



1989

Psychological Reactions to Viewing a Simulated Nuclear War Scene

Rocco Domanico
Loyola University Chicago

Follow this and additional works at: https://ecommons.luc.edu/luc_theses



Part of the [Psychology Commons](#)

Recommended Citation

Domanico, Rocco, "Psychological Reactions to Viewing a Simulated Nuclear War Scene" (1989). *Master's Theses*. 3629.

https://ecommons.luc.edu/luc_theses/3629

This Thesis is brought to you for free and open access by the Theses and Dissertations at Loyola eCommons. It has been accepted for inclusion in Master's Theses by an authorized administrator of Loyola eCommons. For more information, please contact ecommons@luc.edu.



This work is licensed under a [Creative Commons Attribution-NonCommercial-No Derivative Works 3.0 License](#).
Copyright © 1989 Rocco Domanico

PSYCHOLOGICAL REACTIONS TO VIEWING
A SIMULATED NUCLEAR WAR SCENE

by

Rocco Domanico

A Thesis Submitted to the Faculty of the Graduate
School of Loyola University of Chicago in Partial
Fulfillment of the Requirements for the Degree of
Master of Arts

November

1989

ACKNOWLEDGEMENTS

I would like to express my appreciation for the time and effort of those who have contributed, directly and indirectly, to the completion of this thesis. I would like to thank James Johnson, Ph.D., my director, for his support, advice, availability and especially, for his help in editing the many drafts of this manuscript. I would also like to thank Alan DeWolfe, Ph.D., for being on my committee and for his support, encouragement and assistance, especially in regards to statistical and computer related questions.

I would additionally like to thank my family for their support, interest and encouragement in all my endeavors; and especially my grandmother who never fails to inspire me. Finally, I would like to wholeheartedly thank my wife, Yolanda, for her constant support, understanding and patience.

VITA

The author, Rocco Domanico, is the son of John Richard Domanico and Jeanette Dorothy (Oremovich) Domanico. He was born April 24, 1962, in Chicago, Illinois.

His elementary education was obtained in the public schools of Addison and Wauconda, Illinois. His secondary education was completed in 1980 at Wauconda High School, Wauconda, Illinois.

In January, 1981, Mr. Domanico entered Lake County Community College, where he enrolled as a part-time student. In August, 1983, Mr. Domanico transferred to Loyola University of Chicago, receiving his degree of Bachelor of Science in psychology in May, 1986.

In August, 1986, Mr. Domanico reentered Loyola University of Chicago to pursue a doctorate in clinical psychology.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	ii
VITA	iii
LIST OF TABLES	v
LIST OF FIGURES	vi
CONTENTS OF APPENDICES	vii
Chapter	
I. LITERATURE REVIEW	1
II. STATEMENT OF PROBLEM AND HYPOTHESES	20
III. METHOD	23
Subjects	23
Materials	24
Procedure	33
IV. RESULTS	39
V. DISCUSSION	64
SUMMARY	88
REFERENCES	91
APPENDIX A	95
APPENDIX B	97
APPENDIX C	100
APPENDIX D	103
APPENDIX E	105
APPENDIX F	107

LIST OF TABLES

Table		Page
1.	Descriptive Statistics on Primary Dependent Variables	40
2.	Descriptive Statistics on Nuclear Orientation Ratings	57
3.	Descriptive Statistics on Degree of Disturbance and Concern Related to Viewing Film Segment	59
4.	Correlation Matrix	61
5.	Descriptive Statistics on Subcategories of General Nuclear Concern	83

LIST OF FIGURES

Figure		Page
1.	Pretest and Posttest Mean DACL Scores	42
2.	Pretest and Posttest Mean STAI Y-1 Scores	45
3.	Pretest and Posttest Mean Scores for Current Participation in Nuclear Threat Reducing Activities	48
4.	Pretest and Posttest Mean Scores for Desired Future Influence on the U.S. Nuclear Weapons Policy	50
5.	Pretest and Posttest Mean Scores for Perceived Future Participation in Nuclear Threat Reducing Activities	51
6.	Pretest and Posttest Mean Scores for General Perception of Future Political Efficacy in Regards to Nuclear Weapons Issues	52

CONTENTS OF APPENDICES

	Page
APPENDIX A	Items Derived from the NWQ to Assess General Nuclear Concern 96
APPENDIX B	Nuclear Orientation Assessment. 98
APPENDIX C	Items Derived from the MDI to Assess Sadness and Pessimism 101
APPENDIX D	Survey Questionnaire for Various Aspects of Political Efficacy 104
APPENDIX E	Questionnaire Items Assessing Degree of Disturbance and Concern Related to Viewing the Film Segment . . . 106
APPENDIX F	Demographic Questionnaire Sheet 108

CHAPTER I

LITERATURE REVIEW

Much of the current literature in psychology dealing with the relationship between humans and the threat of nuclear war calls for increased public education on nuclear related topics. Some researchers believe that nuclear education is one way of ultimately reducing the threat of a nuclear holocaust. For example, Chavez, Hamilton, and Keilin (1986) propose using media events such as docudramas and movies pertaining to nuclear war to instill a productive type of anxiety that then may mobilize individuals towards partaking in nuclear threat reducing behaviors. They suggest that consequent positive results via viewing nuclear related material may develop as individuals react to the fears that are elicited by the material which may otherwise ordinarily exist out of awareness. If feelings of anxiety and fear are significantly aroused, individuals may take direct action towards reducing the personal anxiety related to the nuclear threat. Some of these activities, in turn, may lead to lessening the overall threat of nuclear destruction. In effect, researchers such as Chavez and his associates believe that arousing public awareness to the potential destruction of nuclear war may increase

feelings of political efficacy, and motivate people towards actively decreasing the risk of a nuclear catastrophe.

Another pair of researchers (Granberg & Faye, 1972) espouse similar ideas to those of Chavez, et al. (1986) by stating that films on nuclear destruction can be used to increase the public's awareness to the potential and ever increasing possibility of nuclear war. They speculate that by increasing the public's awareness, more and more people will become less inclined to passively live under the constant threat of nuclear war, and will engage in activities directed towards lessening its possible occurrence. Nuclear war related movies represent one way of making nuclear devastation more understandable and salient in the minds of individuals, and ultimately all the more deplorable and intolerable.

Lifton (1967) states that in order to activate people into working towards lessening the nuclear threat, it is necessary to break through the barriers of denial that keep the nuclear threat out of awareness. The purpose of overcoming the denial is to bring the fear of death into awareness. He suggests that once the denial of total human annihilation dissipates, an individual realizes the potential devastation that awaits us all via nuclear war. This awareness results in anxiety and fear which in turn motivates an individual to participate in

nuclear threat reducing activities.

In light of the fears and anxieties that individuals experience as a result of the nuclear threat, researchers have developed methods designed to help individuals cope with this stressor. For instance, Newman (1987) offers various suggestions for helping people deal with nuclear related anxiety and ultimately reducing the nuclear threat. First, he states that those experiencing nuclear related anxiety should talk openly about their fears and worries. Second, attempts should be made to educate children, adolescents and adults on how to actively work against nuclear annihilation and to increase feelings of political efficacy. Such activity may be helpful by implanting a sense of control in individuals who may otherwise perceive nuclear war as uncontrollable. This can be achieved by acquainting people with potential political measures that may be used to alleviate the possibility of nuclear war. Additionally, it may be helpful to induce fear and anxiety in those individuals who currently possess no fears of nuclear annihilation. This is not a punitive tactic designed to instill immobilizing fear, but is intended to generate anxiety that will ultimately lead to activity directed towards eliminating the nuclear threat.

Feshbach (1986) also endorses increasing the public's concern for and fear of nuclear war by engaging

them in discussions on the topic. Once again, the purpose of discussion is to bring the issue to the forefront of public awareness, and to motivate people towards action. Such discussion is not meant to raise fears to the point where individuals may avoid the issue altogether. Feshbach further states that when fear is strongly aroused, but not fully relieved by reassurances, a person becomes motivated to minimize the severity of the threat. Yet, what needs to be established is the method for instilling a healthy, action-oriented level of fear as opposed to an ineffective, immobilizing level.

Methods of educating the public may not lie in any one general method of nuclear education, but may in fact vary among individuals or groups depending on personality characteristics and pre-existing nuclear-related attitudes. Nonetheless, educators should take care in selecting an appropriate format for inducing the fear of nuclear war in people because it is possible, and likely, that some individuals will react negatively to incoming nuclear information (i.e., reactive fear); and may close themselves off totally to the information if it proves to be overwhelming--just the opposite of what is intended. Highly threatening forms of nuclear education are bound to be counterproductive in changing people's attitudes towards nuclear war and should be avoided.

Movies and videos are one of the most accessible and

prevalent types of nuclear education that are available to the public. The contents of these movies range from romanticized films that only allude to the ravages of nuclear war (e.g., On The Beach) to realistically graphic depictions of material destruction and human suffering as a result of nuclear bombings (e.g., Threads). Other forms of nuclear education may take the form of literature, schooling, or public meetings.

Regardless of what medium is used to present the topic, psychologists state that there are specific aims in educating the public on this issue. Some of these goals include increasing people's sense of political efficacy, maintaining the issue in the public's mind (Fiske, 1987), decreasing feelings of helplessness, depression and reactive fear (Hamilton, Chavez & Keilin, 1986), and decreasing death denial by increasing the awareness of the nuclear threat (Lifton, 1967), but not instilling an immobilizing fear that will inhibit productive activity (Feshbach, 1986; Newman, 1987).

The amount of interest by psychologists directed towards the effects of living in the nuclear age does not go unwarranted. Many researchers in this area find that living in this era is potentially detrimental to both the development and psychological well-being of individuals. For example, Raundalen and Johan Finnoy (1986) performed a study assessing the attitudes of 3000 Norwegian and 1000

Swedish adolescents on their perceptions of world problems. It was found that the possibility of nuclear war was the most frequently mentioned problem which those students felt the world needs to address. In fact, of all the problems listed, the threat of nuclear war was the most frequently selected primary problem. In addition to these findings, other analyses of the data indicate that individuals having concerns about nuclear war tended to be more angry, depressed, and worried about the future than individuals who did not show this concern.

In a study by Goldenring and Doctor (1983) 913 students, ages 11 to 19, were asked to rank a given list of 20 main possible worries in terms of "not worried at all" to "very worried." They found that the possibility of nuclear war was the third highest ranked worry of these adolescents, only to be preceded by worries of a parent's possible death and receiving bad grades in school. Upon further questioning it was found that 33% of the subjects reported that they frequently pondered about nuclear war and expected to see it in their lifetimes. Interestingly, those who showed the most worry or concern about nuclear war also tended to be the most optimistic about preventing its occurrence. This latter finding lends support to Lifton's suggestion that generating a fear of death and decreasing denial is useful in increasing feelings of hopefulness and political efficacy. It appears that by

confronting the notion of nuclear annihilation, an individual can tap into areas of related anxiety and concern, and consequently pursue activities that will ultimately lead to lessening the stressor. In some instances this activity will take the form of direct activity towards lessening the threat of nuclear annihilation.

Newcomb, in a 1986 study assessing young adults' emotions and attitudes toward living in the nuclear age, also achieved results supporting the conclusion that the threat of nuclear war impinges upon the psychological well-being of young adults. Newcomb assessed a group of 19- to 24-year-olds on their beliefs and fears regarding nuclear war, nuclear weaponry and nuclear power plants. He found that a majority of the subjects, at times, felt depressed and worried about living in a nuclear age. He also noted that females were more pessimistic, concerned, and frightened about the specified areas than were males. Furthermore, females were more opposed to nuclear war than were males, and tended to respond to questionnaire items in a more extreme manner. Even though a majority of subjects, male and female, showed a high degree of concern for and pessimism about the future in regards to nuclear war, most would not hesitate to raise children in this era.

In another study assessing college students'

concerns and worries (Goldberg, et al., 1985), it was found that the occurrence of nuclear war was the most frequently mentioned worry given by participants. Also, approximately 33% of these students claimed it to be their primary concern. Their findings suggest that thoughts of nuclear war occur frequently in the minds of teens, yet these concerns are no more intrusive than thoughts about unemployment or career plans. This indicates that while individuals contend with thoughts of nuclear destruction, they have not closed their minds to the future and show signs of hopefulness.

Although maintaining a degree of hopefulness, feelings of control may be severely depleted for some individuals in regards to nuclear war as opposed to career planning. In fact, most of the students agreed that out of all the problems listed, nuclear war was the one in which they felt the least amount of control. Also, a perceived lack of control over nuclear war appeared to be highly correlated to feelings of anxiety. However, other areas of concern such as employment did not show as high a degree of related anxiety as did the concern about nuclear war. Individuals showing the highest degree of anxiety related to nuclear war also appeared to be most willing to discuss the issue, and felt that they could be somewhat effective in helping to avert a nuclear war more than did individuals who preferred not to deal openly with the

issue. Individuals who expressed the least amount of fear and anxiety, and were not willing to discuss the issue, were found to perceive themselves as being helpless and ineffective in regards to alleviating the nuclear threat. These results indicate that individuals who are fearful and anxious about nuclear war are not necessarily emotionally disturbed, and may in fact be expressing realistic fears that they feel they can transfer into constructive action.

In a review of over 50 studies assessing people's beliefs, feelings and actions related to nuclear war, Fiske (1987) found that the above factors vary little across race, education, income and political ideology. In the realm of beliefs Fiske found that a considerably larger number of people today as opposed to people in the 1950s, 60s and 70s do not believe their chances of surviving a nuclear war are very good if such a war should occur. They tend to perceive nuclear war as an improbable event, but one in which if it were to occur would result in complete material destruction, including their own deaths.

Although realizing the potential devastating consequences of nuclear war, Fiske notes that the degree of overall worry and concern that an individual experiences is disproportionate to the acknowledged disastrous consequences of nuclear war. That is, although

most individuals acknowledge the apocalyptic potential of nuclear war, many resign themselves to passive roles in its deterrence, and react in an apathetic or unemotional manner when contemplating such a catastrophe despite its inherent horror. Also, some research shows that the level of concern appears to fluctuate as a function of age and sex. For example, there appears to be a greater degree of concern among children and adolescents than among adults. Additionally, females tend to show more nuclear anxiety than do males. Yet, overall, the most common reactions to the nuclear threat that are cited in the literature are fear, worry, anxiety, terror and sadness.

Even though Fiske's review of the literature fails to find much diversity in the beliefs held by individuals in regards to nuclear war (with the possible exceptions of age and sex), some recent research (Hamilton, Chavez, et al., 1986) challenges this notion. Within the last few years an admirable attempt has been made by Hamilton and his colleagues to develop an assessment technique that would allow researchers to classify individuals as a function of professed nuclear orientation, and to assess individual's concerns, beliefs and attitudes regarding nuclear war. This classification procedure and nuclear related attitude assessment nicely captures the diversity of beliefs, concerns and feelings held by people in relation to nuclear war. In conjunction with other

assessments it may ultimately serve to delineate the association among varying nuclear beliefs and personality characteristics, cognitive processes, emotions and behavior.

