80,000 troops to wartime deaths or capture (Duffy, 1991, p.16; Elmer-Dewitt, 1991, p.32). The period after the cease-fire on February 28, 1991 through the final withdrawal of all troops many weeks later marked the beginning of the after cease-fire phase of the War.

Operation Desert Storm was the most bloodless war in recent history for the United States and her allies. Nevertheless, the media repeatedly showed graphic images of "smart bombs" entering through the front door of Iraqi shelters. Images of crushed bodies were in our living rooms before rigor mortis had set in.

The War's Impact on Campus Life

One reason that Fall, 1990, was different from recent ones on college campuses was that the probability of war was increasingly present, a war in which the college student-aged cohort would be called upon to be soldiers. A build-up of troops was occurring with historically unprecedented rapidity. Within days of the Iraqi invasion of Kuwait, the first United States troops shipped-out for

the Persian Gulf in what soon became known as Operation Desert Shield. By January 21, 1991, there were an estimated 430,000 U.S. troops in the Persian Gulf arena (Lacayo, 1991, p.32). Those students in ROTC and the armed services Reserve units were even more likely to serve in wartime hostilities. But, students everywhere on the University of Rhode Island (URI) campus could be heard discussing the "situation in the Gulf," and the campus newspaper closely followed the unfolding events.

Impact of wars on psychological functioning

While positive sentiments regarding the war were commonplace, few researchers and/or media reporters examined the range of emotional reactions to the war. Specifically, what were the emotional sequelae of the unfolding conflict on non-participant observers? To the extent that war is a stressful event, it is reasonable to expect that some people would become apprehensive at the prospect of global conflict. This effect was likely exacerbated by the detailed and explicit broadcasts to every home and dorm room that had a television. Similarly, as friends and neighbors departed for the Middle East, it is likely that those remaining behind would share some concerns at all phases of the war. Another question was, were men affected more than women, as only men would be called up if Congress reinstituted the draft? Similarly, were women more aware of the risks of war as this war marked the first large scale military conflict in which American women were called upon to fight? Nevertheless, these areas were largely neglected by the media. Two bodies of literature offer some insight into bystander/non-participant observers' possible reactions to wars.

Disaster Studies. Social scientists have rarely considered the effect of war on non-participant citizens at large. Studies of disasters (e.g. earthquakes and volcanic eruptions) constitute one body of literature that examines emotional sequelae to macro-crises. Social scientists examining the effects of disasters have restricted their subject pools to victims, rescuers, and friends and/or relatives of victims. In reviewing the literature on psychological impairment following disasters, Rubonis and Bickman (1991, p.384) report that, "one basic controversy that warrants continued investigation concerns whether a disaster represents a stressor that contributes to psychopathology (e.g. Gleser, Green, & Winget, 1981) or attenuates it (e.g. Quarantelli & Dynes, 1973)." Rubonis and Bickman's (1991) examination of the literature focused on disasters affecting specific localities. They included studies of tornados, earthquakes, fire, explosion, nuclear accident, floods shipwrecks, mine traps and plane crashes. Following a meta-analysis of 52 studies, the authors conclude that, "By using information about the central tendency and variability of impairment effect-size estimates, one may conclude that a consistently positive and practically meaningful relationship between disasters and psychopathology is evident in this body of literature" (p. 384).

Variables that the above study found had an impact on the extent of psychological distress experienced by victims (i.e., effect size) included the number of human casualties, the amount of elapsed time between the disaster and study, and the degree of human responsibility with naturally occurring disasters correlating

with more impairment. While these events were undeniably disasters, they were quantitatively and qualitatively different from the Persian Gulf War in that they were geographically confined, the victims were in close proximity to the actual physical traumata, and none of the disasters were likely the direct result of a geopolitical conflict.

Israeli Studies on Students' Reactions to Wars. A second body that examines more directly emotional reactions of bystanders in wartime hostilities comes exclusively from studies in Israel. First, Hobfoll, Bridges, Lomranz, Eyal and Tzemach (1989) write:

It is not surprising that what little data on national reactions [to wars] do exist come from Israel, as this tiny nation has rightfully (and unfortunately) [been] called a stress laboratory for the world . . . Research on Israeli national reactions to war could provide information regarding how people react to war, how rapidly people's adjustment is (if they adjust at all), and how different segments of the population are affected by the chaos, threat to life, and insecurity engendered by war (p.1002).

Hobfoll et. al. (1989) started with two hypotheses: depressive mood would increase in response to the stressor of war; and following a state of war, the population's depression measures would rapidly return to pre-war baseline. They collected 11 independent samples from the mainstream Israeli population, starting in June, 1979, with then four, three and three samples in 1982, 1983 and 1984, respectively ($N=11,944$). Their dependent measure was the Depressive Adjectives Check List (Levitt & Lubin,

1975). The Depressive Adjectives Check List (DACL) is a survey of 34 adjectives, with bi-directional scoring. The first measure (June, 1979) served as an estimate of the base rate, against which the second sample (August, 1982) was collected, followed by one sample each in September, November and December, 1982; the Israel-Lebanon War commenced in June, 1982. The authors conclude, "Clearly, the population reveals more depressive mood when at war than before the war or during the stable plateau achieved after May, 1983." This study is the only examination found in the literature of the hypothesis being tested here.

Next, Milgram (1982) has included a discussion of War Related Stress in Israeli Children and Youth in Goldberger and Breznitz's (1982) text on stress. From the outset, Milgram clearly decries the scarcity of empirical work in this area:

There has been some research on specific topics in adults, such as post-traumatic war neurosis in soldiers and psychiatric syndromes in former prisoners of war and in survivors of concentrations and death camps. However, there has been little programmatic research on other topics in adults and even less research on children and youth (p.656).

Milgram reports two studies that are relevant to this thesis. Zak (1982) administered the Cattell16PF to a sample of almost 500 high school seniors prior to the Yom Kippur War (1973). Zak repeated the measures for a third of them one year later. He concluded "that war is a stressful event exercising a consistent effect on personality characteristics of young men even if they have not been in military service" (in Goldberger and Breznitz, 1982,

p.671) . Similarly, Milgram and Milgram (1986) found a doubling of reported anxiety (further unspecified) in a sample of 85 fifth and sixth graders during to the Yom Kippur War (1973). Milgram remarks of this study, "a second unanticipated finding in the Milgram and Milgram (1986) study was the absence of a relationship between wartime anxiety levels and the extent of active involvement of family members in the Yom Kippur War" (in Goldberger and Breznitz, 1982, p.671).

Cognitive Theories of Depression

The Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised (DSM III-R) of the American Psychological Association (1987), reports that the prevalence of major depression in the American adult population ranges from a low of 23/1,000 for males to a high of 93/1,000 for women. Referring to the more mild form of the same symptom cluster, called Dysthymia or Depressive Neurosis, the DSM III-R states that "this disorder is apparently common," without citing any specific ranges. Willerman and Cohen (1990) report that, "a complaint [of depression] need not be a symptom of disorder (Akiskal, 1979). Depressive complaints may be part of normal reactions to stress and frustration . . ." (p.340). This assumption forms the foundation the Hobfoll et al. (1989) study, as well as for this thesis. Complaints associated with depression can vary widely from mild dysphoria (e.g., "the blues") to suicide. There are many suggested etiologies of depression, ranging from biochemical to genetic, and from intrapersonal to psychosocial. Therefore we need to clarify what kind of depression is being studied here.

Aaron Beck's cognitive theory of depression gained much popularity in the 1970's and 1980's. Beck (1979) traces the roots of his theory back to a variety of origins, including that ancient Greek philosophers, Kant, Binswanger, and Piaget, as well as Sigmund Freud and Alfred Adler. The cornerstone of Beck's theory is that depressed individuals conceptualize and experience the world in a manner that is fundamentally different from the way in which non-depressed individuals experience it. Furthermore, cognitive sets that lead to this difference are amenable to therapy that challenges faulty beliefs and replaces them with more realistic ones.

