


THE RELATIONSHIP OF ADOLESCENTS'
CONCERN OVER THE THREAT OF NUCLEAR
WAR AND SEVERAL PERSONALITY DIMENSIONS

by

Garth Stewart

Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Education at the
University of Manitoba

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Table of Contents

List of Tables.....	iii
Acknowledgements.....	iv
Abstract.....	v
Chapter	
I Introduction.....	1
Introduction to the Problem.....	1
Statement of the Research Problem.....	8
Significance of the Study.....	8
II Review of the Literature.....	10
Methodological Issues.....	10
Review of the Research and Theoretical Literature.....	13
Summary.....	21
III Method.....	24
Overview.....	24
Selection of the Sample.....	25
Description of the Sample.....	26
Description of the Survey Instrument.....	27
Method of Data Collection.....	36
Method of Data Analysis.....	36
IV Results.....	38
Overview.....	38
Reliability Estimates, Descriptive Statistics and Intercorrelations of the Scales.....	38
Correlational Analysis of the Data.....	44
Comparison of High Versus Low Concern Groups.....	47
Description of Students' Concerns about the future.....	49
Students' Beliefs and Opinions about Nuclear War.....	54

V	Discussion.....	60
	Introduction.....	60
	Reliability and Validity of the Scales.....	60
	The Relationship between Concern over the Threat of Nuclear War and the Personality Correlates.....	63
	Adolescents' Reactions to the Nuclear Threat....	72
	Direct Versus Indirect Measures of Concern.....	76
	Implications for Nuclear Education.....	78
	Delimitations of the Study.....	80
	Conclusions and Recommendations.....	82
	References.....	86
	Appendixes	
A	Summary Research Proposal.....	94
B	Letter to Parents.....	98
C	Survey Instrument.....	99
D	Instructions to the Teachers.....	107
E	Ranking and Percentages of Students' Number One Concerns about the Future.....	108
F	Excerpts from Student Comments concerning the Threat of Nuclear War.....	109

List of Tables

Table	Page
1. Reliability Coefficients for Scales.....	40
2. Means and Standard Deviations (STD) of Scores for Males and Females.....	41
3. Intercorrelations Between the Personality Correlates.....	43
4. Intercorrelations Between the Measures of Concern and the Personality Correlates.....	45
5. Means for the High and Low Concern Groups on the Personality Correlates.....	48
6. Ranking and Percentages of Students' Combined Concerns about the Future.....	52
7. Means and Standard Deviations (STD) for Males and Females and Total Sample Percentages for Questions Concerning Nuclear War.....	55

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Abstract

Adolescents' concern over the threat of nuclear war was examined with respect to its possible relationship to their orientation toward the future, their ability to delay gratification, their level of impulsivity, their venturesomeness, and their locus of control orientation. A survey instrument was constructed using a variety of established scales to measure each of the aforementioned variables. Concern over the threat of nuclear war was measured directly and indirectly by scales designed specifically for the present research. The survey was administered to students from three high schools with religious affiliation. A total of 447 completed surveys were returned and the data were subjected to a correlational analysis to determine the relationship between the degree of reported concern over the threat of nuclear war and the personality variables under investigation. A comparison of students with a high versus those with a low degree of concern is provided, along with a descriptive summary of the students' concerns about the future and their beliefs and opinions regarding nuclear war. The results indicate that the threat of nuclear war is not associated with adverse effects on the personality variables investigated. Suggestions for

future research and recommendations for nuclear education programs are provided.

CHAPTER I

Introduction

Introduction to the Problem

Society is living in a nuclear age. News of recent nuclear developments, antinuclear demonstrations, and verbal jousting between the two superpowers over arms reduction proposals have become commonplace. Films and television programs such as "The Day After" and "If You Love This Planet" serve to increase the public's awareness and sensitivity to the threat of nuclear war (Nelson & Slem, 1984).

Recent estimates place the total number of nuclear warheads in the world at over 50,000, with the combined power of more than 1,000,000 Hiroshima bombs (Alberta Teachers Association, 1984). Scientists warn that even a limited nuclear war would create enough dust and smoke to block out 95% of the sun's light, creating what has become known as a nuclear winter (Ehrlich, 1984; Turco, Toon, Ackerman, Pollack & Sagan, 1983). Some deny the possibility that a nuclear war could ever occur, maintaining that our leaders would never let it go that far. Others argue that even if the missiles are never

deliberately launched the possibility of disaster as a result of human or computer error is too great to be ignored (Grinspoon, 1984).

Even if the bombs are never used, the psychological impact of the impending nuclear threat may be taking its toll on people in our society. In a review of research on attitudes toward nuclear war, Kramer, Kalick and Milburn (1983) reported that the percentage of people who believed they would not live through a nuclear war increased from 39% in 1952, to over 50% in 1963 and 1982. Croake (1969) found that the most common present and future fears of third and sixth grade children from two mid-western States were the fear of a communist take over and of war. Croake contrasted these findings with studies spanning the period from the 1930s to the early 1950s during which children were most fearful of supernatural phenomena, animals, receiving bad grades, and getting lost or hurt. Improved mass communication and the advent of the Vietnam war, which was brought into the living rooms of everyday Americans via the television screen, may be partially responsible for these differences. However, it is not unreasonable to assume that the increased threat of nuclear war and the publicity which it has generated may

also have contributed to this shift in the fears of children.