The Nuclear War Questionnaire (NWQ) and the Nuclear Orientation Questionnaire (NOQ) developed by Hamilton, Chavez, et al. (1986) are relatively simple and informative methods of assessing nuclear beliefs and attitudes. Together, the NWQ and NOQ involve four steps in which individuals indicate their beliefs about nuclear issues, and evaluate various nuclear attitudes or orientations. In the first part (NWQ), individuals indicate their degree of support for 16 nuclear-related statements. In the second part (NOQ), individuals rate nine nuclear attitudes on a five-point-scale as to how supportive they are of each one. Included in this measure, but not incorporated into this study, are two subtests of the NOQ. First, individuals select one of the nine nuclear orientations that best represents their own beliefs and philosophy in regards to nuclear war. Second, individuals choose their next preferred orientation out of the eight remaining groups. The nine categories relevant to rating various nuclear attitudes and in selecting the two most preferred orientations as described by Hamilton, Chavez, et al. (1986) are listed below:

DETERRENTIST: Believing that the United States' ability to inflict unacceptable damage on an aggressor, even

after absorbing a surprise first attack, will function as a deterrent to nuclear war.

DISARMIST: Believing that world powers must scale down nuclear stockpiles and ultimately disarm in order to ensure peace.

SURVIVALIST: Believing that time and energy are best spent in preparing to survive a potential nuclear attack.

ELIMINATIONIST: Believing that the United States should prepare to "win" a nuclear war and even initiate a first strike as a means of self-protection and potential world democratic transformation.

HEDONIST: Believing that here-and-now, immediate gratification is the most appropriate focus of attention when continuity of existence is in question.

STOIC: Believing that resigned acceptance and intellectualized detachment are the best way to cope with an uncontrollable nuclear arms situation.

THEIST: Believing that the fate of the world is in the hands of God and ultimately not controlled by man.

ROMANTICIST: Believing that nuclear war will never occur because human beings are basically good and rational whereas nuclear war is destructive and irrational.

ALTRUISTIC FATALIST: Believing that contributing to society during one's lifetime is the best one can do when nuclear arms development, deployment, and use are outside one's personal control.

The differences among these orientations are quite apparent, and the assessment technique in total appears to be a relatively comprehensive manner of evaluating a variety of nuclear attitudes, beliefs and orientations.

Overlying these nine categories exist two basic subcategories of nuclear orientations. Specifically, the first four groups are characterized by action-oriented behaviors that propel individuals to directly alter the

threatening environment. The latter five groups are similar to each other in that they are characterized by individuals who partake in indirect activities that function to alleviate tension due to the nuclear threat. Such indirect actions may take the form of intrapsychic mechanisms or avoidance motivated activities.

In the Hamilton, Chavez, et al. (1986) study 308 subjects were divided into eight groups based on their selected primary nuclear orientation, and assessments of these individuals were made in regards to nuclear-related thinking, worry, emotionality, life impact, war probability estimates and opinions regarding media coverage of the issue. It was found that a plurality of the individuals tested selected the Altruistic Fatalist philosophy as their primary orientation of preference (40.9%), followed by Disarmist (20.8%), Deterrentist (12.3%), Hedonist (12.0%), Stoic (6.5%), Romanticist (5.5%), and Survivalist (2.0%). No subjects selected the Eliminationist orientation, and the Theist orientation had yet to be developed in the subsequent reformulation of the Nuclear Orientation Questionnaire (Hamilton, Knox, & Keilin, 1986). Hence, these two groups were not included in the proceeding results.

The results, in part, indicate that Disarmists spend significantly more time thinking about nuclear war than do Romanticists, and are significantly more worried about

nuclear war than all other groups except for the Stoics. In regards to the likelihood of nuclear war and the overall impact of the nuclear threat on life itself, Romanticists claim that the probability of a nuclear war is low and score significantly lower in this area than all other groups except for Survivalists. Romanticists also report significantly less life impact than do Hedonists, Stoics and Disarmists. Altruistic Fatalists also report less life impact than do Hedonists.

In the Hamilton, Chavez, et al. (1986, p. 136) study subjects were also asked at the end of the questionnaire to "think about the threat of nuclear war" while they completed the Multiple Affect Adjective Check List (MAACL). ANOVAs were performed on the three subscales of the MAACL (anxiety, depression and hostility) as compared to the various nuclear orientations. The results revealed a statistically significant difference ($p < .01$) among the nuclear orientations only in the area of anxiety. Disarmists appear to be significantly more anxious when contemplating the threat of nuclear war than do any of the other attitude groups, while Romanticists show a trend towards being most unaffected in terms of anxiety.

On the depression subscale, although not achieving statistically significant differences, there is a trend for Hedonists, Disarmists, and Altruistic Fatalists to score higher on depression than do other groups. Other

trends show that Romanticists scored the lowest among all groups on the depression and hostility subscales, while Hedonists and Disarmists scored the highest in the area of hostility.

The aforementioned partial results of the Hamilton, Chavez, et al. (1986) study are presented in order to display the diversity present among people's orientations towards and attitudes about the nuclear threat. Consequently, to gain a more accurate understanding of the relationships among beliefs, emotions, attitudes and behaviors associated with the nuclear threat, it may be helpful to include such an assessment--at least in part--in subsequent nuclear threat related research. The existence of differing nuclear concerns and various attitudes may have practical significance for the manner in which educators disseminate nuclear related information.

One area of interest related to the methodology in Hamilton, Chavez, et al.'s (1986) study is in its use of individually induced nuclear threat imagery or conceptualizations. The researchers may be assuming that most individuals will conjure up equally disturbing images of nuclear destruction, and hence react to these similar visual conceptualizations. Yet, in keeping with the notion of certain characteristic qualities existing within specific nuclear attitude groups, it seems illogical to

imagine that individuals across different orientation groups will form similar conceptualizations of nuclear war. In fact, individuals may react differently to thoughts of nuclear war merely by virtue of possessing various conceptualizations of it. For example, a Romanticist would probably conceive of nuclear war in much less horrific terms or images than would a Survivalist or Stoic. Thus, when asking individuals to respond to various psychological measures after reflecting upon their thoughts of nuclear war, responses will obviously be influenced by independent ways of imagining nuclear war. This methodology is useful in attempting to assess an individual's reactions to his/her own conceptualizations of nuclear war. Yet, it would appear to be equally, if not more interesting, to observe individuals' reactions to nuclear war when presented with factually based and visually graphic information about nuclear destruction. By using a consistent presentation stimulus of nuclear war across individuals, a researcher can assess the reactions of individuals to the reality of nuclear war as a function of their nuclear war related attitudes and beliefs. Such a method of stimulus presentation can be gained by presenting to individuals identical films, photographs, literature, etc. Use of this technique may more accurately assess individuals' reactions to the reality of nuclear war, and may inform researchers on how individuals

with various nuclear concerns, orientations and attitudes typically respond when presented with a factually based presentation of nuclear war as opposed to a potentially uninformed or individually affected view of nuclear destruction.

One such study that assessed the various effects of abstract and concrete imagery in relation to nuclear war was performed in 1972 by Granberg and Faye. These researchers found that, on the average, people have difficulty dealing with overwhelming concepts such as nuclear annihilation. They note that the reality of such an occurrence is so far removed from our physical and conceptual visibility that it does not produce the horrific responses that it is expected to incur. Their study was an attempt to sensitize people to the potential devastation of nuclear war by showing film segments of the Hiroshima-Nagasaki bombings. The contents of these segments allowed for subjects to make much more salient in their minds the reality of nuclear destruction.

The analyses of the completed questionnaires by 113 subjects indicated that the film did in fact have an impact on certain areas. For example, after seeing the film, subjects constricted the range of acceptability for initiating a nuclear war. Also, subjects became more tolerant of larger losses in conventional warfare before willfully resorting to nuclear retaliation. Third, there

was a decrease in the number of people wanting to survive a nuclear war. Finally, subjects experienced a significant increase in nuclear anxiety.

The authors recommended using films to increase people's awareness to nuclear issues in order that they become less tolerant of attitudes supportive of nuclear war. Granberg, et al. believe that increasing nuclear awareness is possible by making the reality of nuclear war more concrete and understandable with images and facts.

From Fiske's (1987) review of the literature on the nuclear threat and psychology, it appears that the majority of individuals do not think of nuclear war in concrete or personal terms. Most individuals describe nuclear war in terms of the ensuing material destruction without reference to the potential human loss and suffering. Even when considering the implications of human destruction which would follow a nuclear holocaust, most individuals continue to conceptualize nuclear war in abstract and impersonal terms; ordinarily, visual images of nuclear war and destruction tend not to be specific, sensory, proximate or personal. A film depicting a simulated nuclear war and its subsequent damages displayed in human terms should allow and perhaps even force individuals to more easily think of nuclear war in more concrete and personal terms.

Fiske, Pratto, and Pavelchak (1983) state that in

order for a visual stimulus to be effective it must be emotionally interesting to the viewer, graphically concrete, imagery provoking and proximate in a sensory, temporal or spatial way. Yet, in a subsequent nuclear related study by Schofield and Pavelchak (1985), who attempted to use such a rich stimulus as proposed by Fiske, et al. (1983), it was found that the stimulus was not as effective as predicted. In their study, the researchers questioned adults who had recently seen the televised showing of The Day After. They found that viewing the film had minimal affect upon adults' attitudes and emotions related to nuclear war. In evaluation of these results it is necessary to recall that concerns and worries about nuclear war tend to wane as one ages. Also, research indicates that adults as a group tend to be the least overtly affected by such material. A more informative survey of The Day After viewers may have been gained by questioning children and adolescents as well as adults. Children and adolescents are more ostensibly concerned with and anxious about nuclear war, and may be more affected by a film depicting nuclear destruction than would adults (Fiske, 1987).

CHAPTER II

STATEMENT OF PROBLEM AND HYPOTHESIS

The current study attempts to measure the psychological impact on young adults of viewing a nuclear related film segment. Young adult subjects viewed either a 15 minute film segment of a simulated nuclear war scene (experimental film segment) or a 12 minute film segment depicting the story of an unwed teenage pregnancy (control film segment). Measures on the dependent variables which include depressed mood, state anxiety, various forms of political efficacy, general nuclear concern, sadness, pessimism, and ratings on nuclear orientations were taken three weeks before viewing either film segment and immediately following the presentation. Analyses were then performed examining the impact of the nuclear destruction film segment on viewers' psychological states as compared to those who viewed the control film segment.

In accordance with previous research and theory it is hypothesized that at posttesting, on the whole, subjects in the experimental condition will score significantly higher in the areas of depressed mood, state anxiety and general nuclear concern as compared to subjects in the control condition. A higher degree of general nuclear concern reflects an individual who looks

less favorably upon nuclear war and nuclear weaponry, and is more concerned about nuclear war and its probable occurrence. Also, in accordance with Newcomb's (1986) research on gender differences, it is hypothesized that in the experimental condition female subjects will respond in a more concerned, anxious, and depressed manner at post-testing than will male subjects.

Unlike previous research, this investigator hypothesizes that feelings of political efficacy will decrease for subjects in the experimental condition as compared to subjects in the control condition. The ultimate goal of nuclear education is to arouse the fear and concern of individuals to the point where constructive action is stimulated. However, because subjects in this project are immediately assessed following the viewing of a graphically horrific nuclear holocaust scene, it is believed that the instantaneous experience of experimental subjects after viewing the film segment may be one of feeling overwhelmed and helpless. Consequently, feelings of helplessness and dysphoria may--at least momentarily--override and reduce feelings of political efficacy.

In order to assess the degree of disturbance that the film elicits, a question is included at posttesting that asks subjects to rate on a scale from 1 to 7 how disturbing the film segment was to viewers. It is hypothesized that experimental subjects will find the

contents of the nuclear film segment more disturbing than will control subjects in response to viewing the teenage pregnancy film segment.

The results of this research may aid educators in devising a program of nuclear education as it relates to adolescents and young adults. Also, this is an assessment of how one of the most accessible and prevalent forms of nuclear education (i.e., docudramas and films) affects the psychological status of viewers, and how it may be helping or hindering the development of nuclear awareness in individuals, as is the purpose of nuclear education.

CHAPTER III

METHOD

Subjects

A total of 76 subjects were recruited from introductory psychology classes at Loyola University of Chicago to participate in this study. Of the 76 initial volunteers only 62 subjects completed both pre- and posttest measures, and were included in the final analyses. The experimental group and control group consisted of 32 and 30 subjects, respectively. All subjects voluntarily elected to take part in this project in exchange for extra credit points. No demographic constraints such as age, race or sex were implemented as qualifiers for participation in this project; all volunteers were admitted.

Before testing, subjects were randomly assigned to either the experimental or control condition. The experimental group was composed of 13 male and 19 female subjects with mean ages of 18.8 and 18.5 years, respectively. The age range of these subjects was 17 to 21 years. The majority of subjects in the experimental condition were European American (66%) followed by African American (16%), Latin American (6%), Asian American (6%), and Other (6%).

The control group consisted of 10 male and 20 female subjects with a mean age of 18.8 years for each subgroup, and an age range of 17 to 23 years. The majority of subjects in this condition were also European American (53%) followed by Latin American (17%), African American (13%), Asian American (10%), and Other (7%).

Materials

This research project used the British docudrama, Threads, for the basis of its experimental and control treatments. The film was produced in 1986 by The British Broadcasting Company, and is accessible on video to the public. It is a visually graphic, emotionally toned, and thought provoking film that depicts a world wide nuclear holocaust. The film occurs in the context of a major English industrial city, Sheffield, and follows the lives and deaths of a handful of its residents before, during, and in some instances, after a nuclear war. Overall, its implications are that nuclear war will drastically alter human existence and may ultimately lead to its extinction.

Subjects in the control group viewed a 12 minute compilation of film segments from Threads that depicts the relatively common contemporary problem of unwed teenage pregnancy. This film segment deals with the unexpected pregnancy of an unwed teenage adolescent, and briefly presents how the couple and their families attempt to cope and deal with this situation. In compiling this film

segment measures were taken to carefully exclude any references to nuclear issues or war.

The 15 minute film segment shown to subjects in the experimental group consisted of scenes depicting nuclear destruction. It included three 3 to 4 minute scenes that display events preceding the bombing, the bombing itself, and the consequences of the bombing.

The variables measured included ratings on depressed mood, state anxiety, sad mood and pessimism, political efficacy in regards to nuclear issues, general nuclear concerns, nuclear orientations and degree of disturbance and concern experienced as a result of viewing one or other film clipping. Also, a demographic cover sheet accompanied the measures. All measures with the exception of the DACL and the STAI Y-1 are located in the Appendices.

The NWQ assesses nuclear war related feelings, behaviors, opinions and predictions. It consists of 16 items presented in a Likert-type format that takes approximately 3 to 4 minutes to complete. Each item on the measure presents the individual with a question to which they are to respond by placing a check near one of a series of subsequent response options. Due to the measure's relative newness, research on its psychometric properties is sparse.

For the purposes of this study only items 1 through

5 of the NWQ were used to measure general nuclear concern. Items assessing general nuclear concern are located in Appendix A. These items may be grouped together to assess an individual's overall concern about and degree of preoccupation with nuclear war. The remaining 11 items not included in this current study are independent of one another, and tap into a variety of beliefs and feelings regarding nuclear issues. Unlike the first 5 items, these items are disparate from one another in issue addressed and method of quantifying the response (i.e., different scaling techniques and values). Hence, these items are not amenable to grouping in order to arrive at a general concept and score. The measure of general nuclear concern was used to determine whether or not any significant changes occurred regarding the concerns and degree of preoccupation with nuclear war a subject experiences as a function of viewing the nuclear film segment.