Beck's (1979) model of depression has three basic components. First, the cognitive triad assumes that depressed people have a negative view of themselves and their experiences of the world at present and in the future. Second, Beck postulates that depressed people have cognitive schemata that assist them in maintaining their pain-inducing and self-defeating attitudes despite objective evidence of things that are going well. Finally, Beck suggests that depressed people make systematic and consistent errors in processing information. Stated simply, depressed people have a negative view of self and world, screen information in the environment to select input that supports their views, and then manipulate that information in ways that capitalize on the aspects of it that, again, supports their views.

Other theorists have put forth similar models of depression. Meichenbaum (1977) assumes that people's self-statements are central to shaping their view of the world. Through his

self-instructional therapy, Meichenbaum uses a fairly direct and confrontive approach to challenge a person's self-talk (in Corey, 1977, p.231).

Ellis (1977) suggests that activating event (A) leads to emotional and behavior consequences (C) through that person's beliefs (B). He believes that irrational beliefs are responsible for depressive emotions. The irrational quality of our thought comes from "*demanding* that the universe *should, ought to, and must be* different." Through his *rational emotive therapy*, Ellis challenges these beliefs (Corey, 1977, p.213).

Of these three psychologists, only Beck has operationally defined depression and created an instrument for evaluating depressive thoughts. The BDI is a 21 item self-report measure of behaviors and cognitions that were clinically determined to be characteristic of depressed people. It is widely used in many types of studies including psychopharmacological, field studies, covariates of life events, clinical outcomes, and examining reactions to a specific stimulus. It is this latter context that is the basis for this study.

Teixeira and Valentino's Study

The BDI was one of the measures used in a timely study, the results of which were, in part, the impetus for this study. Feelings of concern and anxiety around Operation Desert Shield were confirmed as commonplace at the University of Rhode Island URI. In January, 1991, a URI Psychology graduate student and her professor, who were attempting to examine correlates between depression, anxiety, and electrical brain activity, gave a battery of

self-report measures to 190 undergraduate students on 1/16/91 and again to another 234 students on 1/18/91. The air-only phase of the War broke out on 1/17/91 (Teixeira and Valentino, 1991). This duplicated similar data collection on a comparable sample in September, 1990. The January groups had higher scores on depression and anxiety than the September group. ANOVA results revealed that students reported higher scores on the BDI that approached statistical significance ($M=8.05$ vs. $M=6.95$, $p=.112$). Anxiety measures on the State-Trait Anxiety Index (STAI), state anxiety, were significantly higher on the later administrations ($M=44.00$ vs. $M=40.31$, $p<.001$). In addition, there was a correlation between the overall means of these measures ($r=.6658$, $p<.001$). These findings suggest that both depression and anxiety increased 16% and 9%, respectively, and that knowing one measure accounts for two-fifths of the variance in the other measure.

A Brief Critique of the Teixeira and Valentino Study. The above study was an innovative and timely endeavor. One of its strengths was that it used a large number of subjects, with more subjects in the later groups, so as to reduce the chance of a Type I error. Another strength of the study was that it used relatively comparable groups of subjects at similar times during the respective semesters, although some of the change in scores may be due to temporal effects (e.g. Winter vs. Fall, or second semester vs. first semester).

Nevertheless, the study has a number of potential confounds that make interpretation of the findings difficult. One of these is that in the time between the early and late administrations fiscal

disaster fell upon Rhode Island residents with the collapse of the Credit Union System and the temporary or enduring closure of all of the state's credit unions, including the one on campus. It is quite likely that at least some, if not many, students responded to this crisis with concern. Anxiety and depression are both likely symptom clusters in reaction to a moderate, pervasive, psychosocial stressor, such as having no available money. For example, the DSM-III-R lists "serious financial problems" as an Axis IV, moderately severe, enduring, stressor.

A second potential confound in Teixeira and Valentino's study is that they used two separate subject pools. Minor but systematic fluctuations, such as those found by Teixeira and Valentino, are difficult to interpret when comparing groups of people to other groups of people (i.e. between-subjects design). In order to consider peoples reaction to stressful events, the preferable experimental design is a panel study where analyses examine a person's change relative to themselves, over time (i.e., a repeated measures design).

The Present Study

The goal of this study is to assess whether the War was responsible for depressive symptoms at sub-clinical or clinical levels in college students. Employing a repeated measures design solved two problems. First, by using repeated measures, students served as their own controls and the analysis would be more powerful. Second, with the Credit Union Crisis continuing largely unabated, it was not likely to account for any changes in the measures used, during the course of the study.

The collection of repeated measures data requires frequent meetings of the same subjects. Anticipating that this situation might already be in place, we arranged to merge the collection of data with an experiential group format attached to a large lower-level undergraduate class.²

In addition, using a repeated measures design also permitted the examination of a treatment model, Meichenbaum's Stress Inoculation Training (1985). Meichenbaum describes the transactional nature of stress as a person-environment relationship where the demands of the environment exceed the person's resources or endanger her/his well-being. Meichenbaum's program involves improving performance under stress and stress tolerance by combining didactic teaching, Socratic discussion, cognitive restructuring, problem solving and relaxation training. Behavioral and cognitive self-monitoring and change are combined in Stress Inoculation Training, emphasizing flexible clinical discretion.

Stress Inoculation Training is designed to: (1) teach clients the transactional nature of stress and coping; (2) train clients to self-monitor maladaptive thoughts and behaviors to facilitate adaptive appraisals; (3) train clients in problem solving, that is, problem definition, consequence, anticipation, decision making and feedback evaluation; (4) model and rehearse direct-action, emotion-regulation, and self-control coping skills; (5) teach clients how to use maladaptive responses as cues to implement their coping repertoires; (6) offer practice of skills and nurture confidence in and utilization of coping repertoires; and (7) help clients acquire sufficient knowledge, self-understanding and coping skills to

facilitate better ways of handling stressful situations (Meichenbaum, 1985).

Meichenbaum's program is an awareness and skill building approach. The present study utilized a modified version which included some of the techniques thought to have more rapid effects, while eliminating those with long term foci. A stress inoculation program was developed to fit within the design's framework. Stress Inoculation Training is composed of three phases. Roughly following Meichenbaum's suggested sequence and time apportionment, the present intervention proceeded from a three session *Conceptualization Phase* (establishing relationship, open discussion of stress related problems and educating clients in the transactional nature of stress through stress awareness exercises and process discussions) to the two session *Skill-Acquisition and Rehearsal Phase* (problem solving discussion, cognitive restructuring and relaxation training). The *Application and Follow-through Phase* was interwoven into the latter sessions, primarily using imagery rehearsal and systematic desensitization. The goals of this last phase are to generalize the skills learned and apply them.

Hypotheses

There are two basic hypotheses in the present study. The first hypothesis is that college students, a population of non-clinical young adults, would react to the war by showing increased levels of depressive cognitions. Specifically that there will be an elevation of depressive cognitions during the more active phases of the war and that students will return to pre-war levels of depression in a short time after the war ends. The second hypothesis is that a

stress inoculation training curricula would mitigate the increase in depressive thoughts.

Methods

Subjects

Sixty students enrolled in a beginning level undergraduate Psychology course aimed at increasing self-understanding were recruited to participate in the study. Students received extra course credit toward their final grade for attendance at the weekly groups. Students were not required to complete the questionnaires to receive some extra credit, and informed consent was obtained at the outset.

Although 60 students signed up to participate in the groups, only 38 attended the first session. There is no information to suggest that there is anything particularly unique about this sample, except that they are perhaps more psychologically minded than their cohort. The characteristics of this sample are found in Table 1.