Other studies have shown that most children and adolescents believe a nuclear war will occur within their lifetime, and that they personally will not survive the holocaust (Blackwell & Gessner, 1983; Escalona, 1965; Goodman, Mack, Beardslee & Snow, 1983; Harvey, Howell & Colthorpe, 1985; Nelson & Slem, 1984; Wrightsman, 1964). This pessimism reported by today's youth has prompted many mental health professionals to consider the implications of growing up without the promise of a future. What effect does growing up in the nuclear age have on the developing adolescent?

Erikson (1968) described the period of adolescence "as a psychosocial moratorium during which the young adult through free role experimentation may find a niche in some section of his society" (p. 156). At this stage of human development the individual must master the psychosocial task of achieving identity versus role confusion (Erikson, 1963). This process involves the integration of all the earlier identifications and genetically endowed aptitudes, together with the opportunities and social roles offered by society. According to Erikson, the inability to establish an occupational identity is often most disturbing to young people. It is in this regard that the

nuclear threat may have its most profound effect. The uncertainty of the future, of even having the opportunity to take one's place in the adult society, can only serve to make the establishment of an occupational identity more difficult. How can an adolescent be expected to find identity in an occupation or societal role if he or she honestly believes that the world will be destroyed by nuclear war before that role ever becomes a reality?

Intellectually, the adolescent is capable of what Piaget (1967) refers to as "hypothetico-deductive" thinking. Unlike children, who are concerned only with that which is concrete, adolescents can reflect upon possibilities and hypothetical events, and imagine the implications that may result. They become occupied with ideas about the future, and reality is subsumed under the realm of possibility (Ginzburg & Oppen, 1979). Because of this capacity for abstract thinking adolescents may be particularly sensitive to the nuclear issue. The adolescent has the mental power to fully comprehend and dread the threat of nuclear war.

It has been suggested that the nuclear threat impedes the development of some important individual characteristics, and that it may be a contributing factor in the etiology of delinquent and irrational behavior (Abraham, 1983; Blackwell & Gessner, 1983; Escalona, 1965,

1982; Goodman et al., 1983; Mann, 1983; Salguero 1983). The rationale for this belief is straightforward. If adolescents perceive nuclear war to be a realistic threat and understand the possible consequences of such an event, then their attitude towards the future and the way in which they conduct their lives on a daily basis may be altered. Why should one look forward to a future which holds no promise? Where is the motivation to work for the future and forego immediate gratification to come from if there is a very real possibility that the supposed benefits of such behavior may never be realized? How are adolescents to develop a sense of control over their own lives when they are faced with what some would say is an unavoidable prospect of global nuclear warfare?

If the threat of nuclear war has adverse consequences on children and adolescents, then steps should be taken to help them cope with their concerns in a constructive manner. Indeed, a variety of guidelines for both parents and educators have already been proposed with this goal in mind (e.g., Becker, 1983; Goldberg, 1985; Union of Concerned Scientists, 1983). However, if for most children there are no substantial short- or long-term effects then direct intervention by parents and teachers may serve no useful purpose. In fact, it is possible that providing information about the possibility and probable

consequences of a nuclear conflict may increase anxiety levels and instill a sense of hopelessness and doom in students who were initially optimistic about the future.

Studies examining the psychological effects of conventional war on children provide little insight into the effects of the nuclear threat on children. War is often a grim reality for children as they witness the destruction firsthand or are confronted with the death of family members or friends. Similarly, while investigations into reactions to nuclear power plant accidents may initially appear to have some relevance to the present discussion, the consequences of such events are far more imaginable and not nearly as widespread or final as the total extinction of the human species.

Another problem facing researchers is the lack of a suitable control group with which to compare those who have been exposed to the nuclear threat. Even if it were possible, it would not be ethical to subject one group of adolescents to potentially harmful information while keeping another group completely ignorant about the threat of nuclear war. Due to the prevalence and availability of the knowledge pertaining to the nuclear threat it is difficult, if not impossible, to devise an experimental study to examine the influence that this knowledge has on an individuals thoughts, feelings, and behavior.

Consequently, research to date has typically been restricted to descriptive studies, with the results serving as a basis for conjecture about the likely effects of growing up in the nuclear age.

The terms fear and anxiety have been defined in a variety of different ways to reflect a variety of different theoretical viewpoints (Bamber, 1979; English & English, 1958; Epstein, 1972). For the purposes of the present investigation, fear is defined as a reaction to a specific danger, usually a definite external stimulus, that is typically of short duration (Cattell, 1972; Chaplin, 1973). In contrast, anxiety is defined as a reaction to an anticipated danger and may be more continuous and prolonged in comparison to fear (Chaplin, 1973). Anxiety is also associated with ambiguity and uncertainty about the future. Lazarus and Averill (1972) state that "during anxiety there is uncertainty about one or all of several things: exactly what will happen, whether it will happen, when it will happen, and what can be done about it" (p. 250). According to these definitions, both fear and anxiety may include some type of unpleasant state or emotional response, but no distinction is made on the basis of the ability or inability to respond appropriately to a threatening situation. In reference to the threat of nuclear war,

anxiety is a more appropriate term than fear because of its emphasis on uncertainty and the future. However, if an intense and sufficiently vivid stimulus (e.g., a film portraying a nuclear holocaust) is presented a fear reaction may also be elicited. The term "concern", as used in the present investigation, is a generic term which includes the concepts of fear and anxiety, but with the added dimension of worry, emotionality, or a general feeling of uneasiness.