Another related measure, the NOQ, which also was used in part in this research project was created by the same developers of the NWQ (Hamilton, Chavez, et al., 1986). The NOQ consists of nine distinct, randomly-ordered descriptions of possible attitudes held towards the threat of nuclear war. The test time is rather quick taking only 4 to 5 minutes to complete. Subjects in this project were requested to complete only the first portion of this assessment which is presented in Appendix B.

subjects were asked to read each orientation description carefully, and to rate each on a Likert-type scale with values ranging from 1 (strongly disagree) to 5 (strongly agree). Subjects were not requested to select the two most preferred orientations that best represent their own attitudes on the nuclear threat. The reason for excluding the second portion of the NOQ is due to its relatively poor test-retest reliability and its obscure validity along with the restricted amount of testing time allowed the researcher for testing subjects.

Analyses on the degree of intercorrelation between these nine orientations have found that they are relatively nonoverlapping with a mean intercorrelation range of .075--intercorrelation range is .00 to .34 (Hamilton, Chavez, et al., 1986). Ratings of test-retest reliability over a month's span of time achieve values of r that range from .35 to .78. The coefficients of stability for Eliminationists (.35), Stoics (.42), and Survivalists (.57) appear relatively weak in comparison to the moderate coefficients of validity for the remaining groups; Romanticists (.60), Disarmists (.62), Deterrentists (.63), Altruistic Fatalists (.64), Hedonists (.67), and Theists (.78).

The implications are that nuclear orientations may not be stable over time, and may in fact be influenced by temporal factors. Yet, the coefficients of validity are

not low enough so as to warrant discarding the measure altogether. The coefficients of validity for subjects selecting the same orientation at time 2 that was originally selected at time 1 averages to approximately .50. This is a rather moderate level of intrapersonal consistency, and casts doubt on the consistency of nuclear orientations. Yet, when considering which orientations were selected at time 2 by those individuals who changed their orientation of preference, it seems that many of them switched to their second orientation of preference listed at time 1. When considering the two top orientations toward nuclear war, it was found that .75 of the subjects were stable over time. This is considerably more promising a value for intrapersonal consistency than is .50. However, the reliability of this portion of the measure is still relatively low.

Other data offer some support for the measure's construct validity by showing that individual orientations correlate moderately with other nuclear-related questionnaires (e.g., Deterrentist scale - Pronuclear Activism, $r = .45$; Disarmist scale - Weapons Opposition, $r = .54$) (Hamilton, 1987). Yet, the authors fail to fully explain the implications of the test's construct validity, and only supply a table of correlation figures between various nuclear war measures and individual orientation scales from the NOQ.

Measures of depressed mood were obtained by the Depression Adjective Check List (DACL). It is a state measure of depressed mood which takes, on average, 2.5 minutes to complete. There are a total of seven forms of the DACL, all of which contain 32 to 34 adjectives depictive of depressed or elevated moods. The variety of forms, (A through G), show alternate test form intercorrelation values ranging from .80 to .93. The existence of varying forms of the same measure lessens the effect of subject response recall over numerous assessments of depressed mood. The two forms selected for this project are Forms E and F, both of which have 34 items. The values of internal consistency for these forms of the DACL are relatively high: Form E, .83 for males and .88 for females; and Form F, .79 for males and .86 for females. Split half reliability figures are equally high with coefficients of .85 for Form E and .83 for Form F. The degree of correlation between Forms E and F is .89 for both males and females. In essence, the DACL is a highly reliable measure that provides researchers with alternate forms of the same measure without sacrificing the consistency of the measure (Lubin, 1981).

Validity figures for the DACL are equally as impressive as reliability figures. The test shows a high degree of construct validity as well as a secure level of concurrent validity in comparison to other measures of

depressed mood. For example, the DACL Forms E and F correlate .79 and .89 respectively to the Depression scale of the Multiple Affect Adjective Check List (MAACL). Also the DACL appears to aptly discriminate between state and stable forms of depression as evidenced by its relatively modest level of discriminate validity (Lubin, 1981). Another measure used is a variation of the Multiscore Depression Inventory (MDI). The MDI is a 118 item, self-report questionnaire that measures stable depression and depressive features. It is composed of 10 relevant subscales that offer a differential view on the components of depression for the individual being tested. The subscales of interest in this study are the Pessimism and Sad Mood subscales. Both consist of 12 items that are distributed throughout the measure. The test in its entirety requires 20 to 25 minutes to execute, and is based on a true-false response format (Berndt, 1984). For the sake of brevity the test for this project will be shortened to include only those items from the two subscales of interest along with 16 other test items randomly selected from the other subscales. This assessment as altered by this investigator is presented in Appendix C. In this form, the test will take approximately 8 to 10 minutes to complete.

The MDI is included in this project to assess for the presence of stable depression or any changes in stable

depression that may develop by posttesting. The existence of stable depression may confound the results indicating the creation of a depressed mood by the film segment when actually it is attributable to some extraneous factor. Thus, the MDI is being used to more accurately gauge the impact of the film segment on depressed mood, and attempts to control for the confounding of more stable forms of depression upon depressed mood.

Reliability figures for the MDI are quite high, and lend much support to its usefulness. Overall, the test shows internal consistency values ranging from .96 to .97. The coefficient values for the Pessimism and Sad Mood subscales are approximately .83 and .87, respectively. Assessments of test-retest reliability show that the MDI is measuring relatively stable forms of depression. Coefficients of consistency for the full scale measure, and the Pessimism and Sad Mood subscales over a three week period are .82, .86 and .76, respectively (Berndt, 1984).

Studies on the concurrent validity of the Full Scale MDI find that it correlates .77 with the DACL and .69 with the Beck Depression Inventory (BDI). The measure also appears to have a great deal of face validity as was intended by the test developer. Lastly, studies employing cluster analysis of the data find that there is support for the construct validity of the subscales (Berndt, 1984).

The State-Trait Anxiety Inventory-State Form (STAI Y-1) was used to measure state anxiety. This test is composed of 20 statements that evaluate how an individual feels at any given moment. It measures apprehension, tension, nervousness and worry, and is a sensitive indicator of transitory anxiety. It requires approximately 6 minutes to administer (Spielberger, Gorusch, Lushene, Vagg, & Jacobs, 1983).

Measures of internal consistency for items on the STAI Y-1 are high at .93. Yet, test-retest reliability is relatively low with values ranging from .34 to .62 at 30 day intervals, and .36 to .51 at 60 day intervals. Considering the purpose of the test as a state indicator of anxiety, values of test-retest reliability are not expected to be elevated. Consequently, with low values of test-retest reliability, the test does not appear to be measuring enduring aspects of anxiety. The test also shows very good construct validity as well as evidence of convergent and divergent validity (Spielberger, et al., 1983).

Another measure included in this project was a survey questionnaire assessing various forms of perceived political efficacy related to nuclear issues. There are a total of six items that assess perceptions of political efficacy. Item 1 assesses the perceived degree of influence an individual experiences in influencing the

nuclear policy. Item 2 assesses how much activity an individual is currently involved with in attempting to reduce the nuclear threat. Item 3 is a combination of the first and second items, and is considered a global measure of current political efficacy around nuclear issues. Item 4 assesses an individual's perceived future involvement in lessening the nuclear threat. Item 5 assesses an individual's perceived future influence on the nuclear policy of the U.S. The final item, Item 6, is a combination of the fourth and fifth items, and is considered a global measure of future political efficacy in regards to nuclear issues. The assessment of various forms of political efficacy is presented in Appendix D.

A questionnaire assessing a subject's degree of disturbance and concern over the issues present in the film segment viewed was also included in this study. This measure is presented in Appendix E.

One final measure included in this packet of questionnaires is a demographic cover sheet which is presented in Appendix F. The demographic sheet contains questions on age, race, sex, religious and political affiliations, and socio-economic status.

Procedure

Subjects were tested at two points in time with a three week interval between pre- and posttesting. For both times of testing, subjects were able to select a test

LEWIS TOWNE

date from among ten different test times over a week's duration. The several test times were given in order to accommodate students' varied schedules, and to control for the possible confounding effects of using a single test time for all subjects.

The variable manipulated in this experiment was the presentation or nonpresentation of a 15 minute film segment depicting a nuclear bombing of Sheffield, England. The film segment shown to the control group was a 12 minute film segment depicting the occurrence of an unexpected pregnancy for an unwed teenage couple living in Sheffield.

The two film segments may both be considered provocative and potentially upsetting. Yet, the compilation of the unexpected pregnancy film segment was composed by the researcher so that its contents are much less potentially disturbing than is the nuclear holocaust film segment. In the film compilation of the unexpected pregnancy, the teenage couple progresses from discovering the "problem," deciding to marry, informing their parents, meeting each other's families, to locating a place to live. The couple never actually marries because the nuclear war begins while the couple is still engaged. However, the control group only viewed the unwed couple up to the time when they are refurbishing their new home before the nuclear war begins. The contents of this film

segment may be considered relatively neutral and much less graphically disturbing than the nuclear film segment.

Two questions were presented to subjects in both conditions immediately following the viewing of the film segment. The first question asked subjects to rate on a 7-point Likert-type scale how disturbing the film segment was to them. The second question, which is based on a similar Likert-type scale asked subjects to indicate how much of a concern to them is the topic of this film segment. Both items were included in this project to assess whether or not the nuclear film segment was actually experienced as more disturbing than the film segment of the control group.

The two film compilations were taken from the same British docudrama, Threads, in order that the influences of using two different films of varying quality, acting, and/or production and such would not influence the manner in which participants responded to dependent variable measures.

Subjects were randomly assigned to either the experimental or control group, and measures on the dependent variables were taken on both experimental and control groups in order to detect any treatment effects that may have occurred between groups over time. In assessing depressed mood, two comparable forms of the same measure were used in order to lessen the effects of

subject response recall at posttesting. Also, in order to control for the possible effects of subject reactivity to the nuclear toned questionnaires, measures of the dependent variables other than nuclear beliefs and orientations were placed first in the battery of questions, whereas surveys and assessments of nuclear related topics followed the other measures.

At pretesting subjects were told that they were participating in a study assessing social concerns. Subjects were then asked to complete the packet of questionnaires that included a demographic cover sheet, a variation of the MDI, DACL, STAI Y-1, parts of the NOQ and the NWQ, and a survey questionnaire. The former four measures preceded the latter three measures in each subject's packet, but the order of presentation for the first three measures (excluding the demographic sheet) were counterbalanced across subjects to avoid ordering effects. The last three measures always followed the other measures in the order depicted above. Hence, any given test packet appeared in either one of the three following forms:

1. Demographics, DACL, MDI, STAI Y-1--NOQ, NWQ,
Survey on Political Efficacy
2. Demographics, MDI, STAI Y-1, DACL--NOQ, NWQ,
Survey on Political Efficacy
3. Demographics, STAI Y-1, DACL, MDI--NOQ, NWQ,

Survey on Political Efficacy

Total pretesting time was approximately 40 minutes for subjects in each condition. Upon completing the whole packet of questionnaires and before leaving the testing area, subjects were requested to select a time from among a list of times when they could return to complete the second part of the experiment. These time slots were similar to the time slots offered at pretesting, but were placed three weeks following it.

At posttesting subjects in the control group were told that they were about to view a film that might prove to be disturbing to some individuals. The presentation of the film segment lasted approximately 12 minutes. After viewing the film segment, subjects were requested to complete the same packet of questionnaires that was presented at pretesting with the exclusion of the demographic sheet and the inclusion of a different form of the DACL. The posttesting packet of questionnaires also included two questions assessing the degree of disturbance and concern that subjects experienced after viewing the film segment.

In the experimental condition subjects were also told that they were about to view a film segment that might prove to be disturbing to some individuals. The presentation of the film segment lasted approximately 15 minutes. After viewing the film segment, subjects were

requested to complete the packet of questionnaires similar to those given at pretesting excluding the demographic sheet and including a different form of the DACL, and the two film-related questions. Total posttest time for both groups was approximately 50 minutes.

Following posttesting for both experimental and control groups, subjects received a brief, written statement explaining the purpose of the study in which they had participated. Also, anyone having questions or comments was invited to discuss them with the investigator.

CHAPTER IV

RESULTS

The design of this study is a 2 X 2 X 2 factorial design with repeated measures on the third factor. For each ANOVA with repeated measures conducted, gender and condition were the grouping factors in which the levels of condition were either experimental or control. The experimental manipulation determining the testing condition was the presentation or nonpresentation of a film segment depicting a nuclear war. The third factor, which is the repeated factor, was applied to the following six dependent variables: depressed mood, state anxiety, trait sad mood, trait pessimism, various forms of political efficacy and general nuclear concern. The ANOVA with repeated measures analyses were used to test for significant differences among the dependent variables as a function of gender and test condition over time (i.e., pretest-posttest). Descriptive statistics related to the aforementioned dependent measures analyzed via the ANOVA with repeated measures design are supplied in Table 1.

Analyses of depressed mood scores indicated the presence of a significant interaction between test condition and time of testing, $F(1,58) = 8.84, p < .005$. Upon probing this interaction it appears that the

TABLE 1

Mean, Standard Deviation, *F*, and *p* Values for Measures of Primary Dependent Variables

VARIABLE	CONDITION				<i>F</i>	<i>p</i>
	<u>Experimental</u>		<u>Control</u>			
	Pre	Post	Pre	Post		
Depressed Mood (DACL)	7.94 4.90	15.22 7.17	10.53 6.75	9.60 4.68	8.84	0.00
State Anxiety (STAI Y-1)	35.50 9.84	48.34 12.64	40.87 10.92	37.93 10.86	16.58	0.00
Stable Sadness (MDI)	2.03 3.00	2.22 2.89	2.10 2.41	1.97 2.04	0.24	0.62
Stable Pessimism (MDI)	3.56 2.71	4.16 3.43	4.33 3.13	3.67 2.81	1.98	0.16
General Nuclear Concern (NWQ)	13.03 3.54	13.31 3.21	11.13 3.83	10.85 3.94	0.84	0.36
Political Efficacy (Item 1)	3.16 1.80	3.22 1.43	2.33 1.42	2.57 1.46	0.39	0.53
Political Efficacy (Item 2)	1.03 0.18	1.13 0.34	1.03 0.18	1.00 0.00	3.80	0.03
Political Efficacy (Item 3)	1.28 0.46	1.25 0.44	1.07 0.25	1.17 0.38	1.14	0.29
Political Efficacy (Item 4)	1.38 0.49	1.53 0.51	1.27 0.45	1.20 0.41	4.70	0.02
Political Efficacy (Item 5)	5.28 1.55	5.59 1.52	4.60 1.98	4.30 1.71	3.29	0.04
Political Efficacy (Item 6)	1.72 0.46	1.84 0.37	1.53 0.51	1.47 0.51	3.06	0.04

Note. Experimental and control *N* are 32 and 30, respectively. Mean values are highlighted. Standard deviation values are in standard type. *F* values presented in the table represent condition by repeated measures analyses.