Design

Students signed up for one of three time slots according to their own schedules. Two of these groups were then selected as treatment groups and the third group as a control group. Because of rapidly unfolding international events and our desire to commence data collection as rapidly as possible, Group 3 (the second treatment group) began the study 6 days after Groups 1 and 2. Therefore, real-time and project-relative time will be coded independently for all analyses. More specifically, students participated in a five session experiment over a six week period; Week 4 was Spring Break at the University. That means that the total length of the study was seven

Table 1

Descriptive Statistics

Variable	median	range	frequency	percentage
age	19.5	18-29		
gender				
males			9	32%
females			19	68
class standing				
freshman			12	43%
sophomores			6	21
juniors			7	25
seniors			3	11
current residence				
residence hall			18	64%
off-campus apt./house			6	21
at home with family			4	14
marital status				
single			27	96%
married			1	4
parents of minor children				
yes			1	4%
no			27	96
number of siblings	2	0-9		
number of step sibs	0	0-6		
family position				
only child			3	11%
youngest child			12	43
middle child			6	21
oldest child			7	25
size of home town				
<2,500			3	11%
2,500-25,000			10	36
25,000-100,000			8	29
100,000-500,000			5	18
500,000+			2	7
race/ethnicity				
black			3	11%
Hispanic			1	4
Asian American			1	4
white			23	82

Table 1 (continued)

religion

Roman Catholic	15	54%
Protestant	7	25
no religion	1	4
other	5	18

weeks, with any one subject serving in as many as five of six consecutive weeks.

Week one subjects were surveyed on February 20, 1991. The first wave of ground troops entered Iraq and Kuwait on Sunday February 24, 1991. The second week samples were collected on Tuesday and Wednesday, February 26th and 27th. The cease-fire commenced Thursday February 28, 1991. This means that Week 1 was during the air-only phase of the War. Week 2 samples were collected during the 100 hours of the air and ground phase of the War, and all subsequent weeks of data collection were during the after cease-fire phase of the War (Table 2).

Measures

The Beck Depression Inventory (Beck and Steer, 1987) is the operationalized measure of depression for this study:

In his introductory paper, Beck (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) described the BDI as "an instrument designed to measure the behavioral manifestations of depression" (p.53). More recently, he (Beck & Beamesderfer, 1974) described the BDI as "an inventory for measuring the depth of depression." (Derogatis in Goldberger and Breznitz, 1982, p.154)

The most recent version of the BDI (1987) was used here and the administration guidelines and protocol were followed (see Appendix A). Students were given a blank self-report version of the BDI upon entering class each week, and completed it silently prior to engaging in planned lessons. On the first session only, subjects completed a self-report demographic questionnaire (see Appendix B) prior to filling out the BDI.

Table 2

Chronology of the Persian Gulf War:

August 2, 1990=120,000 Iraqi troops invade Kuwait

September, 1990= Wave 1 of Tiexeira and Valentino's (1991) study

September 10, 1990= *U.S. News and World Reports*: 20,000-30,000
estimated American casualties, "almost certain use of chemical
weapons"

November 19, 1990=200,000 U.S. troops to Middle East

January 1, 1991= RISDIC

January 15, 1991= President Bush's stated deadline for Iraqi
withdrawal

January 16, 1991= Wave 2a of Tiexeira and Valentino's (1991) study

January 17, 1991= first of 4,000 air sorties, SCUDs on Tel Aviv and
Haifa

January 18, 1991= Wave 2b of Tiexeira and Valentino's (1991) study

January 21, 1991=430,000 U.S. troops

February 20, 1991= Wolfner Study Week 1

February 24, 1991= Ground war starts

February 26 and 27, 1991= Wolfner Study Week 2

February 28, 1991= Cease-fire starts

March 5 and 6, 1991= Wolfner Study Week 3

March 8-17, 1991= Vacation

March 19 and 20=Wolfner Study Week 5

March 26 and 27, 1991= Wolfner Study Week 6

April 2 and 3, 1991= Wolfner Study Week 7

The reliability of the BDI has been the focus of many studies in the three decades of its use. While many of these studies have focused on clinical populations, others have served to norm this instrument for a non-clinical college sample. In a recent study on a college population at a midwestern state university, Zimmerman (1986) analyzed BDI scores of 132 undergraduates enrolled in an introductory level psychology class on two occasions separated by one week. The test-retest correlation was .64 ($p < .001$). Zimmerman found a carryover effect, with the second administration showing a 6.05 percent decrease (8.52 ± 6.5 vs. 7.05 ± 6.0 , $t = 3.18$, $p < .005$). He also found a close temporal relationship between stressful life events and elevated BDI scores.

The extension of this question is whether there is a systematic carryover effect when the BDI is used in multiple repeated measures designs. A comprehensive review of the literature failed to reveal any studies that addressed this problem directly. Likewise, Beck's staff at the Center for Cognitive Therapy (personal communication, August, 1991) were also unaware of any normative studies of multiple repeated-measures study designs.

Researchers at the University of North Carolina at Chapel Hill examined two additional sources of possible response bias, using a sample of undergraduate women enrolled in an introductory level psychology course (Dahlstrom, Brooks, & Peterson, 1990). They administered the original version of the BDI, a backwards version in which the descriptors in each of the 21 sets was presented in reverse order, and a random version that used a random presentation

of the descriptors, making sure to exclude repetition from the other two versions. They state their hypothesis as:

... after the first two or three sets have been examined, the uniform pattern of presentation from the least to the most pathological in each set provides a means by which the person motivated to appear pathology-free (or to dismiss the task as quickly as possible) can copy [the pattern] with completing the BDI without even reading through the item sets (p.227).

The Chapel Hill study revealed significant mean differences ($E(2,222)=15.29$, $p<.0001$) between the three separate administrations: original version, $\underline{M}=7.93\pm7.33$; backwards version, $\underline{M}=6.01\pm6.21$; and random version, $\underline{M}=11.01\pm7.25$. A strength of this study is that it provides a useful comparison of the effect of response set order on the BDI score. Weaknesses of the study include unequal cell size, failure to examine gender effects, and an inadequate description of assignment to conditions.

Finally, there has been much discussion of the factor structure of the BDI, an area that will not be empirically examined in this study due to inadequate sample size. One of the problems associated with factor analytic studies of non-clinical populations can be ceiling effects such that the restricted range of response is likely to mask underlying factors. With this premise in mind, Louks, Hayne and Smith (1989) administered the BDI to 907 consecutive admissions to a Pacific Northwest Veterans Administration hospital. Descriptive statistics of their retained sample for 777 of these subjects is: $\underline{M}=15.2\pm10.1$, range 0-49. A principal components analysis with Varimax rotation revealed four factors. The first of

these, a cognitive factor, akin to the desired dependent measure in the proposed study, accounts for 67 to 81 percent of the variance in the study. The second factor measured vegetative aspects of depression. Louks et. al. (1989, p.476-478) conclude:

Clearly, this implies that the BDI is most useful as a global measure of the severity of the cognitive aspects of depression . . . The unidimensional nature of the BDI is consistent with Beck's theoretical view that depression is the result of disordered thought process (Becker, 1974), as is true with other cognitively oriented theorists (Ellis, 1962).

In summary, the BDI is a useful measure of depressive cognitions in both clinical and non-clinical populations. Furthermore, possible response bias in the standardized form of the BDI, and potential carryover effects threaten to minimize population differences. But, to the extent that neither of these sources of possible bias increase the chance of a Type I error (quite the opposite), the Beck remains an appropriate and reliable instrument for this study.

Intervention Procedure

Groups were conducted by two clinical psychology graduate student co-leaders. Following the collection of baseline data and some introductory exercises in the initial session, the treatment condition diverged from the control group. The control group consisted of five sessions of an open forum discussion group, facilitated by the co-leaders. These control sessions were intended to be non-directive, in that the topics discussed were chosen by the students each week.