Statement of the Research Problem

The primary purpose of this study is to determine what relationship, if any, may exist between adolescents' concern over the threat of nuclear war and five personality correlates that have been identified in the relevant literature as being the most susceptible to the nuclear threat. These include adolescents' ability to delay gratification, their orientation toward the future, their level of impulsivity, their venturesomeness (risk-taking behavior), and their locus of control (the extent to which they feel in control of their own lives).

Significance of the Study

The results of this study should further our understanding of how adolescents respond to an impending

danger like the threat of nuclear war. Are adolescents anxious about the possibility of a nuclear conflict, and if so, how do they cope with their anxiety? Does their perception of the future alter the way in which they live their lives on a daily basis? Is there any relationship between their degree of concern over the nuclear threat and the five personality correlates? It is hoped that this study will provide some insight into how adolescents perceive the threat of nuclear war, and how important an issue they consider it to be in comparison to other more immediate concerns such as their present schooling and their peer relationships.

It is anticipated that such information will be of interest to both parents and educators. A deeper understanding of adolescents' feelings regarding this issue and the manner in which it may affect them should help parents and individual teachers to be more sensitive to the needs of adolescents. Furthermore, the findings of this study are likely to have implications for decisions regarding curriculum planning and school policy.

CHAPTER II

Review of the Literature

Methodological Issues

Much of the research on the threat of nuclear war has come under considerable criticism. Morawski and Goldstein (1985) note that psychologists' "heritage of contributing expert knowledge to social policy has long employed a model that equates responsible involvement with the provision of objective knowledge derived independently of political interests" (p. 276). Unfortunately, research on the possible impact of the threat of nuclear war on children and adolescents has not been totally independent of political motivation. Adelson and Finn (1985) point out that the only real evidence of nuclear anxiety in young people comes from those who are strongly vested in the nuclear-freeze movement. They further charge that scientific principles have been superseded by the righteousness of the cause and an intense desire to prove the point. This bias has resulted in samples that are unrepresentative and in some cases self-selected, and findings that are reported in vague terms, often based on selected interviews and personal impressions rather than actual data (Adelson & Finn, 1985; Tizard, 1984).

Another issue is the question of how best to measure concern over nuclear war. The majority of investigators have employed a strategy in which the nuclear issue is presented within the questions themselves, and subjects are asked to respond to pointed questions concerning their fears and beliefs. Becker (1983) and Goodman et al. (1983) maintain that children must be solicited to express their fears, while others argue that indirect questions may be more appropriate (Tizard, 1984). It is possible that questions dealing directly with nuclear war may themselves raise anxiety levels in respondents, resulting in a spurious estimation of their degree of concern. On the other hand, concern which is being suppressed may not be detected without some degree of solicitation.

Research has indicated that exposing subjects to films or written material on nuclear war does influence their beliefs in a manner consistent with the tone or slant of the material presented. College students who viewed a film about the dropping of nuclear weapons on Hiroshima and Nagasaki experienced an increase in anxiety regarding nuclear war (Granberg & Faye, 1972), as did college students who watched the television movie "The Day After" (Nelson & Slem, 1984). Zweigenhaft (1984) employed a posttest-only control group design with a sample of college freshman and found that a pronuclear U.S.

government film on protection in the nuclear age had the effect of increasing optimism while exposure to a book or short film portraying the physical consequences of nuclear war increased anxiety levels and produced more extreme beliefs about the effects of war. Specifically, the subjects in the latter condition were more pessimistic about the possibility of winning or surviving a nuclear war than those in the control group.

In most cases, questionnaire research which inquires directly about nuclear war is far less innocuous than the manipulations employed in these studies. Subjects who are asked to complete questionnaires are seldom exposed to graphic descriptions of human suffering and radiation sickness, but the possibility and dangers of a nuclear conflict are brought to their attention through preambles and the wording of the questions. Consequently the findings of studies employing a direct approach should be interpreted with caution as the information provided in the questionnaire itself may produce anxiety. An indirect approach which simply asks subjects to state their concerns should be a more sensitive measure allowing for a clear differentiation between those who are truly preoccupied with the threat of nuclear war and those who are not.

Review of the Research and Theoretical Literature

Interest in the effects of the threat of nuclear war on children and adolescents began to grow during the early and mid 1960s, a period corresponding to the Berlin crisis and the Cuban missile crisis. Escalona (1963, 1965) was one of the first social scientists to suggest that the uncertain future associated with the threat of nuclear war had a detrimental impact on the development of emotionally disturbed as well as normal children. Escalona and her colleagues developed an open-ended questionnaire designed to elicit childrens' expectations about the future in an indirect fashion. Seventy percent of the children between the ages of 10 and 17 made reference to war and peace, and of these, 35% thought that it was very probable or certain that a destructive war would occur within 10 years. Escalona described growth in adolescence as "the pull exerted by the prospect of maturity pitted against the remaining needs for dependency and the security of childhood", but added "if there is no future to look forward to, or it seems chiefly disasterous, where is the pull for maturity to come from?" (1965, p. 209).

At about the same time, Schwebel (1963, 1965) asked students, ranging from the third grade to college freshmen, three direct questions concerning their opinions about the cold war. Content analysis was performed on

2,200 written responses revealing that nearly half of the sample beleived there would be a war. Ninety-five percent of the sample said they cared about this possibility, while the other 5% used some type of defense mechanism as reflected in statements such as "I try not to think about it" or "you've got to die someday." Although the responses did not indicate how preoccupied the students were with the prospect of war nor how their concerns may affect their lifestyle, Schwebel went beyond the data and suggested that the uncertainty of the future is bound to have subtle effects on the hopes and fears of the youth.