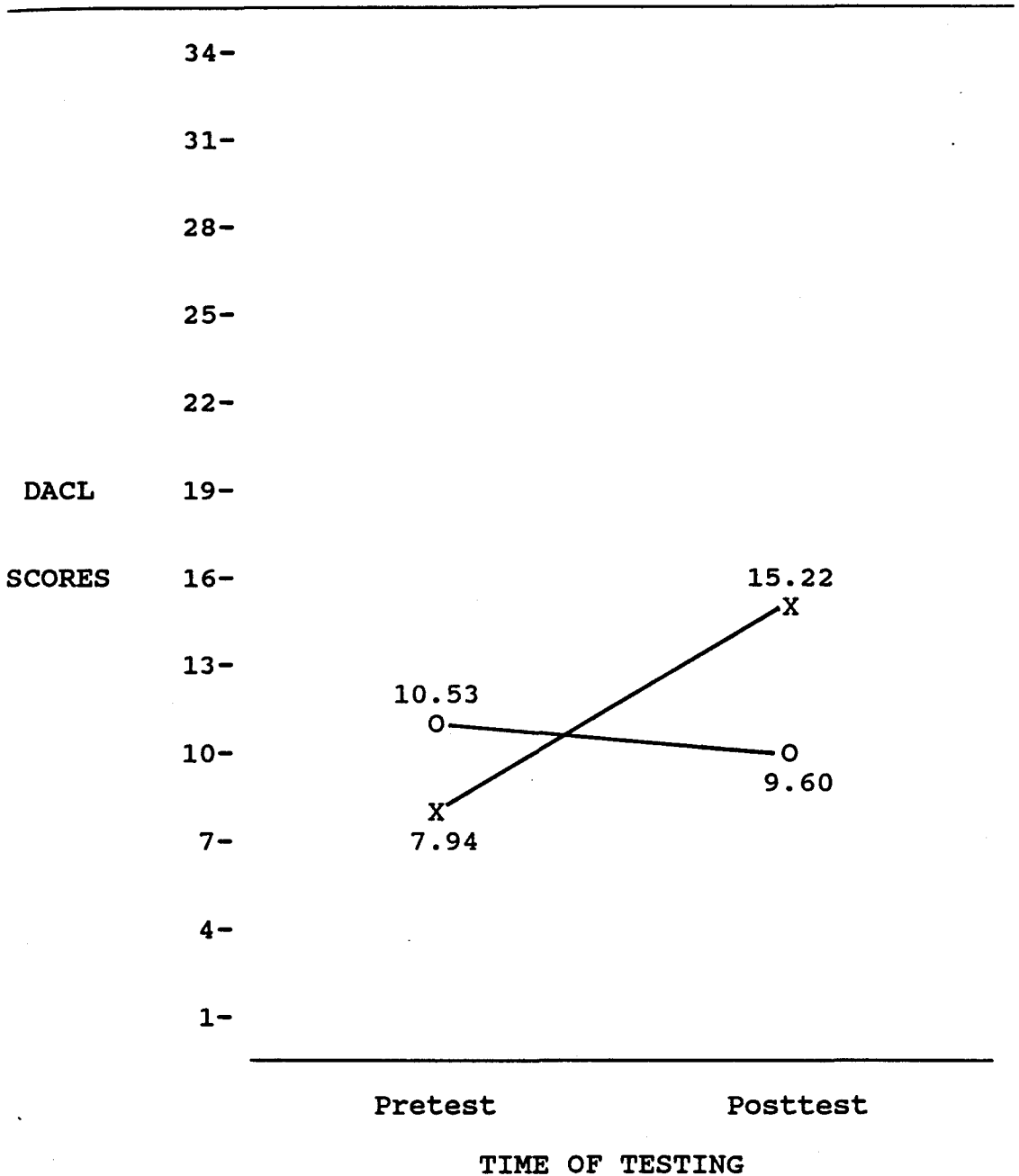
experimental group, overall, scored significantly higher on the DACL at posttesting as compared to their pretest scores, $t(32) = 4.65, p < .05$. (A higher DACL score indicates a higher degree of depressed mood.) However, the control group scores did not significantly alter between test times. This interaction is graphically presented in Figure 1.

Using t -tests to further assess group differences at both test times, it appears that at pretesting experimental subjects exhibited a trend towards scoring lower on the DACL than did control subjects, $t(60) = -1.74, p < .10$. Yet, at posttesting experimental subjects scored significantly higher on the DACL than did control subjects, $t(60) = 2.39, p < .05$.

In summarizing the analyses of depressed mood, experimental subjects displayed a significant increase in depressed mood at posttesting relative to their mood level at pretesting. However, control subjects did not indicate a significant change in depressed mood between pre- and posttest. Also, at pretesting experimental subjects overall tended to show a lesser degree of depressed mood than did control subjects. Yet, upon posttesting it was found that experimental subjects had a significantly higher degree of depressed mood than did control subjects. These results support the current hypothesis that experimental subjects would experience an increase in

FIGURE 1

Pretest and Posttest Mean DACL Scores



Note. "X" denotes mean values for experimental group and "O" denotes mean values for control group. This method of denotation applies to the remaining figures. An elevated DACL score indicates a higher level of depressed mood.

depressed mood at posttesting as compared to their pretest scores as well as to the control group's posttest scores.

However, contrary to the prestated hypothesis, females in the experimental condition did not score more extremely on the DACL as compared to males in the experimental condition. Hence, there was no significant two-way interaction for depressed mood across time as a function of gender and condition. In fact, there were no significant two-way interactions with gender and condition as grouping factors for any of the remaining analyses. Consequently, no gender differences or influences were detected in any of the ANOVAs performed, and no hypotheses anticipating gender differences were validated by the data analyses.

Like the findings for depressed mood, a similar pattern of results emerged for measures of state anxiety across time and condition. Analyses of state anxiety indicated the presence of a significant interaction involving test condition and time of testing, $F(1,58) = 16.58, p < .001$. Subsequent probings indicated that at posttesting experimental subjects scored significantly higher on the STAI Y-1 relative to their pretest scores, $t(32) = 5.30, p < .05$. However, control subjects did not experience a significant alteration in scores from pre- to posttest. This interaction is graphically presented in

Figure 2.

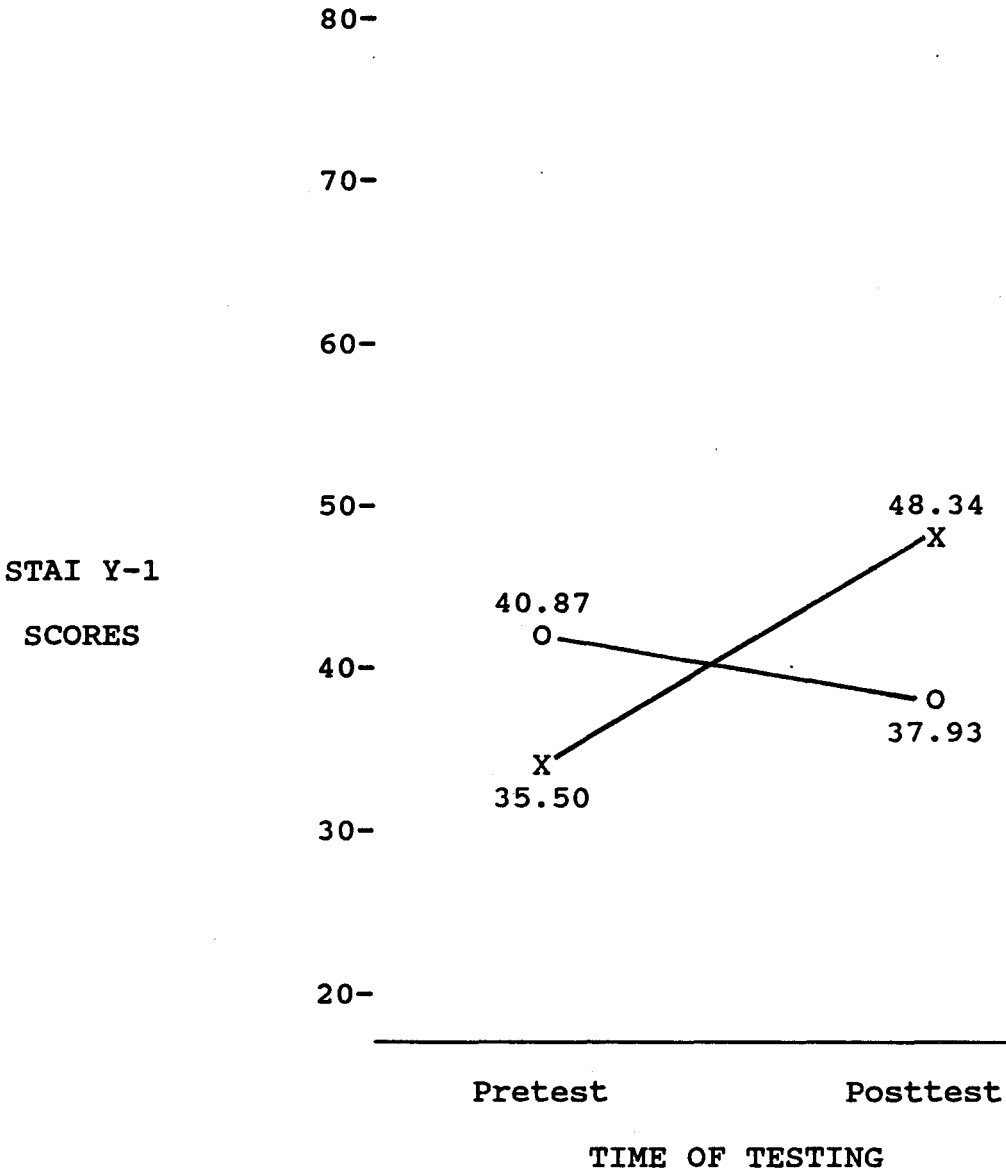
The t-test comparisons of group means at each time of testing show that at pretesting experimental subjects scored significantly lower on the STAI Y-1 than did control subjects, $t(60) = -2.03, p < .05$. However, by posttesting the direction of scores had reversed such that experimental subjects scored significantly higher than did control subjects, $t(60) = 3.47, p < .001$.

Hence, at pretesting experimental subjects were less anxious than subjects in the control condition. Yet, at posttesting this effect had reversed such that experimental subjects appeared more anxious than control subjects. Furthermore, at posttesting experimental subjects appeared more concerned and worried than they did at pretesting, whereas no change in anxiety was detected for control subjects across test times. These findings are consistent with the hypothesis that experimental subjects would present as more generally anxious than control subjects after viewing the nuclear film segment.

A number of ANOVAs were employed to assess various aspects of political efficacy across time, condition and gender. In total, six separate analyses were performed on perceived current influence (Item 1), current participation in nuclear threat reducing activity (Item 2), general perception of current political efficacy (Item 3), desired future influence (Item 4), perceived future

FIGURE 2

Pretest and Posttest Mean STAI Y-1 Scores



Note. An elevated STAI Y-1 score indicates a greater degree of state anxiety.

nuclear threat reducing activity (Item 5), and general perception of future political efficacy (Item 6). Of these six analyses, four resulted in significant interactions, while the remaining two resulted in significant main effects.

No significant interactions across condition, time of testing and gender were present for perceived current influence upon the U.S. nuclear weapons policy or for general feelings of current political efficacy. However, significant main effects related to condition collapsed across time of testing and gender were found for both of these items. Item 1 measures perceptions of current, personal influence on the U.S. nuclear weapons policy. That is, this item addresses how much impact an individual perceives him/herself as currently having upon the nuclear weapons policy of the U.S. Item 3 is a more general assessment of current feelings of political efficacy in regards to nuclear issues. It combines the contents of Items 1 and 2, and offers a more global perspective on perceptions of current political efficacy and behaviors adopted in regards to affecting the nuclear weapons policy.

Experimental subjects scored significantly higher on Item 1 across time of testing and gender as compared to control subjects, $F(1,58) = 4.75, p < .05$. This indicates that overall, experimental subjects as compared to control

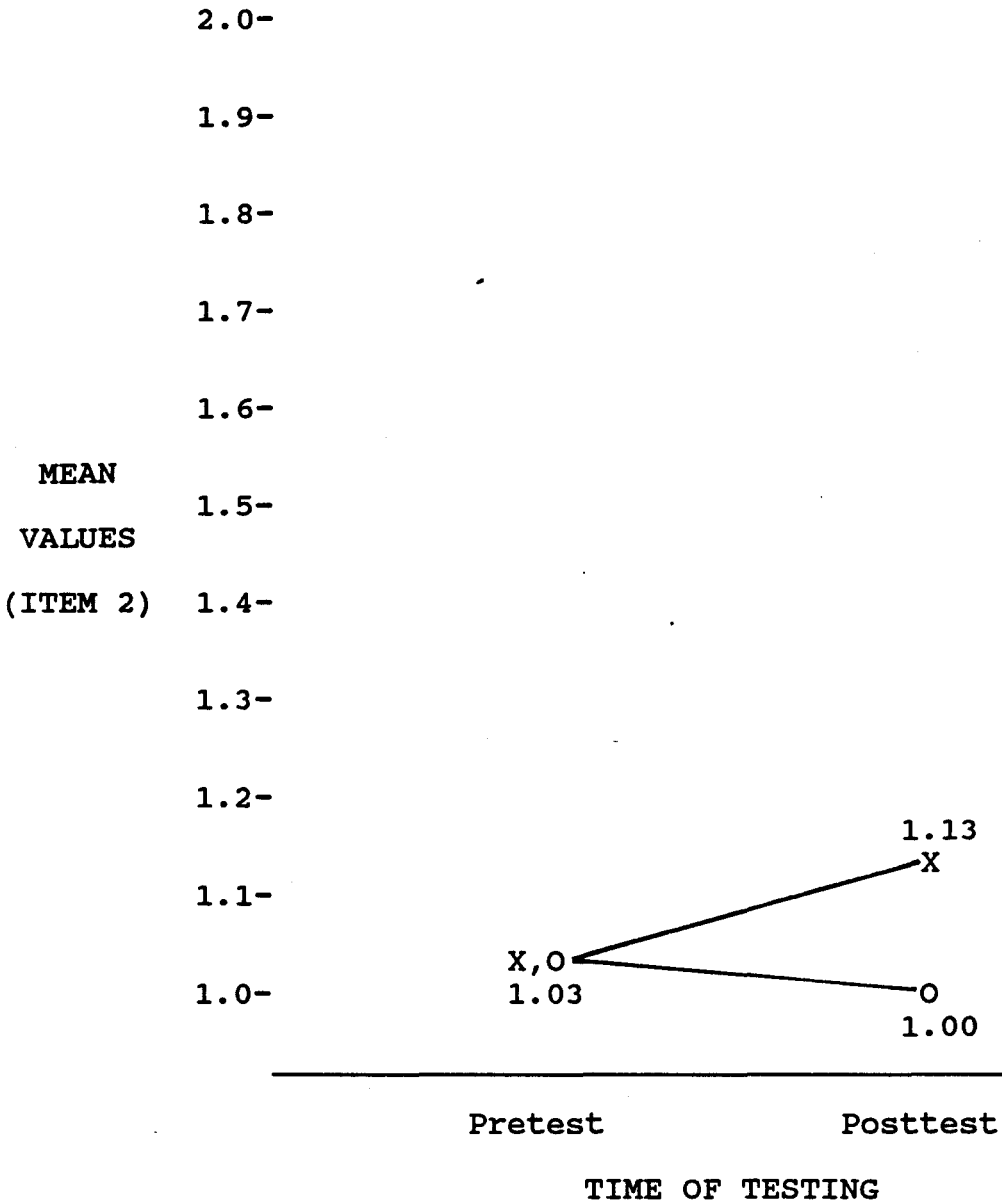
subjects felt more potentially influential in shaping the U.S. nuclear weapons policy regardless of time of testing and gender.