The treatment condition consisted of the initial session and then a four session planned program. In Sessions 2 and 3, subjects practiced exercises designed to increase awareness of stress and personal experience of stress and discussed their emotional reactions to these exercises were discussed. In the second session, the exercise used was a nonverbal mingling task in which the subjects mill about each other in a confined space, trying to communicate and get to know each other without speech. In the third treatment session, subjects discussed common reactions to stress, with a directed focus on the phenomenological experience of stress. To illustrate the ideas derived in class, a contrasting pressure-performance analog was created using timed and untimed serial arithmetic problems, with and without a social evaluation component (i.e., group members cheering vociferously versus not cheering at all for their relay team member to finish first). The resulting Yerkes Dodson-like performance curves were graphically illustrated in class and discussed with a focus on how they applied to the students' everyday experience.

In the final two sessions, stress management was the focus. In the fourth session, the students discussed their own stress management preferences. In the fifth and final session, the students were led through a 15 minute guided imagery relaxation exercise and then the students processed the experience and discussed how they might practice the technique on their own. Several times during each session the group leaders modeled alternative coping and problem solving strategies.

Informed Consent

Complete informed consent was obtained from all students prior to the start of the data collection. A copy of the informed consent form (Appendix C) was based on the Institutional Review Board's guidelines and offered the students the option of declining to participate in the study at any point. It also offered the students opportunities to have access to the principal investigators as well as to Dr. Grebstein, a licensed clinical psychologist and member of the Psychology Department faculty, should they wish to discuss any concerns they had related to the study. Both principal investigators were blind to the subjects' identities through the assignment of ID numbers. A third graduate student retained a sealed list correlating the ID numbers in the event that any subjects forgot their ID number or in the unlikely event that any particular student's depression score was extreme enough to require that the student be interviewed for suicidality and/or other clinical depression-related concerns; the principle investigators did not have direct access to this list and that colleague did not have direct access to the data, thereby assuring confidentiality. The risks of the study were minimal and similar to those found in other noninvasive, self-report studies. The benefits to the students that participated in the study was that they had a forum to discuss their reactions to stress and also learn about social science research. In general, the feedback we received was quite positive.

Data Clean-up and Missing Data Substitution

Raw data screening for typographical and other data entry errors was accomplished by verifying the demographic information on all 35 subjects, and the BDI scores for a random subsample of 10% of the protocols; few errors were found. Then, subjects with more than two missing sessions (>40%) were dropped from the data set, leaving 32 subjects. The new dataset was examined for outliers on BDI scores by session, which resulted in dropping one subject who was more than two standard deviations out on at least one BDI score; given the large standard deviations (see Tabatchnik & Fidell, 1989, p. 68, for more information).

Of the 31 subjects comprising the final dataset, 6% missed Sessions A or D, 13% missed Sessions B or C, and 10% missed Session E. Thirteen subjects (42% of the sample) missed one session and only one subject (3%) was missing two, nonconsecutive sessions (i.e., Sessions 3 and 4; Weeks 3 and 5); there was no obvious pattern to the missing scores by either session or group membership. Raw frequencies by session and week are shown in Tables 3 and 4, respectively.

Repeated-measures ANOVAs is a procedure that eliminates subjects listwise for missing data. To the extent that a systematic difference may exist for subjects with missing data (e.g., subjects who are more depressed miss more school) and given the small sample size, substitution for the 14 subjects with missing data was accomplished before running any further procedures. A closest score substitution was chosen as the method of choice, as substitution by group means would violate the internal integrity of the design.

Table 3

Raw Frequencies of Subjects by Session

Group	Session					Marginal
	A	B	C	D	E	
Group 1 (Treatment)	13	13	13	15	14	15
Group 2 (Control)	8	6	6	8	6	8
Group 3 (Treatment)	8	8	8	6	8	8
Marginals	29	27	27	29	28	31

Table 4

Raw Frequencies of Subjects by Week

Group	Week							Marginal
	1	2	3	4	5	6	7	
Group 1 (Treatment)	13	13	13	V	15	15		15
Group 2 (Control)		8	6	6	V	8	6	8
Group 3 (Treatment)		8	8	V	8	6	8	8
Marginals	21	27	27		31	27	8	31
Total possible	23	31	31	V	31	31	8	
% missing	8.65	12.03	12.03	V	0	16.13	0	5.86

Substitution by regression would render the results less interpretable and includes the possibility of biasing the data, as multiple regression also eliminate subjects listwise. Also, if subjects missing any data have a systematic difference from subjects who attended all sessions, then this difference will be lost in the "noise" of the regression equation.

To the extent that a systematic variation was theorized to have a descending trend over time, I substituted a subject's missing score with their own score for the previous session, or for the following session if the missing data point was for Session A (14% of missing subjects). Tabachnick and Fidell (1989) suggest that when eliminating cases with missing data is undesirable, "*prior knowledge* is used when a researcher replaces a missing value with a value from a well educated guess" (p.63-64). Given Hobfoll et al.'s findings (1989) and the preliminary findings of Teixeira and Valentino (1991), the literature suggests that depression would be elevated during the active phases of the war, and that changes will be in close temporal proximity to historical events. The benefit of this method of substitution is that it preserves the internal integrity of a repeated-measures design. Its potential liability is that it may inflate differences, thereby exacerbating Type I errors (false rejection of the null hypothesis) where the previous session score is used, and may exacerbate the chance of a Type II error when the following session's score is used. But, as there were no obvious pattern for missing data, such inflations of the should be unsystematically distributed throughout the sample and therefore of less concern.

Results

Main Effects and Interactions by Session

Subjects' scores on the Beck Depression Inventory (range=0-63) for undergraduates on each of five trials sessions (B) was measured for each of the three testing groups (A), with 15, 8 and 8 subjects per group. The BDI was scored as indicated above, with a higher score suggesting more depressive thoughts or symptoms. The clinical range of depression is generally conceived to start with scores of 12 or above. This A X (B X S) split-plot, factorial ANOVA revealed only a significant main effect for Sessions ($E(4,120)=5.67$, $p<.001$), using the Geiser-Greenhouse correction, which assumes a maximum violation of homogeneity of variance. The descriptive statistics for this analysis, with and without substitution, can be found in Table 5.

The most important finding in this analysis is the absence of a main effect for or interactions involving Group, as trends from one session to the next are difficult to interpret directly due to different starting points for the groups. These results suggest that all three groups are approximately equal on BDI scores by session.

In addition, BDI scores on each of the five trials (B) was measured for each of two conditions (A), derived by collapsing across Groups 1 and 3. This A X (B X S) split-plot, factorial ANOVA of treatment versus control groups revealed only the main effect for Session was significant ($E(4,116)=5.64$, $p<.01$), suggesting that the groups did not significantly vary as a function of treatment (Table 6).

Table 5

Descriptive Statistics by Session

Descriptive	Session				
	A	B	C	D	E
Mean (w/subst.)	10.45	8.77	6.94	7.55	6.87
Median (w/subst.)	8.00	8.00	6.00	5.00	6.00
Standard Dev. (w/subst.)	8.56	6.72	6.18	7.32	7.06
Skew (w/subst.)	.91	.51	1.04	.89	1.21
Kurtosis (w/subst.)	.19	-.75	.52	-.37	1.05
W statistic test (w/subst.) for Normality (p value)	<.01	<.10	<.01	<.01	<.001
Mean (Raw)	10.93	8.22	6.48	6.82	7.03
Median (Raw)	9.00	8.00	5.00	4.00	6.00

Table 6

Source Table for Treatment/Control by Session

Source	df	SS	MS	F
TX/CONTROL (A)	1	8,030.78	8,030.78	37.01
S/A	29	6,293.10	217.00	
SESSIONS (B)	4	287.31	71.83	5.64*
A X B	4	24.73	6.18	0.49
B X S/A	116	1,476.29	12.73	
TOTAL	154	16,112.21		

$p < .001$; Geiser-Greenhouse $p < .01$

These results suggest that the grouping variables, and interactions between the grouping variables and the repeated measure (BDI), are not significant. Therefore, all further analyses will be examined using the real-time repeated measure for Weeks rather than Sessions, as Group 3 began sessions six days after Groups 1 and 2. Subjects' BDI scores will be collapsed over Groups, and the Geisser-Greenhouse correction will be used wherever appropriate (i.e., wherever the IV has more than two levels).