Subsequent research has supported the earlier findings of Escalona and Schwebel. In general it has been found that children place the fear of nuclear war near the top of their list of concerns (Chivian, Mack, Waletzky, Lazaroff, Doctor & Goldenring, 1985; Goldberg, LaCombe, Levinson, Parker, Ross & Sommers 1985; Solantaus, Rimpela & Taipale, 1984), and that they become aware of the nuclear threat by age 12 (Beardslee & Mack, 1983; Chivian et al., 1985). With few exceptions, the research has indicated that preoccupation with and fear of war is greatest in children aged 12 to 13 and decreases with increasing age as concerns over employment and career plans come to the fore (Goldberg et al., 1985; Matas, 1984; Schwebel, 1965; Solantaus et al., 1984). There is

also some evidence to suggest that gender is an important variable mediating an individual's reaction to the nuclear threat. Males have been found to be more accepting of nuclear war (Guinn, 1984; Jeffries, 1974; Putney & Middleton, 1962) and tend to think more about it than females (Matas, 1984; Mayton, 1984). In contrast, females appear to be more fearful and pessimistic about war (Harvey et al., 1985; Matas, 1984; Nelson & Slem, 1984; Sommers, Goldberg, Levinson, Ross & LaCombe, 1985), although at least one study has failed to support this contention (Blackwell & Gessner, 1983).

Subjects from varying socioeconomic classes may respond to the threat of nuclear war differently, although the evidence for this is inconclusive. Goldberg et al. (1985) and Mayton (1985) found no differences in the degree of reported concern across socioeconomic levels. In contrast, Escalona (1963, 1965) reported that children from higher socioeconomic levels were more preoccupied with nuclear war, and suggested that lower-class children have too many pressing and immediate concerns to be worried about the remote danger of nuclear war. In addition, many of these children tend to be "cognitively impoverished" and are able to contemplate the future only in immediate and concrete terms.

Much of the research conducted during the 1970s and

early 1980s culminated in a task force report by the American Psychiatric Association (1981) and a hearing before the House of Representatives Select Committee on Children, Youth and Families (1983). The evidence presented in these documents clearly supported the view that children and adolescents are concerned about the prospect of a nuclear holocaust. To the extent that it is natural to be concerned about one's own survival these findings should not be surprising. However, the manner and degree to which this concern impacts the daily lives of adolescents was less clear.

It has been suggested that childrens' expectations of and ability to plan for the future is influenced by the reality of the nuclear threat. Blackwell & Gessner (1983) contended that planning for the future becomes a problem for adolescents because the future is provisional. Why plan for the future if there is a high probability that the future will never come? Lifton (1982) claimed that most of us live a double life: On one level we know that at any moment the buttons could be pushed, while on another level we continue on with our lives seemingly ignoring the reality of this threat.

From interviews with more than 1,000 students, Beardslee and Mack (1981) concluded that nuclear developments had affected adolescents' daily thinking and

their thoughts about the future. However, questionnaire research has yielded somewhat different results. For instance, Klavens (cited in Beardslee & Mack, 1983) reported that over 50% of his adolescent sample felt that nuclear advances had a great effect or some effect on the way they thought about the future and the world, but little impact on their thinking about marriage and having children. Similar results were reported by Goldenring and Doctor (1983) who found that only 5 to 15% of their adolescent sample considered delaying plans for marriage and family. Both Harvey et al. (1985) and Goodman et al. (1983) found that while most of the respondents in their studies expected a nuclear war in their lifetime, most did not plan their lives around its occurrence. In reference to their sample, Goldberg et al. (1985) concluded that "the high concern with personal job/career plans suggests that thoughts about nuclear war have not led these students to 'foreclose' on their own futures" (p. 507). Thus, it appears that adolescents live what Lifton (1982) calls a double life. They are aware of the dangers of nuclear war and express concern over the prospects for the future, but continue to live and plan for the future in spite of their fears.

In addition to thoughts and expectations concerning the future, various writers have expressed the belief that

the development of impulse or self-control may be hampered by the nuclear threat (Blackwell & Gessner, 1983; Escalona, 1982; Goodman et al., 1983; Mack, 1981; Schwebel, 1982). Those who believe that the world will soon be destroyed may develop a propensity toward sensation-seeking and risk-taking behavior reasoning that "we are all going to die soon anyway". Some writers warn that the uncertainty of the future forces adolescents to live more for the present, and that their subsequent inability to delay gratification may lead to more serious problems. Mann (1983) offers the following thoughts regarding the possible impact of the nuclear threat:

It is inconceivable that the psychic numbing and denial which permits the human race to continue sleepwalking towards oblivion does not have pathological consequences which manifest themselves in the most intimate and personal core of our beings, affecting precisely those areas we address as professionals, from mental illness to marital breakdown, adolescent suicide, alcoholism and drug abuse, criminality, and the weakening of interpersonal and cultural value systems. (p. 23)

Goldenring and Doctor (1983) offer anecdotal evidence from conversations with adolescents which suggest they

have adopted a "live for today" attitude in response to the nuclear threat. But again, the results from more controlled studies with less selective samples do not support this contention. Wrightsman (1964) reported that the concern of junior high adolescent males over the possibility of a nuclear war, as assessed by a single likert-type question, was not related to aggressivness or their view of human nature. Similarly, Mayton (1985) found there was no relationship between college students' perception of the nuclear threat and measures of self-control, emotional stability, or their efficacy in interpersonal relationships. However, it is important to note that in both of these studies the methods used to assess concern over the nuclear question were relatively insensitive to the variability which may exist on this dimension. For instance, Mayton employed a dichotomous grouping of concerned versus unconcerned subjects, thereby obscuring any differences in degree of concern which may have existed between those who were extremely concerned and those who were only a little concerned.