Experimental subjects also scored significantly higher on Item 3 across gender and time of testing as compared to control subjects, $F(1,58) = 3.95, p < .05$. This suggests that experimental subjects, in a more general manner, perceived themselves as more politically efficacious than did control subjects. Mean and standard deviation values on Items 1 and 3 are presented in Table 1.

Although not achieving any significant interactions related to Items 1 or 3, there did occur a significant interaction on Item 2 which assesses the amount of activity an individual is currently involved in towards lessening the nuclear threat, $F(1,58) = 3.80, p < .05$. A graphical depiction of this interaction is presented in Figure 3. Probing these findings indicated that experimental subjects at posttesting scored significantly higher on Item 2 relative to their pretest scores, $t(32) = 1.79, p < .05$. Control subjects did not exhibit a significant alteration of scores on Item 2 across time. Subsequent analyses of group mean values at each test time indicate that both groups of subjects at pretesting scored within a comparable range of each other on Item 2. Yet, at posttesting experimental subjects scored significantly

FIGURE 3

Pretest and Posttest Mean Scores for Current Level of
Participation in Nuclear Threat Reducing Activities



Note. These values represent mean score values for Item 2 on the measure for perceptions of political efficacy. A score of 1 on Item 2 indicates no participation in activities directed towards reducing the nuclear threat; a score of 2 indicates some involvement.

higher than control subjects, $t(60) = 2.04, p < .05$.

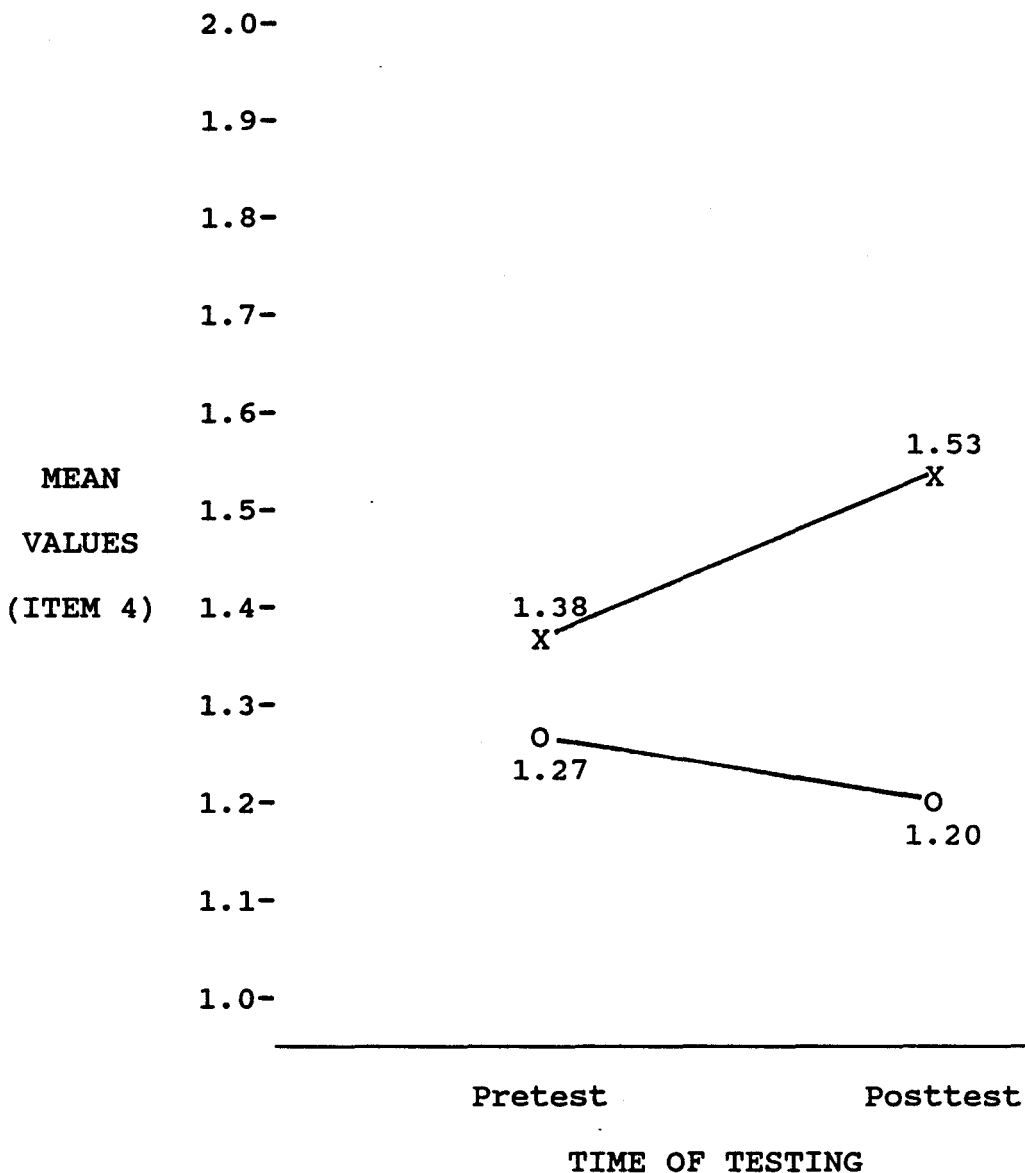
Together, these analyses suggest that at pretesting both groups' overall feelings of current involvement in lessening the nuclear threat were comparable. However, at posttesting experimental subjects indicated that they felt more involved in such activities than did control subjects. Furthermore, experimental subjects experienced an increase over time in feeling involved in current nuclear threat reducing activities, whereas control subjects did not.

In regard to perceptions of future political efficacy all three measures were shown to involve significant interactions involving testing condition and time of testing. Figures 4, 5 and 6 graphically depict these various interactions.

Item 4, which assesses the desire for future activity towards lessening the nuclear threat was found to significantly change over time as a function of condition, $F(1,58) = 4.70, p < .05$. Subsequent probings show that while scores for control subjects on Item 4 did not alter across time, scores for experimental subjects were significantly greater at posttesting as compared to pretesting, $t(32) = 1.97, p < .05$. Furthermore, both groups scored within nonsignificant range of each other on Item 4 at pretesting, while experimental subjects scored significantly higher than control subjects at posttesting,

FIGURE 4

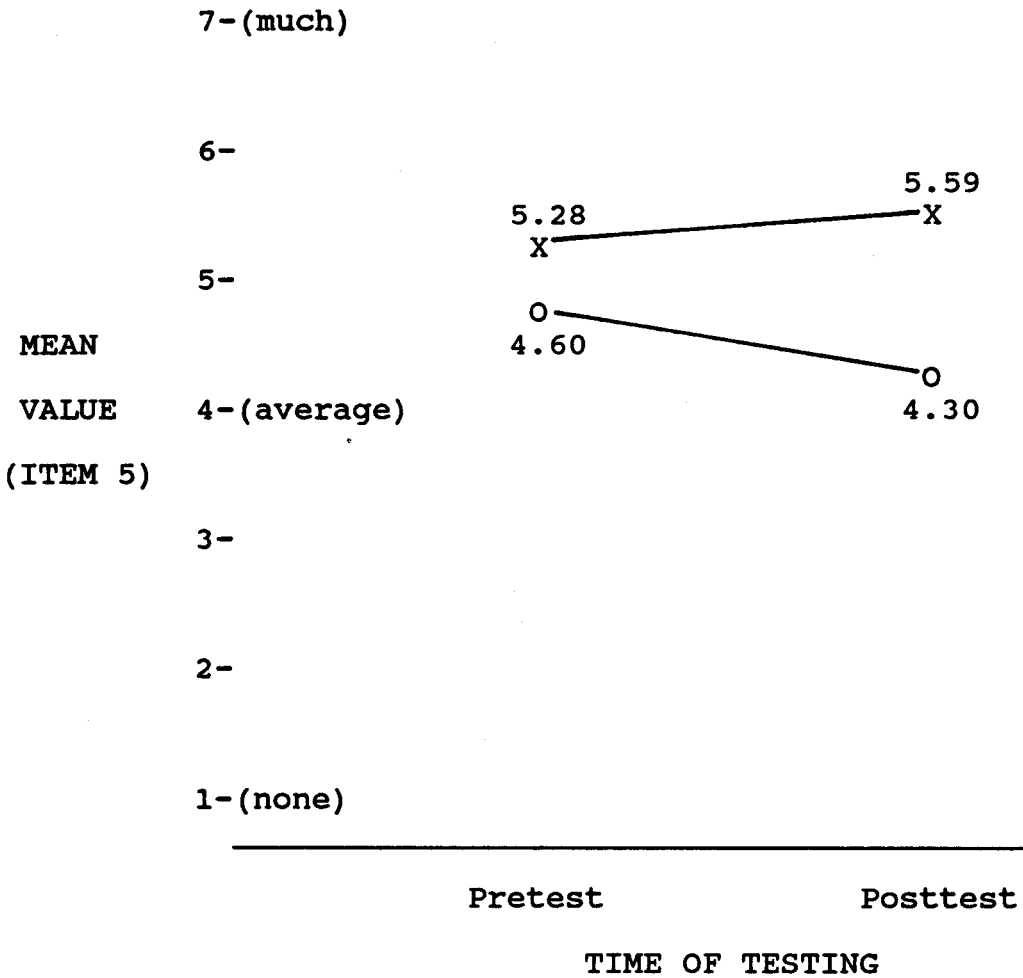
Pretest and Posttest Mean Scores for Perceived Future Participation in Nuclear Threat Reducing Activities



Note. These are mean response values for Item 4 on the measure for perceptions of political efficacy. A score of 1 on Item 4 indicates no estimated future participation in activities directed towards reducing the nuclear threat; a score of 2 indicates some expected future activity.

FIGURE 5

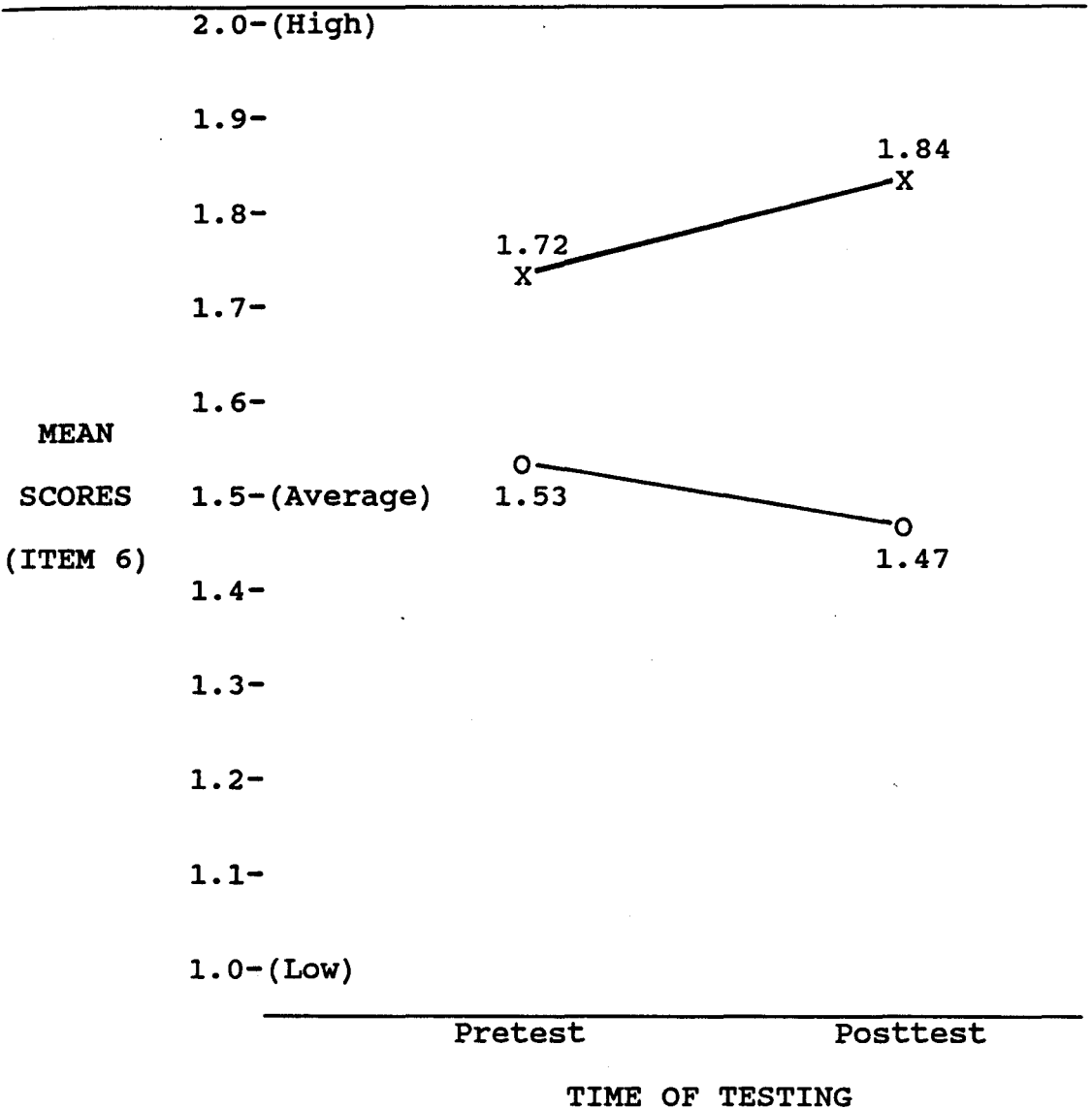
Pretest and Posttest Mean Scores for Desired Future
Influence on the U.S. Nuclear Weapons Policy



Note. These are mean score values for Item 5 on the measure for perceptions of political efficacy.

FIGURE 6

Pretest and Posttest Mean Scores for General Perception
of Future Political Efficacy in Regards to Nuclear
Weapons Issues



Note. These are mean response values for Item 6 on the measure for perceptions of political efficacy.

$t(60) = 2.83, p < .005.$

In total, subjects in both the experimental and control conditions indicated relatively equal degrees of perceived future involvement in reducing the nuclear threat at pretesting. However, at posttesting, experimental subjects displayed a higher degree of such involvement than did control subjects. Furthermore, at posttesting experimental subjects had experienced an increase in such perceptions as compared to their pretest evaluations, while control subjects did not experience alterations in perceptions of future involvement as a function of test time.

A similar pattern of results emerged for Item 5 which assesses the desired level of future influence that an individual would like to have on the U.S. nuclear weapons policy. A significant interaction involving condition and time of testing occurred for Item 5, $F(1,58) = 3.29, p < .05.$ Probing indicated that while control scores on Item 5 did not alter across time, experimental subjects overall scored higher at posttesting than at pretesting, $t(32) = 2.33, p < .05.$ Further analyses showed that at pretesting both groups scored similarly on Item 5. However, at posttesting experimental subjects scored significantly higher than control subjects, $t(60) = 2.83, p < .005.$

Hence, at pretesting subjects in both conditions

indicated similar levels of desired future influence on the nuclear weapons policy. Yet, at posttesting experimental subjects displayed a higher degree of desired future influence as compared to control subjects. Also, control subjects did not experience a change in the desire of future influence across time, whereas experimental subjects displayed an increase in this area at posttesting.