Main Effects and Interactions by Week

Subjects' scores on the BDI for five of six weeks (A) for 31 subjects was measured and analyzed using an (A X S) repeated-measures design. The omnibus ANOVA revealed that there was significant variance over Weeks 1, 2, 3, 5, and 6, with scores descending in that order (Table 7). Week 1 scores for Group 3 (which started on Week 2) were estimated by their score the following week for this analyses; this means that 32% of the BDI scores for Week 1 were derived by the closest score substitution (2:23 for Groups 1 and 2, plus 8:8 for Group 3=10:31 total substitution). The total variance in BDI scores accounted for by Weeks (1 through 6) is 14.75% (omega squared).

The descriptive statistics for BDI by Week can be found in Table 8, shown for the method of substitution described above, an alternate method of substitution, and the raw data.

Then, a series of planned comparisons were carried out, the first of which was for Week 2 and Week 6, as these are the first and last data points, respectively, where all subjects could have participated. This ANOVA revealed that BDI scores for Week 2 were

Table 7

Source Table for BDI by Weeks 1 through 6

Source	df	SS	MS	F
Weeks (A)	4	301.77	75.44	6.11*
A X S/A	120	1480.63	12.34	
TOTAL	126	1782.40		

* $p < .001$; Geiser-Greenhouse corrected $p < .01$

Table 8

Descriptive Statistics by Week

Descriptive	Session						
	1	2	3	4	5	6	7
Mean (w/subst.) ¹	8.48	9.58	7.77	V	7.25	6.83	11.00
Std. Dev.(w/subst.) ¹	6.72	8.24	6.72	V	6.88	6.55	10.51
Median(w/subst.) ¹	7.00	9.00	7.00	V	5.00	6.00	9.00
SIQR(w/subst.) ¹	6.00	5.00	5.00	V	4.00	5.00	10.25
Mean (w/alt. subst.) ²	10.45	9.58	7.77	V	7.25	6.83	
Std. Dev. (w/alt. st) ²	8.56	8.24	6.72	V	6.88	6.54	
Number w/subst.	23	31	31	V	31	31	8
Mean (Raw)	8.95	9.14	7.44	V	7.26	6.19	11.00
Std. Dev. (Raw)	6.77	8.42	6.92	V	6.88	5.95	10.52
Number present (Raw)	21	27	27	V	31	26	8

¹Week 1 BDI for Group 3=missing; Week 7 BDI for Groups 1 and 2=missing

²Week 1 BDI for Group 3 subjects was estimated by substituting each subject's score for Week 2, as Group 3 did not begin participation until Week 2; to the extent that Week 7 scores for Group 3 are inexplicably inflated and likely due to measurement error or one or more outliers, no Week seven estimate is available for this method of substitution.

40.06% higher than for Week 6 $\{[(9.58-6.84)/6.84] \times 100\}$; there was no Geiser-Greenhouse correction for this and other single degree of freedom comparisons as there is only a single co-variance value for the analysis, and therefore no homogeneity of co-variance to violate (Table 9).

A planned comparison between Week 1 and Week 2 (using the Week 2 to estimate for Group 3 subjects' score for Week 1) revealed that subjects had approximately 9% higher BDI scores on Week 1 than Week 2 ($E(1,30)=45.41$, $p<.001$).

Next, a planned comparison for depression during the fighting war (Weeks 1 and 2) versus after the fighting war (Weeks 3, 5, and 6) revealed BDI scores during hostilities ($M=10.16$) were 39.37% higher than BDI scores after the cease fire ($M=7.29$). Once again, the Week 2 score was used as an estimate of Group 3 subjects' Week 1 score (Table 10). The main effect for during/after the war accounts for 25.63% (omega squared) of the variance in BDI scores for this comparison.

Finally, a series of Tukey pairwise comparisons for Weeks 3, 5, and 6 revealed that there were no significant differences in the BDI scores during the cease-fire phase of the War.

Demographic Factors

Given the unequal cell sizes and few subjects, ANOVAs for most of the demographic variables were not possible. Two analyses that were done tested for regional differences in BDI scores for Weeks 2 and 6, as these are the first and last data points for all subjects, thereby minimizing substitution. A planned comparison of

Table 9

Source Table for BDI Weeks 2 and 6

Source	df	SS	MS	F
Weeks (A)	1	116.53	116.53	8.42*
A X S/A	30	414.96	13.83	
TOTAL	31	531.49		

*p<.01

Table 10

Source Table for BDI During/After the War

Source	df	SS	MS	F
During/After (A)	1	115.16	115.16	12.03*
A X S/A	30	287.15	9.57	
TOTAL	31	402.31		

*p<.01

BDI scores for residents of Rhode Island ($n=11$) versus residents of other localities ($n=14$), revealed no significant differences for the main effect for group, or the Week by location interaction; the main effect for Weeks was, of course, significant ($p<.05$). Similarly, when comparing residents from the New England States ($n=19$), which were hard hit by the recession, versus residents from other localities ($n=6$), no significant differences except for a main effects for Week appeared.

Gender differences for the 19 women and 9 men who completed the demographic questionnaires revealed no significant main effect for gender or any interaction, although men had slightly higher BDI scores (approximately 6%), using marginals (i.e., collapsing across Weeks).

Most other demographic comparisons were not possible. Nevertheless, two results appear so dramatic that they warrant mention. The number of siblings appears to have a notable trend in that respondents with no siblings had a marginal mean that is 62% higher than respondents that have one sibling and 87% higher than those with two or more siblings (Table 11). In addition, subjects with no siblings had BDI scores that dropped only half as much from Week 2 to Week 6 as did respondents with one or more sibling.

The second noteworthy trend in the demographic data is for family position. Only children had marginal BDI scores (collapsing across Weeks 2 and 6) that were 39%, 54%, and 360% higher than youngest, middle, and oldest children, respectively (Table 12).

Table 11

Mean BDI for Weeks 2 and 6 for Number of Siblings (with substitution)

Descriptive	Number of Siblings			Marginal
	0	1	2+	
Mean BDI2	14.33	9.63	8.47	9.43
S.D BDI2	16.26	10.95	5.30	
Mean BDI6	12.00	6.63	5.65	6.61
S.D. BDI6	12.53	8.11	4.79	
Marginal	13.17	8.13	7.06	8.02
n	3	8	17	28
% Change ¹	16.26	31.15	33.29	29.90

¹[(Week 2-Week 6)/Week 2]

Table 12

Mean BDI for Weeks 2 and 6 for Family Position (with substitution)

Descriptive	Number of Siblings				
	only child	youngest	middle	oldest	marginal
Mean BDI2	14.33	11.41	10.17	3.29	9.43
S.D BDI2	16.25	8.46	5.60	2.75	
Mean BDI6	12.00	7.50	7.00	2.42	6.60
S.D. BDI6	12.53	6.44	6.32	2.99	
Marginal	13.17	9.45	8.58	2.86	8.02
n	3	12	6	7	28
% Change ¹	16.26	34.27	31.17	26.44	30.01

¹[(Week 2-Week 6)/Week 2]

There were no obvious trends in the data for educational class, or size of home locality. Black students had, on average, 68.52% higher BDI scores than white students (n 's=3 and 23, respectively). Many other demographic variables were not good candidates for analyses, due to the small and unrepresentative nature of this sample. The reader is strongly cautioned that those findings reported above may well be due to sampling and other experiment errors, and therefore no statistical tests are appropriate.