One personality construct that has received relatively little attention in connection with the threat of nuclear war is that of locus of control (LOC), that is, the extent to which individuals perceive themselves as being in control of their own lives (internality) as

opposed to being controlled by chance, fate, or by people more powerful than themselves (externality). It has been found that an internal LOC orientation is positively associated with academic achievement (Crandall, Katkovsky & Crandall, 1965; Nowicki & Segal, 1974; Nowicki & Strickland, 1973), social adjustment and involvement (Hersch & Scheibe, 1967; Nowicki & Segal, 1974) and the tendency to describe oneself as more active, powerful, independent, and effective (Hersch & Scheibe, 1967). Results such as these generally imply that internality is more desirable and advantageous than externality. In fact, Crandall et al. (1965) have suggested that an internal orientation may be necessary for one to respond appropriately to reinforcements. If an individual believes that the rewards and punishments he receives are independent of his or her behavior and beyond his control, he will not be motivated to attempt to change the frequency of their occurrence for his own personal benefit.

There has been periodic reference made to the feelings of powerlessness and helplessness that are assumed to accompany concern over the nuclear threat (Aarons, 1984; Escalona, 1982; Schwebel, 1982). As uncertainty over the future increases, one's ability to prepare for the future decreases resulting in feelings of

helplessness (Lazarus & Averill, 1972). If an individual does know what the future will be like, or whether there will even be a future, he or she cannot adequately prepare for the future, and is in a sense helpless. Following another line of reasoning Escalona (1982) suggested that growing up in a society that "tolerates and ignores the risk of total destruction by means of voluntary human action tends to foster those patterns of personality functioning that can lead to a sense of powerlessness and cynical resignation" (p. 601). However, the limited empirical evidence that is available does not support these views. Goldberg et al. (1985) found that "those who were most often fearful about the threat of nuclear war were also those who felt the least helpless" in dealing with this threat (p. 509). Using Rotter's internal-external locus of control (LOC) scale, Mayton (1985) failed to uncover any relationship between LOC and college students' spontaneous concern over nuclear war.

Summary

Conceptually there appears to be sufficient rationale for assuming that the threat of nuclear war may have a detrimental impact on adolescents' feelings about the future, their perceptions of control, and their behavior on a daily basis. However, much of the evidence regarding

the possible adverse effects of the nuclear threat is either anecdotal - based on data from selected interviews or researchers' personal impressions - or derived from self-report research in which the subjects were asked directly how the threat of nuclear war affected them. In addition, much of the available evidence suggests that those who express greater concern about nuclear war also feel the least helpless (Goldberg, et al., 1985) are better adjusted, more mature, and do better in school (Goldenring & Doctor; 1983, 1984). There is currently a need for research employing indirect measures of both the students' concern over nuclear war and the personality characteristics that are presumed to be influenced.

This study is essentially exploratory in nature, and as such no research hypotheses are advanced. Very little is known about how the nuclear threat affects adolescents, and previous research in the area has suffered from methodological shortcomings and biases that diminish the validity of the findings. As such, the goal of the present study is first to determine how concerned adolescents really are about the threat of nuclear war, and then to examine the possibility that there may be a relationship between the degree of adolescents' concerns and their ability to delay gratification, their orientation toward the future, their impulsivity, their

venturesomeness, and their LOC orientation.

CHAPTER III

Method

Overview

The present correlational study examined the relationship between adolescents' reported concern over the threat of nuclear war and their future time orientation, their ability to delay gratification, their level of impulsivity, their venturesomeness, and their LOC orientation. Implicit in the design of the study was the assumption that if concern over the nuclear threat does affect adolescents then those reporting a greater degree of concern should differ with respect to the personality correlates from those who report less concern. The correlates, which were measured in an indirect fashion, were defined as scores on appropriate scales described in the instruments section. The measure of concern was measured using the cumulative responses to a series of questions, thereby allowing for a high degree of variability between subjects. In addition, both direct and indirect questions were employed to permit comparison between these two methods. A number of qualitative questions were also included to provide additional

information about adolescents' opinions and beliefs concerning the threat of nuclear war.

Selection of the Sample

The target population for this study was students in grades 10 and 11 who were enrolled in Winnipeg high schools. Due to scheduling difficulties and activities associated with high school graduation the participation of students in grade 12 was not actively sought. On the basis of initial contacts and the assistance of the Manitoba chapter of Educators for Social Responsibility, five public school divisions and a number of separate schools within the city were identified as being the most likely to allow research on the threat of nuclear war. A summary research proposal (see Appendix A) outlining the nature of the project and requesting their participation was distributed to the identified institutions.

Letter to parents (see Appendix B), complete with information about the study and forms for withholding of consent, was sent home with each student in the targeted sample. This letter did not specifically mention the threat of nuclear war. Rather, the study was presented simply as an investigation into adolescents' concerns about the future, and the manner in which these concerns influence both the way they see themselves and their

orientation toward the future. This mild deception was necessary to ensure that prior knowledge of the subject matter would not artificially increase the students' normal level of anxiety associated with the nuclear threat.