A significant interaction involving time of testing and condition for Item 6 also emerged, $F(1,58) = 3.06$, $p < .05$. Item 6 is a general index for perceptions of future personal political efficacy in regards to nuclear weapons issues. Probing analyses indicated that experimental subjects experienced an increase in Item 6 scores from pre- to posttest, $t(32) = 1.69$, $p < .05$, whereas control subjects did not evince any significant changes. Further analyses showed that both groups scored comparably on Item 6 at pretesting. However, at posttesting experimental subjects scored significantly higher than control subjects, $t(60) = 3.36$, $p < .001$.

In summary, at pretesting, subjects in both conditions displayed relatively equal feelings of future political efficacy as measured by Item 6. However, at posttesting subjects in the experimental condition indicated a higher degree of future political efficacy as compared to control subjects' posttest scores.

Furthermore, at posttesting experimental subjects showed an increase in feelings of future political efficacy relative to their earlier pretest assessments, whereas control subjects did not show any noticeable changes across time. These findings are contrary to the prestated hypotheses stating that feelings of political efficacy in all areas would be significantly lower for the experimental subjects at posttesting as compared to their pretest scores and the posttest scores of control subjects.

No significant interactions were detected for measures of general nuclear concern as measured by the NWQ. However, a significant main effect for test condition was present, $F(1,58) = 4.46, p < .05$. Mean values and standard deviation values for general nuclear concern are presented in Table 1. It appears that the experimental group scored significantly higher in the area of general nuclear concern at pretesting and posttesting as compared to control subjects' scores. However, no significant changes were detected for experimental and control group scores on general nuclear concern across time.

Finally, no significant main effects or interactions were detected for measures of sadness and pessimism. That is, scores on sadness and pessimism remained relatively consistent regardless of condition, gender and test time.

The corresponding statistics for these variables are also presented in Table 1.

Further 2 X 2 X 2 ANOVAs with repeated measures were conducted on subjects' ratings of various nuclear orientations over time as a function of group and gender. These analyses are extraneous to any of the aforementioned hypotheses, and are presented solely for exploratory purposes to further the understanding of the NOQ. No significant interactions or main effects were detected for any nuclear orientation ratings across time. In effect, subjects in both groups scored similarly on these scales across time regardless of gender and condition. Mean values and associated standard deviation values for these analyses are presented in Table 2.

Additional analyses indicate that experimental subjects experienced significantly more disturbance than control subjects as a result of viewing the film segment, $t(60) = 7.43, p < .001$. At posttesting both groups of subjects were asked to indicate how disturbing the film segment was for them. The results indicate that at posttesting experimental subjects displayed a greater degree of disturbance attributable to the film segment than did control subjects. These results support the hypothesis that experimental subjects would rate viewing their respective film segment as more disturbing than would control subjects. These findings are presented in

TABLE 2

Mean, Standard Deviation, F , and p Values for
Ratings of Various Nuclear Orientations

ORIENTATION	CONDITION				F	p
	<u>Experimental</u>		<u>Control</u>			
	Pre	Post	Pre	Post		
Romanticist	2.87	3.10	3.03	3.17	0.42	0.52
	1.36	1.24	1.27	1.18		
Hedonist	2.81	3.10	2.83	3.13	0.01	0.93
	1.40	1.37	1.15	1.36		
Stoic	2.09	2.20	2.00	2.20	0.06	0.81
	1.23	1.13	1.17	1.03		
Deterrentist	2.31	2.33	2.50	2.50	0.77	0.38
	1.33	1.21	1.28	1.33		
Altruist	3.66	3.83	3.33	3.93	1.36	0.25
	1.00	1.37	1.47	1.39		
Disarmist	3.88	3.67	4.00	3.87	0.02	0.89
	1.36	1.09	1.05	1.01		
Theist	3.00	2.47	2.83	2.63	0.17	0.68
	1.50	1.57	1.44	1.43		
Eliminationist	1.50	1.33	1.47	1.47	0.00	0.96
	1.02	0.76	0.97	0.78		
Survivalist	1.81	2.13	1.73	2.13	0.18	0.68
	1.03	0.90	1.05	1.01		

Note. Experimental and control N are 32 and 30, respectively. Mean values are highlighted. Standard deviation values are in standard type. F values presented in table represent condition by repeated measures analyses.

Table 3.

Also, subjects in the experimental condition showed a significantly higher degree of concern for the issues present in the experimental film segment than did control subjects for the issues present in the control film segment, $t(60) = 5.70, p < .001$. Once again, subjects in both groups were presented with a question addressing the degree of concern connected with the issues present in the film. Experimental subjects indicated a greater degree of concern for nuclear related issues than did control subjects for issues associated with unwed teenage pregnancy. This finding supports the hypothesis that experimental subjects would deem the issues presented in their respective film segment as more concern worthy than would control subjects. Accompanying descriptive statistics are also presented in Table 3.

Another set of analyses using the Pearson product moment correlation were used to elaborate upon and further delineate the differences present on dependent measures for experimental subjects only. A correlation matrix involving 13 variables was devised in order to detect any significant correlations existing among the change scores of nine dependent variables, two posttest measures, and two demographic variables of interest. The nine change scores included in the matrix are changes in depressed mood, state anxiety, general nuclear concern and all items

TABLE 3

Mean, Standard Deviation, t , and p Values for
Ratings of Disturbance and Concern Related to Film
Segment Viewed

RATINGS	CONDITION		t	p
	<u>Experimental</u>	<u>Control</u>		
Disturbance	6.34	3.40	7.52	0.00
	1.23	1.81		

Concern	5.78	3.70	5.70	0.00
	1.39	1.49		

Note. Experimental and control N are 32 and 30, respectively. Mean values are highlighted. Standard deviation values are in standard type.

assessing political efficacy. The two posttest measures included are items from the survey questionnaire which assess degree of disturbance and concern that respective film segments elicited. The two demographic variables are age and socio-economic status. The correlation matrix for these variables including correlation coefficient values and associated levels of significance are presented in Table 4.

The Bonferroni correction technique was implemented in correcting for the probability of rejecting the null hypothesis. The calculated probability following this strategy is .004. This stringent criterion for establishing significance was imposed upon each resultant correlation in the matrix. Only three correlations were found to be significant under this criterion for rejecting the null hypothesis. First, a significant direct correlation was detected between DACL scores and STAI Y-1 scores for experimental subjects over time. This correlation indicates that elevations in depressed mood (or increases in DACL scores) were accompanied by elevations in anxiety (or increases in STAI Y-1 scores), $r = -.64$, $p < .001$. Hence, increases in depressed mood were correlated with increases in feelings of anxiety for subjects in the experimental group over time.

Additionally, using the same Bonferroni correction criterion, changes in Item 2 scores assessing current

TABLE 4

Correlation Matrix for Change Scores within
Experimental Condition

	Mood	-					
	Anxiety	.64*	-				
	GNC	-.37	.34	-			
P	1	-.24	.10	.06	-		
o	2	-.19	.16	.30	.03	-	
i	3	.02	-.08	.11	.25	.17	-
t	4	-.08	.14	.24	-.02	.54*	.27
f	5	-.02	.05	-.12	-.12	-.30	-.08
i	6	-.20	.01	-.19	.03	.10	-.09
f							
c							
i							
a							
c							
l							
a							
c							
y							
	Disturbance	-.28	.26	-.02	.48	.02	.40
	Concern	-.34	.36	.19	.12	-.02	.44
	Age	-.12	.14	-.04	-.03	.15	-.39
	SES	.32	-.16	-.11	-.16	.09	-.17
		M	A	G	1	2	3
		o	n	N			
		o	x	C	Political		
		d	i			Efficacy	
			e				
			t				
			y				

Note. $N = 32$. * significant at .004 level.

TABLE 4 (Cont.)

Correlation Matrix for Change Scores within
Experimental Condition

P							
o	E	4	-				
l	f		-----				
i	f	5	-.07	-			
t	i		-----	-----			
c	c	6	.13	-.39	-		
			-----	-----	-----		
Disturbance			.16	.19	-.06	-	
			-----	-----	-----	-----	
Concern			.06	-.02	.04	.50*	-
			-----	-----	-----	-----	-----
Age			.05	-.21	.32	.11	.08
			-----	-----	-----	-----	-----
SES			-.08	-.13	-.06	-.25	-.16
			-----	-----	-----	-----	-----
			4	5	6	D	C
						i	o
						s	n
						t	c
						u	e
						r	r
						b	n

Note. $N = 32$. * significant at .004 level.

involvement in lessening the nuclear threat were positively correlated with Item 4 scores which reflect futuristic plans of becoming involved with activities directed towards reducing the nuclear threat, $r = .54$, $p < .001$. That is, there occurred a positive correlation between increases in current feelings of nuclear threat reducing activities and increases in futuristic plans of involvement for subjects in the experimental group over time.

Finally, elevations in the degree of disturbance related to viewing the nuclear film segment were positively correlated with the degree of concern related to the issues presented in this film, $r = .50$, $p < .001$. That is, those individuals who were most disturbed by the contents presented in the nuclear film segment also were most concerned about these related issues.

CHAPTER V

DISCUSSION

The purpose of this research project was to assess the psychological impact upon young adults of viewing a concrete, visually graphic and horrific portrayal of nuclear destruction. Ultimately, the intent of this research was to assess the instructional or activity motivating value of a frequently encountered form of nuclear educational material; videos and films. These goals were attempted by exposing one group of subjects to a realistically based film segment of nuclear destruction, and measuring individuals' consequent emotional and attitudinal responses. Another group of subjects viewed a film segment pertaining to unwed teenage pregnancy. The latter group was considered the control group, and was used as a comparison for the experimental group. Comparisons were then made on subjects' emotional reactions and attitudinal changes as a function of time of testing, gender and condition.

It is apparent that the experimental group viewed a film segment that was three minutes longer in duration than the film segment shown to subjects in the control group, and that this may be considered a potential methodological confound. However, when considering the

objective of this project, the timing of the film segment appears to be of secondary importance to the contents. The purpose of the experimental film segment was to provide a graphically horrific but realistically based presentation of nuclear war which was intended to elicit an emotional response. This film segment is 15 minutes in length in order to maximize the intensity of its contents while maintaining a comprehensible yet short storyline. The control group film segment is only 12 minutes in length because of the relative sparseness of film clippings in the movie related to the pre-nuclear war storyline. Consequently, it is not the duration of the film segment that was of primary importance, but the emotional responses and attitudinal changes that resulted from viewing each film segment.

The nature of both film segments is such that either may be considered potentially upsetting or disturbing to young adults. However, in accordance with the hypotheses and the intentions of the investigator, the nuclear film segment was deemed much more distressful and disturbing by experimental subjects than was the teenage pregnancy film segment by control subjects. In fact, the mean score value for rate of disturbance relative to the nuclear film segment for subjects in the experimental group was at near ceiling level. This indicates that on the average experimental subjects found the contents of their

respective film segment very upsetting. However, control subjects indicated only an average degree of disturbance related to their respective film segment.

Experimental subjects also indicated a greater degree of concern for the issues present in the nuclear film segment as compared to the amount of concern elicited by the pregnancy film segment for control subjects. Once again, on the average experimental subjects scored at near ceiling level, whereas control subjects tended to experience an average degree of concern.

Overall, when taking into account the subjects' ratings of their respective film segments, it is apparent that experimental subjects experienced a greater degree of distress and worry related to the contents and issues present in the nuclear film than did control subjects who viewed the teenage pregnancy film segment. Hence, the experimental stimulus appeared to have greatly reduced the overall denial related to nuclear destruction, and increased subjects' awareness to the catastrophic nature of living in the nuclear age.

This effect of increased awareness and subsequent distressful arousal may be attributable to the visually graphic and disturbing nature of the experimental film segment. As Granberg and Faye (1972) posit, on the average people have difficulty conceptualizing nuclear catastrophe at a concrete and physical level. Generally,

conceptualizing the horrific reality of nuclear war occurs within the realm of abstract and depersonalized images and cognitions. However, depictions of nuclear destruction such as that presented in the film segment used in this current project make what is abstruse and nebulous more salient and personally relevant to viewers. As Granberg and Faye suggest, and as is indicated by the results of this current study, concrete images of nuclear destruction can catapult an individual from a state of indifference and passive acceptance to one of distress and concern. Thus, it appears clear that the experimental condition created the effects intended.

The degree of concreteness and graphicness in stimulus imagery may account for differences between the results of this investigation, as well as Granberg and Faye's study, and the findings of Schofield and Pavelchak (1985). Schofield and Pavelchak, using the docudrama The Day After as a nuclear related stimulus, failed to find a significant degree of impact upon affect. Yet, it may be that the contents of The Day After are not visually graphic and concrete enough to stimulate more personalized and proximate forms of thought that Granberg and Faye address. Hence, a comparison of distress eliciting qualities related to the degree of stimulus concreteness and graphicness may be necessary to consider when comparing the results of related studies.

Overall, in regards to the film segment presented to the experimental group, subjects described it as extremely disturbing as well as thought provoking and worthy of concern. The film's contents were apparently graphic and concrete enough to increase subjects' level of arousal and awareness related to nuclear issues.

Due to elevations of awareness and heightened reactions of disturbance and concern, a number of emotional and attitudinal changes resulted within the experimental group. For example, the degree and direction of depressed mood were significantly affected by viewing the nuclear film segment. Prior to viewing the film segments by either group, experimental subjects indicated that they tended to have a more elevated mood than subjects in the comparison group. However, after viewing the film, experimental subjects were clearly more depressed in mood than they had indicated at pretesting, and were more depressed in mood than subjects in the control group at posttesting. Apparently, the degree of disturbance aroused by viewing the nuclear film was partly translated into feelings of depressed mood.

Elevation of depressed mood is one of the most common findings present in research which assesses feelings, attitudes and concerns regarding nuclear war (e.g., Raundalen, & Johan Finnoy, 1986) or in research that exposes subjects to nuclear related imagery via

films, docudramas or photographs (e.g., Granberg, & Faye, 1972) and then measures affect and attitudes. The resultant depressed mood after being instructed to think about nuclear war or being subjected to images of nuclear war likely occurs as the reality of nuclear related catastrophe becomes more salient in the minds of individuals who normally conceive of nuclear war in abstract, distant and depersonalized ways. Such a disturbing and thought provoking film as Threads shatters the denial that Lifton addresses, and results in the painful awareness of how fragile and precarious human life is in the nuclear age.

Although elevations in depressed mood clearly occurred within the experimental group, there did not occur any alterations in measures of long-term depression. Stable depression was assessed by the Sad Mood and Pessimism subscales of the MDI. With relative parity in regards to stable depression between groups and over time, changes in depressed mood were not likely due to the influences of trait depression. Instead, fluctuations in depressed mood were more likely attributable to the experimental intervention.