Discussion

Decision to Collapse Across Groups and Treatment

In anticipation of addressing the question of what effect, if any, there was for subjects' depression scores over time, it is first necessary to decide whether to look at the data collection groups as separate samples or collapse across groups. The analysis that was done to address this (Session[5] X Groups[3]) showed that, while Group 3 may have a higher score over the sessions, this effect was not statistically significant, and therefore can be assumed to be the product of sampling error. Similarly, when the groups were collapsed to examine whether there were any treatment effects (Session[5] X Treatment/Control[2]), no significance was found for the grouping variable or its interaction with the repeated measure. This latter finding means that there was no measurable change in BDI scores as a result of structured discussion and exercises designed to lower anxiety (i.e., Meichenbaum's Stress Inoculation Training). In more practical terms, finding no significant differences in these two analyses allowed the option of examining all further effects while collapsing across groups, thereby yielding increased cell size, more

statistical power and hopefully more reliable findings. One problem when taking this aggregate approach to data analysis is that there may in fact be systematic differences in the data that failed to produce large enough effects to be detected in the aforementioned analyses, but real differences nevertheless. By collapsing across groups, these differences may be obscured.

One possible reason that there were no treatment effects detected in the analyses is that there are no real differences (i.e., the treatment is not effective for this application). This could have occurred through the treatment goal (i.e., stress inoculation) being improperly matched with the dependent variable (i.e., depressive cognitions). Similarly, no real treatment effect could have occurred because the treatment was being conducted by novices in SIT. Another possible reason for findings of no significant treatment differences is that there is, in fact, a difference where the marginal mean for treatment subjects ($M=8.00$, $n=23$) is 5% lower than for controls ($M=8.45$, $n=8$), but that this small difference was not detectable due to low power, a product of the small sample size. Given the unequal size of the groups and the very small difference between the treatment and control groups, it is not advisable to deviate from the statistics in the absence of more compelling evidence.

BDI Scores Over Time

The most prominent finding in this study is that BDI scores changed over time, and that this change was systematic. There was a descending trend for Weeks 2 through Week 6, regardless of whether the raw data or the substitution data was used. This means

that the substitution did not likely alter any trends or patterns in the raw data. In addition, there was no statistically significant difference between the subjects' scores on Weeks 1 and 2.

Furthermore, when estimating BDI scores in Week 1 for the subjects in Group 3 (who did not begin until Week 2) with their score on Week 2 (following the closest score substitution rule), a more pronounced trend is found that likely best represents the real changes in the population. Of note is that, depending on the method of substitution (i.e., including estimates for Group 3 in Week 1 marginals), the difference between Weeks 1 and 2 are opposite, although neither are significant pairwise differences.

One potential source of measurement error could have occurred in not controlling for social desirability. To the extent that the BDI and similar self-report survey measures may be susceptible to social desirability, the real trend in the population may be different from that revealed in these data.

A brief comment is necessary on Group 3 subjects' scores for Week 7, which represent the highest of any groups' BDI for any week. To the extent that the group means are not different from one another, nor are there any Group X Session interactions, this finding is likely a statistical anomaly, with a very strong likelihood that a modest outlier or two could well account for this elevation. As I had no a priori reason to examine the Group X Session interaction differentially for the groups, such analyses are ill-advised post hoc. But, there remains a problem of what to do with these unusual scores for Group 3 on Week 7. After careful consideration, I have chosen to not attempt to explain this finding, and to exclude it from

figures and further discussion, as it would be less than responsible to consider statistical anomalies in the same manner that we consider more reliable data.

The War and Depression

Are these changes in BDI scores due to the stages of the War in the Gulf or to some other effect? There are three potential explanations for the trend shown in Figure 1: Differential carryover effects, the stages of the war, or some other time-driven explanation.

To the extent that the Beck has been commonly used and, to the best of my knowledge, never criticized for differential carryover effects, one can assume that there is no systematic variation over time, such as a learning curve, although a current study at the University of Rhode Island shows promise for a more empirical answer in coming months (Wolfner, 1992).

A second possible explanation is that the pattern found in these data could be due to seasonal or semester-driven effects. There is a possibility that seasonal affective reactions could explain some of the change for some of the subjects, as the study commenced in February and ended in April. But, as none of the subjects in the final data set reported symptoms likely consistent with Major Depression, the diagnosis of Seasonal Affective Disorder is doubtful.

A third possibility is that some of the change in BDI scores could be explained by the onset of the RISDIC crisis in the weeks immediately preceding this study. But, there was no difference when state of residence was considered as a main effect or

Figure 1

Best Fit BDI Score by Week

Group 3 scores for Week 1 estimated by Group 3 scores for Week 2
32% of the BDI scores for Week 1 were derived by the closest score
substitution (2:23 for Groups 1 and 2, plus 8:8 for Group 3=10:31
total substitution)

$F(4,120)=6.11$, $p<.001$; G-G $p<.01$; omega squared=.1475

interaction (i.e., RI versus other states). Similarly, any regional differences due to economic hardship secondary to the recession were all but ruled-out by a comparison of BDI scores for residents of New England States versus other localities; caution is needed in interpreting this last analysis, as there was unequal cell size. Therefore, the most likely environmental factor to explain the observed pattern in depression scores is the War in the Gulf.

Stages of the War. How did the War specifically account for changes in subjects' Beck scores. Follow-up analyses revealed no significant differences between Weeks 1 and 2, and between Weeks 3, 5, and 6. Therefore, the most useful distinction is to compare depression scores during hostilities (i.e., the air-only and air-ground phases of the War) with scores following cessation of hostilities (i.e., the cease-fire phase), as is graphed in Figure 2. The overall analysis showed that BDI scores during hostilities ($M=10.16$) were 39.37% higher than BDI scores after the cease-fire ($M=7.29$), and that the variance accounted for by this distinction was approximately 25% [$F(1,30)=12.03$, $p<.01$]; this compares with an omnibus omega squared of .1475 for Weeks 1 through 6.

By what mechanism could the War account for cognitive and/or psychopathological changes in an otherwise normal sample of college students? First, to the extent that these students show no known predisposition towards depressive psychopathology, these data are consistent with Willerman and Cohen's (1990) view that depression may be a normal reaction to stress in a non-clinical population. If this is so, then the War was most certainly a stressor and the depression measured by the BDI is a product of that stress.

Figure 2

BDI by Stage of War

Similarly, the reaction is short lived and subjects soon returned to baseline, a finding consistent with the Hobfoll et al. (1989) report on Israeli students' reaction to that country's war with Lebanon in 1982. But, whereas that stress reaction is understandable given the students' temporal proximity to the fighting, and the very high likelihood that they personally knew many of the soldiers, one might assume geographic proximity is a prerequisite for such bystander effects.

These data reveal another possibility. The bystander stress in war may be a function of psychological rather than physical proximity to the hostilities. By virtue of owning or having access to a television, the fighting in the Persian Gulf was brought into our living room. Although wars have been a part of human history for many centuries, last year marked the first time in history that the world experienced the War in real-time. I assert that in the sameway we could understand stressful reactions were the U.S. to be at war with, let's say, Canada, due to the advancement of satellite communications, it matters little whether the war is 100 or 4,000 miles away, our medium of communication is the same and our emotional reactions quite consistent. That is, depression appears to be a common bystander reaction to war.

There are many possible theories that could account for these findings. One is that American bystanders felt an empathic bond with civilians who were trapped in the war arena. Another explanation could be that the subjects in this study were concerned about their own personal safety and the possibility of a draft, were the fighting to continue long enough. This was the first war most of

them had witnessed, and Iraq had the third largest standing army in the world; the prospective possibility of a lengthy battle was widely considered by civilians and military strategists alike. A third explanation for the increased depression is that there was an existential basis for the emotional reactions. Victor Frankl (1963) has written well about our need to find meaning in the world. To the extent that the world was going to war over a small parcel of land, rich in oil and scarce in democracy and other civil rights, there is indeed good reason to be somewhat pessimistic about the lack of higher meaning in the world. Finally, cognitive dissonance may have exacerbated the cognitive-depressive changes of the subjects in this study. As the public sentiment was one of enthusiastic patriotism, there was little opportunity to discuss and thereby dissipate any fears and concerns about the war, without risking being labeled unpatriotic, or worse. This was a war with virtually no peace movement (Gertzel, 1991), in great contrast to Korea and Vietnam. If people were feeling concerns, they would be unlikely to voice them. Patriotic support of the troops on one hand, and somatic and cognitive concerns on the other, it is quite likely that depressive cognitions would result.