The participants in the study do not constitute a random sample as both the characteristics and size of the sample were determined solely by the willingness of the school administration, parents, and students to take part in the study.

Description of the Sample

A total of 447 surveys were completed by students from three separate schools, all with religious affiliation, who agreed to participate in the study. Two of the schools were co-ed, comprised of both males and females, while the third was an all girls school. One of the co-ed schools requested that their grade 12 students be given the opportunity to complete the survey along with those in grades 10 and 11. All five of the public school divisions who were asked to participate in the study declined to do so for unspecified reasons.

The final sample consisted of 115 males (26%) and 332 females (74%). Approximately 45% of the respondents were in grade 10 and another 45% were in grade 11, with grade

12 students making up the remaining 10%. The mean age of the students was 16.5 years, with a standard deviation of 10 months. An estimate of socioeconomic status (SES) was obtained using a classification system provided by the University of Manitoba Institute for Social and Economic Research (personal communication, April 28, 1986). The system was adapted from Blishen & McRoberts (1976) and is based on the prestige, income, and educational requirements associated with parental occupation. Nearly 35% of the respondents had at least one parent who was a professional or held a senior management position, while 59% of the respondents' parents were engaged in middle-management, supervisory, skilled or technical occupations. Only 6% were classified as semiskilled or unskilled workers.

Description of the Survey Instrument

The survey (see Appendix C) was prefaced by a cover letter informing students of who was conducting the research, and outlining the purpose of the study in general terms. Again, since it was important that the students did not have prior knowledge about the survey that may have influenced their responses, the topic of nuclear war was not specifically mentioned. It was explained that their participation was completely

voluntary, and students were assured of the anonymity of their responses. To facilitate understanding and ease of responding, all of the questions were answered directly on the survey sheets.

The survey consisted of four sections. The first contained demographic questions which provided a general description of the sample. This information was also used in the analysis of the data.

In Section II the respondents were asked to name, in order of importance, the three things that worried them most about the future. Previous research has indicated that nuclear war is typically ranked as one of the top three concerns by children and adolescents (Goldberg et al., 1985; Goldenring & Doctor, 1984; Solantaus et al., 1984). If nuclear war was listed, scores of 5, 3 or 1 were assigned depending on whether it was designated as the most important, second most important, or third most important concern respectively. Since it is conceivable that an individual may be deeply concerned about an issue, and yet rarely think about it, the subjects were also asked to indicate on a scale of 1 to 5 how often they worry about each of the aforementioned concerns. Together, this information constituted the indirect measure of concern, with the total "Indirect concern" score being comprised of the product of the assigned score

(5, 3 or 1) and the worry rating supplied by each student. Thus, if a student listed nuclear war as the greatest concern and indicated that he or she worried about it all of the time the resulting Indirect score was $5 \times 5 = 25$. Similarly, if a student listed nuclear war as the greatest concern but indicated that he or she never worried about it, a score of $5 \times 1 = 5$ was assigned.

In contrast, Section IV contained 11 items which inquire directly about the threat of nuclear war. Of these, 6 were combined to provide a total "Direct concern" score. The remaining items were included to provide descriptive information regarding students' beliefs about the probability and survivability of nuclear war, the degree to which this has affected their plans for the future, and their opinions concerning the teaching of nuclear issues in the classroom. These items were deliberately placed at the end of the survey to minimize the possibility that the wording of these items would influence the students' responses to earlier questions.

The scales measuring direct and indirect concern were devised specifically for the present study in the absence of any previously established instruments. It was anticipated that they would provide a more sensitive assessment of concern than those used in past research as they allow for more variability in the scores and include

items which tap both the intensity of concern and the degree of preoccupation over the threat of nuclear war.

Section III contained five scales, one for measuring each of the five dependent variables: the ability to delay gratification, future time orientation, LOC orientation, impulsivity, and venturesomeness. The items from these five scales were intermingled somewhat to reduce the monotony that may result from responding to sequences of questions with similar wordings.

The ability to delay gratification was measured by a total of five items, three of which were taken from Rosenbaum's (1980) Self Control Schedule (SCS). The SCS as a whole has been shown to have satisfactory reliability, and there is evidence of the scale's validity (Richards, 1985; Rosenbaum, 1980). Factor analysis of the SCS with North American subjects identified three items which appeared to measure delay of gratification in both males and females (Redden, Tucker & Young, 1983). Richards (1985) reported that the alpha coefficient for these three items for males, females, and males and females combined, was .66, .78, and .75 respectively. In an effort to increase the reliability and sampling domain of the scale, the three SCS items were supplemented by two items used by Gjesme (1979, 1980). The response format for both the SCS and Gjesme items were slightly modified

to facilitate their integration with the other parts of the survey (i.e., from a 6 point to a 4 point scale, and from a 'yes' 'no' response to a 4 point scale respectively).

Orientation toward the future was measured by the 14 item Future Time Orientation scale (FTO) developed by Gjesme (1975, 1979). According to the author, the scale was designed to "tap the degree of general concern, engagement, and involvement in the future" (1979, p. 178). It has been found that individuals who score high on the FTO scale estimate a given future goal as being nearer in time than individuals who score low on the FTO, a finding which provides some construct validity for the scale (Gjesme, 1975).