Along with changes in depressed mood, there also occurred a noticeable increase in the level of anxiety for subjects in the experimental group. At pretesting there were clear indications that subjects in the experimental

group were significantly less anxious than their control counterparts. However, after viewing the film segment, experimental subjects became much more anxious and worried than they were before viewing the film, and were significantly more anxious than control group subjects at posttesting.

Fiske (1987) mentions that increases in anxiety are the most frequently mentioned finding in the related literature. As alluded to by Lifton (1967), after the denial of megadeath is overcome or overpowered, an individual encounters an awareness to the possibility of personal and global finitude. These thoughts and fears arouse a great degree of anxiety and related concomitant feelings such as helplessness, concern, and pain from potential loss. However unpleasant these feelings of anxiety may be, they are considered the precursors to pursuing nuclear threat reducing activities. The anxiety present within the awareness of potential nuclear catastrophe is the driving force that motivates people into activity directed towards reducing the likelihood of a nuclear war.

Consequently, anxiety and aspects of political efficacy are closely bound in that fears and worries related to nuclear war germinate nuclear threat reducing activities. Many researchers (e.g., Feshbach, 1986; Granberg, & Faye, 1972) within the area state that

inducing a healthy, mobilizing fear and awareness of nuclear war is a necessary component of public nuclear education.

Further analyses indicate that for subjects in the experimental group there occurred a significant correlation between increases in depressed mood and increases in anxiety. Those subjects who scored high on depressed mood also tended to score high on anxiety. That is, subjects who were greatly depressed by the film were also likely to experience a greater degree of anxiety than subjects who experienced a lower degree of depressed mood. However, the degree of disturbance elicited by the nuclear film segment was not significantly correlated to either changes in depressed mood or anxiety. Hence, no evidence exists that subjects who were more disturbed by the film were also more depressed and anxious. Yet, considering that subjects in the experimental group attained near ceiling level scores on the measure of the film's related disturbance, it may be that there does exist a relationship among these three factors but that the measure of disturbance was not sensitive enough to detect its presence.

A related finding paralleling this correlation of depressed mood and anxiety is cited in the work of Goldberg and his associates (1985). These researchers found that in assessing emotions as they relate to living

in the nuclear age, feelings of helplessness are highly correlated with feelings of anxiety and trepidation. It is likely that nuclear related anxiety is a function of uncertainty and helplessness. That is, as feelings of uncertainty and helplessness increase so does the amount of subsequent anxiety. The overall sense of futility and desperation may in turn lead to increases in depressed mood and the perpetuation of helplessness and anxiety.

It is interesting to note that subjects in the Goldberg, et al. study experienced a greater degree of hope that some measures could be taken to prevent nuclear war, while exhibiting high levels of anxiety and helplessness. It seems somewhat contradictory that subjects who are anxiety-ridden and feeling helpless also feel that they ultimately can perform some activities to reduce the nuclear threat. However, this resonates well with Feshbach's (1986) findings that individuals will seek out ways of alleviating anxiety, tension and helplessness if no means of reassurance are available. Consequently, although feeling helpless, individuals may continue to search for ways of acting on their environment that would increase feelings of efficacy and decrease the degree of underlying anxiety.

In part, this effect of combined feelings of helplessness, increased anxiety and elevated feelings of political efficacy was replicated in the current study.

Subjects in the experimental group evidenced a noticeable increase on all three accounts of future political efficacy. This is in contrast to the previously stated hypothesis which posited that experimental subjects would experience temporary decreases in feelings of future political efficacy due to the film segment's overwhelming nature. Instead, experimental subjects indicated after viewing the film segment that they would likely become more involved in nuclear threat reducing activities, and had a greater interest in influencing the country's nuclear policy. However, no measure was taken on how effective individuals felt they ultimately could be in reducing the nuclear threat. Measures of future political efficacy only assessed degree of anticipated future involvement and desired level of future influence. A more thorough assessment of future political efficacy should include degree of expected impact.

Goldberg, et al. (1985) cite that subjects experiencing a higher degree of nuclear anxiety also evidence a greater degree of believing that they can act to prevent its occurrence. Hence, these researchers assessed expected effect and anxiety, and found that increases in the latter were correlated with increases in the former. As it pertains to the current study, it would appear that along with increases in anxiety, expected future involvement and desires to be effective,

individuals would experience increases in expected impact. Yet, no definitive comment can be made on this assumption based on the current results alone.

An interesting phenomenon occurred in regards to changes in current feelings of political efficacy over time. experimental subjects indicated a higher degree of involvement in current activities directed towards reducing the nuclear threat after viewing the film segment. Apparently, the presentation of the nuclear film segment altered subjects' perceptions of current involvement. This increase in perceptions of current activity may have been unconsciously adopted as a means of defending against feelings of helplessness, inefficacy, depressed mood, anxiety and disturbance which were induced by the nuclear film segment. Believing that one is currently involved in reducing the nuclear threat may attenuate feelings of anxiety and depression related to the desperation experienced. However, this may ultimately militate against individuals actually increasing their level of activity by inhibiting activity due to a distorted belief that they are currently doing their share to reduce the nuclear threat.

It was also found that increases in perceptions of current involvement were highly correlated with increases in desired level of future involvement. That is, those subjects who indicated increases in degree of current

involvement also suggested increases in future involvement. In part, increases in both areas may function as psychological defenses directed towards lessening the degree of dysphoria and discomfort associated with nuclear awareness. However, these increases in perceptions of current and future political efficacy do not assess true level of involvement. Consequently, the current findings are limited in differentiating between actual involvement in nuclear threat reducing behaviors and alterations in perceptions of involvement resulting from intrapsychic defense mechanisms. No research extant addresses the actual degree of nuclear threat reducing activities individuals partake in after being exposed to potentially disturbing nuclear related information. In review of this current investigation and previous related research it is merely an assumption to state that subjects experiencing nuclear awareness actually become involved in nuclear threat reducing activities. It can only be stated with certainty that subjects in a state of nuclear awareness experience an increase in the desire to become more involved in reducing the nuclear threat. Perhaps combining information on action-oriented groups working towards nuclear disarmament and showing a nuclear related film for educational purposes may enhance actual future involvement in nuclear threat reducing activity by making options for

involvement available. It would be interesting and worthwhile for educational purposes to learn of the relationship between levels of desired future influence, acquiring knowledge of resources available for involvement, and actual subsequent involvement.

Unlike the changes in depressed mood, anxiety, and political efficacy, no alterations in general nuclear concern were detected. Consequently, the current hypothesis that experimental subjects would experience an increase in general nuclear concern after viewing the nuclear film segment did not materialize as a result of these analyses. However, there did materialize an overall difference in scores between the two groups at both testing times resulting in a main effect for feelings of general nuclear concern. More specifically, experimental subjects indicated a higher degree of general nuclear concern at pre- and posttesting as compared to control subjects.

Ideally, both groups of subjects should have scored equally on general nuclear concern at pretesting in order to achieve initial parity of subjects on this factor between groups. Because of the disparity between the two groups at the outset in regards to general nuclear concern, care must be taken in interpreting the results in order to incorporate and account for this main effect.

The reason for this initial difference is not

clearly evident. Such a difference may have disappeared upon using a larger sample size. A larger sample may have more easily attained relatively equivalent distributions of general nuclear concern for both sets of subjects. However, the sample size in this project, although not exceptionally large, may be considered moderate in size, and normally would have been expected to cancel out preexisting differences upon the random distribution of subjects.

What is apparent from observing the relevant intergroup differences is that, overall, experimental subjects indicated an average degree of general nuclear concern as compared to control subjects. However, the mean values are interpreted as average based upon the calculation of the arithmetic mean. No normative information relative to this measure is currently available. Control subjects indicated a below average degree of related concern. On a scale of 5 to 25 possible points, experimental subjects on the average scored 13.03 at pretesting and 13.31 at posttesting. The mid point of this scale, being 15, indicates that experimental subjects scored in the average range, whereas control subjects scored relatively below average (pretest mean value, 11.13; posttest mean value, 10.83). Apparently, the film as an agent of altering affect, anxiety and some forms of political efficacy was effective on individuals having an

average degree of general nuclear concern. However, because subjects possessing a lower than average degree of general nuclear concern were not exposed to the nuclear film segment, it is not clear how this group would be effected by the film. Consequently, the indications of this research may more aptly apply to young adults who evince an average degree of general nuclear concern.

Regardless of group differences, it is noteworthy that the levels of general nuclear concern did not increase as a function of viewing the nuclear film segment. This is especially significant in light of the obvious changes that occurred for state anxiety. That is, although the changes in state anxiety for experimental subjects as measured by the STAI Y-1 were clearly evident, there were no detectable changes in the level of anxiety and concern specifically associated with nuclear issues.

The discrepancy between increases in state anxiety and no changes in general nuclear concern within the experimental group at posttesting may be attributable to the nature of the general nuclear concern related items. In particular, it appears that of the five nuclear concern related items, three are trait assessments while the remaining two assess more transient or state aspects of the variable. The three items assessing trait qualities of the variable assess the degree of nuclear preoccupation via time spent thinking, discussing, and learning about

nuclear issues. Because testing was performed directly following the showing of the film segment, these items assessing general nuclear concern may not have been sensitive to the immediate effects of viewing the film. Or, not enough time was permitted to lapse between viewing the film and testing in order for the film to affect these areas of thought and behavior. The three items assessing general nuclear concern which may be deemed as less sensitive to immediate changes in general nuclear concern after viewing the film are presented below:

- 1). How much time do you spend thinking about the threat of nuclear war?
- 2). How much time do you spend talking with others about the threat of nuclear war?
- 3). How much time do you spend reading, listening to lectures, or watching television programs about the threat of nuclear war?

Viewing the nuclear film segment should have its greatest impact upon more state aspects and transient feelings related to nuclear concerns that are not bound to past behaviors and attitudes. However, even alterations in the more transient attitudes or concerns as measured by the two remaining items were not detected in the current analyses in part because not enough time was available for even these factors to change after viewing the film segment, and the measure as a whole was not sensitive

enough to detect immediate changes in transient aspects of general nuclear concern. These two items are as follows:

- 4). In general, how worried are you about the threat of nuclear war?
- 5). In general, how much does the threat of nuclear war affect your life?

Hence, viewing the nuclear film segment may not have greatly affected general nuclear concern because it was primarily assessed in terms of past and current behaviors and attitudes. Changes within general nuclear concern may have been identified if items were presented in a manner that assessed the more transient and immediately affected aspects of nuclear concern instead of past and current behaviors. The two remaining items appear to measure more transient and ongoing emotions related to nuclear concerns which may more greatly be immediately influenced by viewing the film segment. However, it is still questionable as to whether or not subjects would have had enough time to process the film in order to alter perceptions of attitudes as measured by these two items. Thus, although the following two items may appear more sensitive to current attitudes regarding nuclear concern, there is yet the question as to whether or not subjects would experience alterations in general nuclear concern due to the immediate contiguity of viewing the film and testing.

These two items are more likely influenced by the film segment merely because they are not totally bound to previous experiences or behaviors, and can more easily be affected by current emotions, perceptions and cognitions. It may have proven more useful in analyzing group differences to create two categories of general nuclear concern; one assessing stable qualities, and the second assessing state aspects of the variable. In total, the five items on the NWQ assessing general nuclear concern collectively do not offer a distinction between transient and stable related factors. Because the majority of the items are trait related, the assessment may not have been appropriate or sensitive enough to detect the impact of the nuclear film segment upon feelings of general nuclear concern. In this instance measures of state anxiety may be more appropriate in measuring how the film segment affected the degree of transient nuclear concern or fear. Unfortunately, questions addressing general nuclear concern cannot be fully answered by the current data.

In order to more accurately assess the impact of viewing the nuclear film segment upon nuclear concern, subsequent ANOVAs with repeated measures were performed. These analyses were performed to assess whether or not a division of the items assessing general nuclear concern into categories of stable and state aspects of nuclear concern would result in the detection of differences

between groups as a function of time of testing, condition, and gender.

The first three items were grouped into one category as estimators of the more stable and less immediately altered aspects of general nuclear concern. The latter two items were grouped as items more potentially sensitive to immediate alterations in general nuclear concern as a result of viewing the nuclear film segment. The results indicate that there were no significant findings for stable aspects of nuclear concern as a function of time of testing, condition and gender. Descriptive statistics related to these analyses are provided in Table 5.

In analysis of the more transient aspects of nuclear concern, a statistically significant difference was detected. There occurred a significant main effect for transient nuclear concern as a function of group, $F(1,58) = 4.02, p < .05$. This suggests that the experimental group, overall had a greater degree of state nuclear concern as compared to the control group regardless of gender and time of testing. Descriptive statistics for these data are also presented in Table 5.

In interpreting these subsequent analyses, it appears that experimental and control subjects displayed relatively equal degrees of stable nuclear concern across time of testing and gender. Hence, the nuclear film segment appeared not to influence the degree of stable

TABLE 5

Mean, Standard Deviation, F, and p Values for Subcategories of General Nuclear Concern (GNC)

SUBCATEG GNC	CONDITION				<u>F</u>	<u>p</u>
	<u>Experimental</u>		<u>Control</u>			
	Pre	Post	Pre	Post		
Stable	7.66	9.56	6.40	6.23	0.56	0.47
GNC	2.15	13.19	2.04	2.03		
State	5.44	5.75	4.67	4.33	1.27	0.26
GNC	2.14	2.21	2.10	2.06		

Note. Experimental and Control N are 32 and 30, respectively. Mean values are highlighted. Standard deviation values are in standard type. F values presented in table represent condition by repeated measure analyses.

nuclear concern experienced by the experimental group at posttesting. The source of difference between the experimental and control groups was in the area of state nuclear concern. Regardless of time of testing and gender, experimental subjects indicated a higher degree of state nuclear concern as compared to control subjects.

Together these findings do not lend support to the initial hypothesis that experimental subjects would experience increases in general nuclear concern. It is likely that future research on this topic will need to include test items that are more sensitive to possible changes in nuclear concern that may occur immediately after a stimulus presentation, or to test subjects after a period of time lapses between film presentation and testing in which they are able to further process the contents of the film.

One other previously stated hypothesis which was not validated by the current findings is that females as compared to males would tend to respond more extremely on attitudinal and emotional assessments along with reacting more oppositional to the notion of nuclear war and weaponry. Unlike Newcomb's (1986) findings, no significant differences were detected between females and males on any of the dependent variables assessed. Most importantly, females were no more depressed or anxious than were males, and did not indicate a higher degree of

general nuclear concern. Also, upon evaluation of a number of nuclear orientations, females and males rated orientations that typify anti-nuclear sentiments (e.g., Disarmists) similarly. Hence, females and males in this project approximated each other in regards to degree and type of responses made on emotional and attitudinal assessments.

The disparity between the current findings which do not support female/male differences and previous research which does support this distinction may in part be related to two factors. First, the film segment derived from Threads may have been concrete and visually graphic enough to stimulate arousal and anxiety among males who are typically described as less sensitive and emotionally less responsive to nuclear issues. Other films or photographs used in research supporting the female/male distinction may not arouse anxiety and discomfort across gender as a function of not being sufficiently concrete or graphic. Hence, similar increases in affective measures may have resulted between females and males because of the graphically overwhelming stimulant nature of the film segment.