Family Affairs

While it would be optimal to examine the many different demographic variables as IVs for changes in BDI scores, most analyses were not possible. Nevertheless, three variables were examined with BDI scores on Weeks 2 and 6 as the dependent variables. Gender had no noticeable effect, and none was predicted a priori. On one hand, it is possible that men would have had more

depressive cognitions as they would be called upon should a draft have followed. Alternatively, it is possible that women, who some psychologists have categorized as a class as more people oriented and less rules oriented in their moral postures (Gilligan, 1982), may have been had more depressive cognitions over the death and destruction brought on by the War, especially since this is the first war in U.S. history in which women are officially functioning in combat roles. If either of these effects were occurring, they either balanced each other out, or were not present in such a way as to be measurable. Again, caution is needed in that the failure to attain statistical significance could likely be due to low power for a small effect, secondary to the small sample size.

A more robust difference was found when examining the respondents' sibling birth order . Only children had the highest BDI scores, followed by youngest and middle children, and then oldest children (Figure 3). In addition, only children started higher and dropped less over Weeks 2 through 6. Similarly, when examining the number of children in the respondents' family, only children again displayed the highest scores and dropped less from Weeks 2 through 6, than did children from multi-sibling families (Figure 4). While it is quite tempting to offer some explanation for these finding, it is ill-advised to do so. First, there are few only children in the sample ($n=3$); any pattern may be due to one or more outliers in the group. Secondly, given the above noted limitations, it is possible that these analyses may be confounded with some other variable for which proper analysis on a larger data set would offer an explanation. But, the relatively low BDI scores of oldest children (marginal $M=2.86$,

Figure 3

BDI by Family Position

Only children marginal BDI scores (collapsing across Weeks 2 and 6)

39% > youngest

54% > middle

360% > oldest children

Figure 4

BDI by Number of Siblings

no siblings marginal BDI scores (collapsing across Weeks 2 and 6)

62% > one sibling

87% > two or more siblings

$n=7$) is less likely due to chance variation. That is, to the extent that the BDI is uni-directionally constructed and scored (from neutral to most impaired), it is unlikely that the mean for oldest children is due to anything other than a reliable difference between the groups. Whether this is coincidence, a function of a hidden covariate, or a true effect remains in the reader's discretion.

Summary and Recommendations

As America and her allies embarked upon Operation Desert Shield in Fall, 1991, the political mood at the University of Rhode Island, in specific, and in the country, in general, would likely have appeared to an outsider to be one of optimism and enthusiastic support for the escalating conflict. The media coverage and public sentiment all suggested that people were hopeful that good (i.e. George Bush) would succeed over evil (i.e. Sadaam Hussein). This rally of public emotion escalated and continued to mass as we moved into the active hostilities of Operation Desert Storm. Flags were flying from houses that never before displayed one. Even the victory speech by General Schwarzkopf was likened to a Monday morning discussion of Sunday's football game (e.g., "Hail Mary" plays), an all-American pastime.

But, despite the positive public sentiment, there was a palpable undercurrent of pessimism and fear. After all, the thirty seven Americans killed were publicized repeatedly on TV. And even for the most patriotic of viewers, some basic human sentiments are aroused when watching smart bombs destroy personnel bunkers and bridges, over and over again. Sadaam Hussein's threats to use nuclear and chemical weapons put a little fear in all of us. And the

voices and images of Israeli children in gas masks, hoping that the next explosion would be only a conventional bomb surely stirred a few tears for American television viewers.

The hypothesis of this thesis is that a global, pervasive, psychosocial stressor, to wit, the War in the Gulf, would have measurable emotional reactions on American college students halfway around the world. These assumptions are, in part, supported by the data reported here. A sample of URI undergraduates showed a clear and convincing pattern of change in their scores on the Beck, a measure of cognitions consistent with depression. Despite numerous displays of support for the War, it is obvious from these data that students were indeed more pessimistic, less hopeful about the future, more somatically distressed, and perhaps even more depressed, during the fighting than after the cease-fire.

This study is limited in a number of ways, including a small but consistent sample, non-random selection of subjects, non-random assignment to conditions, and the absence of measures necessary to control for covariates. Therefore, it is best regarded as a pilot study of original research based on a sample that was collected at a unique period in world history, and perhaps the only study of its kind.

Regardless of the reasons for the increase in depressive cognitions around the weeks of the most active fighting, and the rapid return to baseline, this change is quite remarkable for a number of reasons. Teixeira and Valentino (1991) documented a 9% change in Beck scores between the invasion of Kuwait and the outbreak of fighting; we document a change of more than four times

that amount around the outbreak of the ground war when employing a more sensitive methodology. In addition, more than 25% of the variance in BDI scores is accounted for by whether the ground war was on-going or the cease-fire had occurred. Considering the many other daily events for these subjects (e.g., exams, family difficulties, relational problems, etc.), that a quarter of the variance in BDI scores is explained by the stage of the war is a figure far beyond any predictions I would have made, and a value that is rarely seen in clinical and social psychology. From this, we can draw two hypotheses. Depressive cognitions as a reaction to being a bystander to war is a robust phenomenon, even over great distances, provided the bystander has an emotional tie to some of the parties involved, and/or that the bystander has a real-time knowledge of wartime events. In addition, this phenomena is short lived, and in a non-clinical population, BDI scores rapidly return to baseline. These should be viewed as working hypotheses rather than theories, due to sample limitations and the methodological problems noted above. In addition, no inferences can be presumed for clinical populations' reactions to similar events, or for long-term reactions to these same events.

Assuming that the War in the Gulf was not markedly different from other global, pervasive psychosocial stressors, this study suggests the need for further examination of the so-called bystander effects of observers to world political and other conflicts. In order to adequately study this topic, researchers will need to employ repeated-measures designs with readily available samples and with instruments which are rapidly mobilized; had this study delayed data

collection by even one more week, its utility would have been markedly compromised. Furthermore, multi-site data collection, a heterogeneous sample and the addition of qualitative data collection are all recommended for future examinations of this topic.

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FOOTNOTES

¹Psychohistory is a field of study conducted by a wide variety of social scientists, but firmly anchored in psychoanalytic and historical theory and methods. It largely assesses societal development by the society's methods of child-rearing and its larger view towards where children function in society. It is a field with its own theories and methods of scientific inquiry. For a more detailed discussion on the foundations and methodologies of psychohistory, the reader is referred to Demause, 1982.

²The data for the proposed study was collected by Kerman and Wolfner (1991) as part of a project for an advanced graduate class in psychopathology. My heartfelt thanks goes to my friends and colleagues Ben Kerman and John Donkervoet, the two graduate students without whose assistance data collection would not have been possible.

Appendix A

THE UNIVERSITY OF RHODE ISLAND
DEPARTMENT OF PSYCHOLOGY
CHAFEE HALL
KINGSTON, RI 02881

PSY607 TERM PROJECT/Kerman & Wolfner

BDI QUESTIONNAIRE

PARTICIPANT NUMBER

DATE

Instructions:

This questionnaire consists of 21 groups of statements. After I read each group of statements, I want you to pick the one statement in each group by circling it which best describes the way you have been feeling during the *past week, including today.*

- Group 1:
1. I do not feel sad.
 2. I feel sad.
 3. I am sad all the time and I can't snap out of it.
 4. I am so sad or unhappy that I can't stand it.
- Group 2:
1. I am not particularly discouraged about the future.
 2. I feel discouraged about the future.
 3. I feel I have nothing to look forward to.
 4. I feel the future is hopeless and that things cannot improve.