The use of this scale in the present study was not ideal for three reasons: (1) The scale was originally developed in Norway, and its appropriateness for use with English-speaking subjects has not been demonstrated; (2) the FTO has not been used with subjects above the grade 6 level; and (3) the reliability of the FTO (alpha coefficient) is reported to be only .62 (Gjesme, 1979). However, in spite of these shortcomings, the FTO was included in the present study since it represents the only available time orientation scale appropriate for questionnaire research. In addition, an examination of

the items suggests that they may be more suitable for use with adolescents and adults than with children. Nevertheless, any findings related to the FTO will be tentative at best.

LOC was assessed by a revised version of the Nowicki-Strickland Locus of Control Scale for Children (Nowicki & Strickland, 1973) which provides a measure of generalized expectancy for internal versus external control of reinforcement. The original scale consists of 40 items which are answered yes or no, and is appropriate for use with children from grades 3 to 12. On the basis of item variance estimates and item-total correlations Nowicki and Strickland (1973) constructed a shorter yet reliable scale consisting of 21 items that were appropriate for use with adolescents. This abbreviated version was used in the present study as a measure of LOC orientation. Higher scores are indicative of an external orientation in which individuals perceive their lives to be controlled by chance, fate, or people who are more powerful than themselves.

Reliability data for the 40 item Nowicki-Strickland scale have been provided using a sample of over 1,000, primarily caucasian, elementary and high school students from a suburban county in the U.S. The authors reported split-half reliabilities (corrected by the Spearman-Brown

formula) of .74 for grades 9, 10, and 11, and .81 for grade 12 students. Shortened versions of the scale which are similar to that recommended by Nowicki and Strickland have yielded somewhat higher reliability coefficients (alpha) ranging from .79 to .86 for junior and senior high school students (Allie, 1979; Walters & Klein, 1981).

The validity of the scale has been demonstrated by significant correlations with other established measures of LOC, a negative relationship between achievement and externality (especially for males), and a tendency for scores to become more internal with increasing age (Nowicki & Strickland, 1973). Additional evidence for the validity of the Nowicki-Strickland scale was provided by Belter and Brinkmann (1981) who found a significant positive correlation between externality and high school students' belief in magical powers.

Impulsivity and venturesomeness were measured using the appropriate items from the I7 Impulsiveness Questionnaire (Eysenck, Pearson, Easting, & Allsopp, 1985). Eysenck and Eysenck (1978) have suggested that these two factors represent two similar yet distinct dimensions. Impulsivity can be described as saying something or performing some action without thinking or considering the possible consequences, while venturesomeness is characterized by sensation-seeking and

risk-taking behavior where an individual is aware of the risks involved but is willing to take a chance. Since it seems reasonable to make a distinction between "impulsive" behavior which is spontaneous and inadvertent and that which involves calculated risks, both impulsivity and venturesomeness were examined separately in the present study.

The I7 Impulsiveness Questionnaire is the latest revision of an earlier scale developed by Eysenck and Eysenck (1978), and is intended for use with subjects age 16 and above. The entire questionnaire consists of three scales: Impulsivity, Venturesomeness, and Empathy. The latter was originally included, in part, to act as buffer items interspersed between the similar sounding impulsiveness and venturesomeness items, and will not be incorporated into the present study (Eysenck & Eysenck, 1978). Rather, this role will be served by the LOC items which have an identical response format.

The I7 Impulsiveness Questionnaire was standardized on 589 male and female British subjects between the ages of 16 and 89, only 73 of whom were under 19 years of age. The reported reliabilities for males and females respectively are .84 and .83 for the impulsiveness items, and .85 and .84 for the venturesomeness items (Eysenck et al., 1985). Validity data for the I7 is sparse, although

the items certainly have face validity. Using the I5 Questionnaire, which was highly similar to the present I7, Eysenck and McGurk (1980) found that a sample of delinquents scored higher than normals on impulsiveness but not venturesomeness, a finding which was expected given the nature of these two constructs as defined by Eysenck.

Much of the evidence supporting the current I7 Questionnaire comes from factor analytic studies which show that although they are moderately correlated with each other, the Impulsiveness and Venturesomeness scales (on both the I7 and its predecessor) represent relatively distinct entities that correspond with the higher-order factors of psychoticism and extraversion respectively (Eysenck & Eysenck, 1978; Eysenck et al., 1985).

At the end of the survey students were provided with an opportunity to voluntarily write comments or express any concerns they had about the questions or the topics dealt with in the survey.

As a pretest the survey was administered to five high school students, and in all cases it was completed in approximately 25 minutes. In an effort to decrease the amount of time required to fill out the survey, the shortened version of the Nowicki-Strickland scale was substituted for the original 40 item scale. All of the

pretest participants indicated that with the exception of one item on the Venturesomeness scale, the survey was both interesting and understandable. This item, which alluded to an activity referred to as "pot-holing", was deleted from the survey since none of the respondents were aware of its meaning and the inclusion of the item would probably not have served any meaningful purpose.

Method of Data Collection

The surveys were distributed to the schools during the last week of April, 1986. All of the surveys were completed under teacher supervision during regular class time between April 29th and May 9th. A short letter to the teachers (see Appendix D) was included thanking them for their cooperation and emphasizing the importance of not mentioning the topic of nuclear war prior to the completion of the surveys. The only instructions given to the students were those provided in the cover letter. Briefly, they were assured that there were no right or wrong answers and were requested to answer all of the questions as honestly as they could.