Second, there currently is a noticeable increase in media attention directed towards nuclear issues as a result of current arms reduction talks between the U.S. and U.S.S.R. Consequently, media coverage has recently

brought nuclear issues increasingly to public attention. This seemingly continual and unavoidable exposure to nuclear information via the media may increase the public's awareness and education of nuclear issues. Consequently, increases in awareness may narrow or eliminate differences between females and males regarding nuclear concerns and anxiety.

In evaluating the ratings of various nuclear orientations no significant differences or changes were detected between groups or testing times. The nuclear film segment apparently had no detectable bearing upon ratings of nuclear orientations for subjects in the experimental group. Instead, these scores remained relatively consistent between groups as well as testing times. This seems to indicate that either the questions on the NWQ do not reflect changes immediately apparent after viewing the film segment, or that attitudes regarding various nuclear beliefs are stable over time. This latter hypothesis is in contrast to findings of Hamilton, Chavez, et al. (1986) citing fluctuations in nuclear attitudes and orientations. What may be stated regarding the ratings on nuclear orientations is that, like the results in the Hamilton, Knox and Keilin (1986) study, subjects rated most favorably the Altruistic Fatalist and Disarmist orientations. Also, The Eliminationist orientation received the least amount of

support among all the orientations.

SUMMARY

In summary, a number of emotional and attitudinal changes occurred for young adult college students exposed to a disturbingly graphic and concrete portrayal of human and material destruction via nuclear war. Noticeable increases in depressed mood and anxiety were detected for subjects in the experimental condition. Furthermore, elevations in the desire for future political involvement towards lessening the nuclear threat occurred. Consequently, the nuclear related film segment caused individuals to experience increases in disturbance, anxiety and depressed mood while also prompting them towards wanting to become more personally involved in lessening the nuclear threat.

Although motivating individuals towards desiring to have greater influence in reducing the nuclear threat, this project does not answer whether or not subjects actually increase their level of activity. However, it is safe to assume that the form of presenting nuclear information via the film segment that was used in this study was influential in stimulating awareness and anxiety in viewers, and in increasing the desire to become more involved in influencing and reducing the nuclear threat. It is this arousal and discomfort that most researchers in

the area (e.g., Granberg & Faye, 1972; Newcomb, 1986) believe is a necessary factor in motivating individuals to action.

As is apparent for subjects in this study, increases in awareness and emotional responsiveness were also accompanied by desires to become personally involved in activities directed towards alleviating or lessening the nuclear threat. This finding adheres nicely to Feshbach's (1986) finding that individuals whose fears are strongly aroused but not ameliorated by reassurances will seek out means of reducing the nuclear threat.

Apparently, in order to immediately cope with these intense feelings of affective discomfort, individuals in the experimental group acted to reduce the level of arousal by altering perceptions of current involvement in activities directed towards lessening the nuclear threat as well as indicating a desire to become more involved in the future. In effect, perceptions of current personal involvement may have been unconsciously altered in order to impede the tension and discomfort elicited by the nuclear film segment. As previously mentioned this affective discomfort was further reduced by concomitantly believing that one would become increasingly involved in the future. Supplying individuals with information of productive nuclear threat reducing activities at this moment of emotional arousal may serve as a means of

managing these negative feelings in a fruitful and beneficial manner.

Although resulting in discomfort, the graphically horrific film segment did not appear to close individuals off from experiencing the awareness and affective arousal elicited by the film. That is, overall, individuals did not resort to using lower defense mechanisms such as gross denial or maladaptive distortion in dealing with the disturbing information present in the film segment. In fact, the film segment appeared to be a means of stimulating a healthy degree of affective discomfort that propels individuals towards wanting to become involved in nuclear threat reducing activities. Consequently, horrific portrayals of nuclear destruction via docudramas and films is one means of disseminating nuclear information to young adults. The film segment used in this project was not overwhelming to the point of generating an immobilizing fear or the use of unproductive defense mechanisms. Instead, viewers clearly indicated that courses of action directed towards reducing the nuclear threat were futuristically plausible and possible.

REFERENCES

- Berndt, D.J. (1984). Multiscore Depression Inventory (MDI). Los Angeles, CA: Western Psychological Services.
- Chavez, E.L., Hamilton, S.B., & Keilin, W.G. (1986). The Day After: A preliminary report on its effects on children. American Psychologist, 41, 722-723.
- Feshbach. (1986). Changing war-related attitudes. In R.K. White (Ed.), Psychology and the prevention of nuclear war (pp. 511-532). New York: New York University Press.
- Fiske, S.T. (1987). People's reactions to nuclear war. American Psychologist, 42, 207-217.
- Fiske, S.T., Pratto, F., & Pavelchak, M.A. (1983). Citizens' images of nuclear war: Content and consequences. Journal of Social Sciences, 39, 41-65.
- Goldberg, S., LaCombe, S., Levinson, D., Ross Parker, K., Ross, C., & Sommers, F. (1985). Thinking about the threat of nuclear war: Relevance to mental health. American Journal of Orthopsychiatry, 55, 503-513.
- Goldenring, J.M., & Doctor, R. (1983). Adolescent concerns about the threat of nuclear war. In T. Solantaus, E. Chivian, M. Vartanyan, & S. Chivian (Eds.), Impact of the threat of nuclear war on children and

adolescents: Proceedings of an international research symposium. Boston, MA: International Physicians for the Prevention of Nuclear War. Pp. 112-33.

Granberg, D., & Faye, N. (1972). Sensitizing people by making the abstract concrete: Study of the effect of 'Hiroshima-Nagasaki.' American Journal of Orthopsychiatry, 42, 811-815.

Hamilton, S.B. (1987). The use of attitudinal typologies in nuclear war research. In D. M. Mayton II, Attitudes toward nuclear war issues: Methodological variations and their correlates. Symposium conducted at the meeting of the American Psychological Association, New York.

Hamilton, S.B., Chavez, E.L., & Keilin, W.G. (1986). Thoughts of armageddon: The relationship between attitudes toward the nuclear threat and cognitive/emotional responses. International Journal of Mental Health, 15, 189--207.

Hamilton, S.B., Keilin, W.G., Knox, T.A., & Naginey, J.L. (In press). When thoughts turn toward nuclear war: Stress responses, coping strategies, and the importance of trait anxiety in moderating effects on "mental health." Journal of Applied Social Psychology.

Hamilton, S.B., Knox, T.A., & Keilin, W.G. (1986). The

nuclear family: Correspondence in cognitive and affective reactions to the threat of nuclear war among older adolescents and their parents. Journal of Youth and Adolescence, 15, 133-145.

Lifton, R.J. (1967). Death in life. New York: Vintage Books.

Lubin, B. (1981). Manual for the Depression Adjective Check Lists. San Diego, CA: Educational and Industrial Testing Service.

Newcomb, M.D. (1986). Nuclear attitudes and reactions: Associations with depression drug use, and quality of life. Journal of Personality and Social Psychology, 50, 906-920.

Newman, A. (1987). Planetary death. Death Studies, 11, 131-135.

Raundalen, M., & Johan Finnoy, O. (1986). Scandinavian youth view the future: A preliminary report of a large questionnaire survey. In F.Solomon, & R.Q. Marston (Eds.), The medical implications of nuclear war (pp. 435-443). Washington, D. C: National Academy Press.

Schofield, J., & Pavelchak, M. (1985). The Day After: The impact of a media event. American Psychologist, 40, 542-548.

Spielberger, C.D., Gorusch, R.L., Lushene, R., Vagg, P.R., & Jacobs, G.A. (1983). Manual for the State-Trait

Anxiety Inventory (Form Y). Palo Alto, CA:
consulting Psychologists Press, Inc.

APPENDIX A

ASSESSMENT OF GENERAL NUCLEAR CONCERN
(Derived from Nuclear War Questionnaire)

Directions: A number of questions concerning nuclear war are listed below. Read each question carefully and then consider the possible responses listed. Place an "X" on the line to the left of the response which best represents your answer. Choose only one response for each question.

1. In general, how worried are you about the threat of nuclear war?
 extremely worried
 very worried
 moderately worried
 slightly worried
 not at all worried
2. How much time do you spend thinking about the threat of nuclear war?
 a great deal
 a lot
 some
 a little
 never
3. How much time do you spend talking with others about the threat of nuclear war?
 a great deal
 a lot
 some
 a little
 never
4. How much time do you spend reading, listening to lectures, or watching television programs about the threat of nuclear war?
 a great deal
 a lot
 some
 a little
 never
5. In general, how much does the threat of nuclear war affect your life?
 a great deal
 a lot
 some
 a little
 never

APPENDIX B

NUCLEAR ORIENTATION RATINGS

Directions: Listed below are nine attitudes concerning the threat of nuclear war. Read each attitude carefully and decide how much you agree or disagree with the position stated. Place only one number to indicate your degree of support for each attitude at the left of each description. Base your decisions upon the following scale:

Strongly disagree	Slightly disagree	Neither Agree or disagree	Slightly agree	Strongly agree
-------------------	-------------------	---------------------------	----------------	----------------

1	2	3	4	5
---	---	---	---	---

A. _____ Human beings are basically good. That is, they are rational, caring and desire self-preservation for all people. In a nuclear crisis, political leaders will act rationally for the good of all humanity and nuclear war will be prevented.

B. _____ The best one can do in dealing with the nuclear threat is to concentrate on getting the most pleasure out of life today. The focus of attention is best placed on personal pleasure, feeling good, and getting what I want out of life in the time remaining.

C. _____ There is not much anyone can do to prevent a nuclear war or survive it. Yes, there would be casualties and destruction, but some people would survive, eventually rebuild, and life would go on.

D. _____ Nuclear war can be prevented through building and maintaining a strong nuclear arsenal. As a result of the balance of power and the recognition that there will be no winners in a nuclear exchange, maintaining our nuclear strength will continue to provide effective deterrents to global conflict.

E. _____ Since I am realistically unable to reduce the threat of nuclear war, why worry about it? The best I can do is to use my available talents and abilities to make the lives of my fellow human beings better and contribute to humanity in the best way that I can.

F. _____ Nuclear war can be prevented through active, vocal effort on the part of concerned citizens to convince world powers to disarm. There will be no nuclear war if there are no nuclear weapons.

G. _____ Whether or not we have a nuclear war is up to God. I place my full trust in His divine wisdom and guidance. Should nuclear war occur, God will decide what the outcome will be.

H. _____ Due to the political stance of the Soviet Union and the fact that the U.S.S.R. cannot be trusted, the best solution is to eliminate the nuclear threat altogether. A prompt, unexpected, first-strike by the U.S. would do away with the communist menace and preserve life and the democratic ideal throughout the world.

I. _____ Nuclear war is survivable if appropriate precautions are taken. By investing time, money, and energy into the construction of blast and fallout-proof shelters that will accommodate large groups of people (myself, family, friends) comfortably for several months, we would survive, rebuild, and go on to create a new world.

APPENDIX C

This is a questionnaire designed to discover some of your typical feelings and attitudes. Your task is to read each item very carefully and to decide whether or not that item is true for you. There are no right or wrong answers, since different people have different attitudes and moods. We are interested in how you feel about yourself and about your world. Answer each item on this sheet by placing a "T" for true or a "F" for false on the space preceding each statement as it applies to you. Mark "T" if the statement applies to you and a "F" if the statement does not apply to you.

1. _____ The more people around me, the better I feel.
2. _____ I blame myself when things go wrong.
3. _____ Lady luck is usually on my side.
4. _____ I usually feel gleeful and jolly.
5. _____ No one seems to understand when I complain.
6. _____ I feel usually free and unrestrained.
7. _____ I usually feel bright and carefree.
8. _____ The wheel of fortune is often on my side.
9. _____ I am often held back by my own inadequacies.
10. _____ I always expect the worst.
11. _____ I often feel downcast.
12. _____ I want to go away somewhere away from people.
13. _____ My future looks rosy.
14. _____ I frequently feel high in spirits.
15. _____ The same thoughts run through my head over and over again.
16. _____ I often feel that my troubles are never going to end.
17. _____ I am usually inventive and resourceful.
18. _____ My life is often full of joy.
19. _____ I am easily provoked.
20. _____ My future seems to get better and better.
21. _____ I frequently feel blue.
22. _____ I frequently feel merry and playful.
23. _____ People don't treat me fairly.
24. _____ I feel droopy and tired.
25. _____ I am an optimist.
26. _____ I flare up when someone crosses me.
27. _____ My future for the most part looks pretty bright.
28. _____ I have a permanent case of the blues.
29. _____ My mind is usually buzzing with confusion.
30. _____ I often feel like smiling and laughing.
31. _____ Things usually seem to turn out well for me.
32. _____ I fly off the handle easily.
33. _____ I usually feel pretty down.
34. _____ I often find it hard to put on a happy face.
35. _____ I usually make decisions easily

36. _____ Things keep getting better in life.
37. _____ I often think negatively about the future.
38. _____ I am a happy person.
39. _____ I frequently feel I have nothing to look forward
to.
40. _____ I often feel I am worthless

APPENDIX D

APPENDIX E

FILM EVALUATION QUESTIONNAIRE

The film you have just viewed is actually a compilation of film segments taken from a 1985 BBC Production film.

1. Do you recall ever seeing the film from which these film segments were taken?

_____ Yes
 _____ No

If yes, can you name the title of this film?

2. How disturbing did you find this film segment?

1 _____ not at all
 2 _____
 3 _____
 4 _____ average
 5 _____
 6 _____
 7 _____ very much

3. To what degree do the issues of this film segment concern you?

1 _____ not al all
 2 _____
 3 _____
 4 _____ average
 5 _____
 6 _____
 7 _____ very much

APPENDIX F

DEMOGRAPHIC QUESTIONNAIRE

1. LIST THE LAST FOUR DIGITS OF YOUR SOCIAL SECURITY NUMBER _____
2. AGE _____
3. SEX _____
4. RACE: _____ BLACK, _____ WHITE, _____ HISPANIC,
 _____ NATIVE AMERICAN, _____ ORIENTAL, _____ OTHER
 (LIST) _____
5. RELIGIOUS AFFILIATION: _____ CATHOLIC, _____ JEWISH,
 _____ PROTESTANT, _____ OTHER (LIST) _____
6. POLITICAL AFFILIATION: _____ REPUBLICAN,
 _____ DEMOCRAT, _____ I N D E P E N D E N T ,
 _____ OTHER (LIST) _____
7. WHAT IS THE OCCUPATION OF THE MAIN PROVIDER IN YOUR FAMILY?
 _____ EXECUTIVE, DOCTOR, DENTIST, LAWYER,
 _____ PROFESSIONAL
 _____ MANAGER/OWNER OF A LARGE BUSINESS
 _____ ADMINISTRATOR, SMALL BUSINESS PERSON OR SEMI-
 _____ PROFESSIONAL
 _____ CLERICAL OR SALES WORKER OR TECHNICAL WORKER
 _____ SEMI-SKILLED LABORER
 _____ UNSKILLED LABORER
 _____ OTHER (LIST) _____

APPROVAL SHEET

The thesis submitted by Rocco Domanico has been read and approved by the following committee:

James E. Johnson, Ph.D., Director
Professor, Psychology
Loyola University of Chicago

Alan S. DeWolfe, Ph.D.,
Professor, Psychology
Loyola University of Chicago

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the committee with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts.

11-22-89
Date

James E. Johnson
Director's Signature