- Group 3:
1. I do not feel like a failure.
 2. I feel I have failed more than the average person.
 3. As I look back on my life all I can see is a lot of failures.
 4. I feel I am a complete failure as a person.
- Group 4:
1. I get as much satisfaction out of things as I used to.
 2. I don't enjoy things the way I used to.
 3. I don't get real satisfaction out of anything anymore.
 4. I am dissatisfied or bored with everything.
- Group 5:
1. I don't feel particularly guilty.
 2. I feel guilty a good part of the time.
 3. I feel guilty most of the time.
 4. I feel guilty all of the time.
- Group 6:
1. I don't feel I am being punished.
 2. I feel I may be punished.
 3. I expect to be punished.
 4. I feel I am being punished.
- Group 7:
1. I don't feel disappointed in myself.
 2. I am disappointed in myself.
 3. I am disgusted with myself.
 4. I hate myself.
- Group 8:
1. I don't feel I am any worse than anybody else.
 2. I am critical of my weaknesses or mistakes.
 3. I blame myself all the time for my faults.
 4. I blame myself for everything bad that happens.
- Group 9:
1. I don't have any thoughts of killing myself.
 2. I have thoughts of killing myself.
 3. I would like to kill myself.
 4. I would kill myself if I had the chance.
- Group 10:
1. I don't cry any more than usual.
 2. I cry more than I used to.
 3. I cry all the time now.
 4. I used to be able to cry but now I can't cry even though I want to.

- Group 11: 1. I am no more irritated now than I ever am.
2. I get annoyed or irritated more easily than I used to.
3. I feel irritated all the time now.
4. I don't get irritated at all by the things that used to irritate me.
- Group 12: 1. I have not lost interest in other people.
2. I am less interested in other people than I used to be.
3. I have lost most of my interest in other people.
4. I have lost all of my interest in other people.
- Group 13: 1. I make decisions about as well as I ever could.
2. I put off making decisions more than I used to.
3. I have greater difficulty in making decisions than before.
4. I can't make decisions at all any more.
- Group 14: 1. I don't feel I look any worse than I used to.
2. I am worried that I am looking old or unattractive.
3. I feel that there are permanent changes in my appearance that make me look unattractive.
4. I believe that I look ugly.
- Group 15: 1. I can work about as well as before.
2. It takes extra effort to get started at doing something.
3. I have to push myself very hard to do anything.
4. I can't do any work at all.
- Group 16: 1. I can sleep as well as usual.
2. I don't sleep as well as I used to.
3. I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
4. I wake up several hours earlier than I used to and cannot get back to sleep.
- Group 17: 1. I don't get any more tired than usual.
2. I get tired more easily than I used to.
3. I get tired from doing almost anything.
4. I am too tired to do anything.

- Group 18: 1. My appetite is no worse than usual.
2. My appetite is not as good as it used to be.
3. My appetite is much worse now.
4. I have no appetite at all any more.
- Group 19: 1. I am no more worried about my health than usual.
2. I am worried about physical problems such as ache and pains; or upset stomach; or constipation.
3. I am very worried about my physical problems and it's hard not to think of much else.
4. I am so worried about my physical problems, I cannot think about anything else.
- Group 20: 1. I have not noticed any recent changes in my interest in sex.
2. I am less interested in sex than I used to be.
3. I am much less interested in sex now.
4. I have lose interest in sex completely.
- Group 21: 1. I haven't lost much weight, if any, lately.
2. I have lost more than 5 pounds.
3. I have lost more than 10 pounds.
4. I have lost more than 15 pounds.

Appendix B

THE UNIVERSITY OF RHODE ISLAND
DEPARTMENT OF PSYCHOLOGY
CHAFEE HALL
KINGSTON, RI 02881

PSY607 TERM PROJECT/Kerman & Wolfner

BACKGROUND AND OTHER RELATED INFORMATION

PARTICIPANT NUMBER

1. What was your age at your last birthday? _____

2. What is your gender?

1=Female

2=Male

3. What is your class standing?

1=Freshman

3=Junior

5=Grad Student

2=Sophomore

4=Senior

6=Other _____

4. Where do you currently live?

1=Residence Hall

2=Fraternity/Sorority house

3=Your own apartment or house

4=Your family's house/apartment

5=A friend's house/apartment

6=Other _____

5. What is your marital status?

1=Single

4=Widowed

2=Married

5=Cohab/living with boyfriend/girlfriend

3=Separated/divorced

6. Do you have any children?

1=No

2=Yes If so, how many?_____

7. How many brothers and/or sisters do you have?_____

8. How many step/half brothers and/or step/half sisters do
you have?_____

9. What is your position in your family?

1=Only child

3=Middle of 3 or more children

2=Youngest child

4=Oldest child

10. Which of the following best describes where you have lived for
the majority of your life?

1=Farm

2=Small town--up to 2,500

3=Medium town--2,500-25,000

4=Large town 25,000-100,000

5=Suburban-urban community in or near a major city--
100,000-500,000

6=City--larger than 500,000

11. What is your predominant racial background?

1=Black

4=White

2=Hispanic

5=Oriental/Asian

3=Black/Hispanic

6=Native American

7=Other_____

12. What is your predominant religious background?

1=Roman Catholic

3=Jewish 5=Other_____

2=Protestant

4=No religion

13. In what State of the country have you spent the majority of your life?_____

14. Are you at least eighteen years old?

1=Yes

2=No (please tell the researcher)

Participant Number

Appendix C

**THE UNIVERSITY OF RHODE ISLAND
DEPARTMENT OF PSYCHOLOGY
CHAFEE HALL
KINGSTON, RI 02881**

PSY607 TERM PROJECT/Kerman & Wolfner

CONSENT FORM FOR RESEARCH

I have been asked to take part in a research project described below. The researchers will explain the project to me in detail. I should feel free to ask questions. If I have more questions later, Ben Kerman and/or Glenn Wolfner, the persons mainly responsible for this study, will be available; they can be contacted by leaving a note in either's mailbox in the mailroom on the third floor of Chafee Hall.

I have been asked to take part in the study which will look at attitudes and feelings on a number of general areas.

If I decide to take part in this study here is what will happen: I will be asked to complete a number of brief surveys (questionnaires) each week for four to six weeks in a row. These are commonly used surveys and I should experience no discomfort or risk as a result of my participation. If at any time I do not wish to continue, I am free to stop participating, without any undue consequences. The only requirement is that I briefly meet with one of the above two persons so as to have the opportunity to better understand what the purpose of the study is, and to have a chance to voice my opinions about the study.

Although there may be no direct benefit to me for taking part in this study, other than having had the experience of participating in a formal study, the researchers may learn more about the subject and will be happy to discuss the findings with me now or at any time in the future.

My part in the study is confidential. None of the information will identify me by name. I will have a participant number which I will select from a list provided by the researchers. If I should forget or misplace this number, I will be able to look it up on that list which will remain unexamined by the researchers. Once the surveys are completed, this list will be destroyed. At no time will my answers on the surveys be linked to my name.

If this study causes me any problems or doubts now or in the future, I will be free to contact the above named persons, or, if necessary, Dr. Grebstein, the Professor for the class in which this study will be used. His mailbox is also on the third floor of Chafee.

The decision whether or not to take part in this study is up to me. I do not have to participate. If I decide to take part in this study, I may quit at any time. Whatever I decide will in no way affect my grade or otherwise impact on my status as a student and member of the community here at the University of Rhode Island. If I wish to quit, I simply inform Ben Kerman or Glenn Wolfner, in person or in writing, of my decision.

If I am not satisfied with the way this study is performed, I may discuss my complaints with Ben Kerman or Glenn Wolfner, or with Dr. Grebstein, anonymously, if I choose.

I have read the Consent Form. My questions have been answered. My signature on this form means that I understand the information and I agree to participate in this study.

Signature of Participant

Signature of Researcher

Printed Name

Printed Name

Date

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