Method of Data Analysis

All of the data were analyzed using the SAS Institute Inc. computer software system (1985a, 1985b). In all

cases, the analysis of variance technique was performed using the GLM procedure, and all significant effects were investigated further using the Tukey method. Due to the large number of tests conducted, a $p < .01$ level of significance was used for all analyses involving the full sample, ($N = 447$), while $p < .05$ was used for all subsample analyses.

In keeping with the primary purpose of the study, a correlational analysis was performed associating the scores for each of the five scales described in Section III of the survey with the measures of concern over the threat of nuclear war. Internal consistency estimates were calculated for the delay of gratification (DG), FTO, LOC, Impulsivity, Venturesomeness, and Direct concern scales using Cronbach's coefficient alpha. The GLM procedure and chi-square statistic were used to investigate gender and grade differences on the scales measuring direct and indirect concern, the five personality correlates, and the students' beliefs and opinions about nuclear war, and to compare students who were identified as highly concerned about the threat of nuclear war with those who were less concerned.

CHAPTER IV

Results

Overview

The results of the study are presented in five sections. First, reliability estimates of the scales are provided along with the intercorrelations between the personality correlates and the means and standard deviations for each scale. Second, the correlations between the measures of concern over the threat of nuclear war and the personality correlates are presented. Third, those subjects who reported a high degree of concern about the threat of nuclear war are compared to those who reported relatively little concern. This is followed by a description of students' concerns about the future. Finally, an analysis of students' opinions and beliefs about nuclear war and a summary of written comments pertaining to the nuclear threat are presented.

Reliability Estimates, Descriptive Statistics and Intercorrelations of the Scales

Alpha coefficients (Cronbach, 1951) were computed as estimates of internal consistency for the scales measuring

the five personality correlates as well as the six items measuring direct concern over the threat of nuclear war. For purposes of comparison, the obtained coefficients and the reliability of each of the scales as reported in the literature are presented in Table 1.

When the three items from the SCS (Rosenbaum, 1980) and the two items suggested by Gjesme (1979, 1980) were used as a measure of the ability to delay gratification the resulting reliability coefficient was .54. However, with the latter items deleted a coefficient more closely approximating that reported by Richards (1985) for the three SCS items was obtained. Since the addition of the two extra items served to decrease rather than increase the reliability of this measure, they were not included in subsequent analyses.

The means and standard deviations of the scores for males and females on the scales measuring concern over the threat of nuclear war and each of the personality correlates are provided in Table 2. In accordance with previous research (e.g., Harvey et al., 1985; Matas, 1984), an analysis of variance (GLM procedure) indicated that males scored significantly lower than females on the Direct measure of concern over nuclear war, $F(1, 394) = 25.42, p < .0001$. The practical significance of this difference is limited. An estimate of the magnitude of

Table 1

Reliability Coefficients for Scales

		Previously Published Reliability Estimates	Present Study
Direct Concern		-	.82
Future Time Orientation	(Gjesme, 1979)	.62	.67
Delay of Gratification	(Richards, 1985)	.75	.70
Impulsivity	(Eysenck et al., 1985)	.84 (a)	.79
Venturesomeness	(Eysenck et al., 1985)	.85 (a)	.74
Locus of Control (b)	(Allie, 1979)	.79	.75
	(Walters & Klein, 1981)	.86	
		.83	

Note. All reliabilities were obtained using coefficient alpha.

(a) Mean of reliability estimates for males and females.

(b) Based on abbreviated versions of the Nowicki-Strickland scale.

Table 2

Means and Standard Deviations (Std) of Scales for Males and Females

	Males		Females	
	<u>n</u> = 115		<u>n</u> = 332	
	Mean	Std	Mean	Std
Direct Concern	13.46	4.09	16.69	3.43
Indirect Concern	3.77	6.77	4.96	7.34
Future Time Orientation *	36.30	5.00	38.85	5.19
Delay of Gratification	6.76	1.90	7.32	1.96
Impulsivity	10.13	3.74	9.36	4.29
Venturesomeness	10.74	2.99	9.57	2.98
Locus of Control	8.53	4.22	7.41	3.99

* $p < .0001$.

the treatment effect (omega squared) indicated that only 1% of the total variance is accounted for by the gender variable. Males and females did not score significantly different on the Indirect measure of concern, $F(1, 390) = .01$, $p=.97$, and no social class differences were found on either the Direct measure of concern, $F(3, 394) = 1.09$, $p=.35$, or the Indirect measure of concern, $F(3, 390) = 1.03$, $p=.38$.

Females scored significantly higher than males on the FTO scale, $F(1, 434) = 16.90$, $p<.0001$. Again, the practical significance of this finding is limited as only 1% of the total variance on the FTO scale can be accounted for by the sex of the respondent. None of the other gender differences for the personality correlates were statistically significant, $F(1, 438) = 2.71$, $p=.10$ for the DG scale, $F(1, 404) = 5.33$, $p=.02$ for the Impulsivity scale, $F(1, 415) = 3.78$, $p=.05$ for the Venturesomeness scale, and $F(1, 411) = 6.30$, $p=.02$ for the LOC scale.

Table 3 contains the Pearson product-moment correlations between the scales measuring each of the five personality correlates. Scores on the FTO, DG, Impulsivity and LOC scales were moderately but significantly correlated with one another, while scores on the Venturesomeness scale were significantly related only to the scores on the Impulsivity scale. The amount of

Table 3

Intercorrelations between the Personality Correlates

	Future Time Orientation	Delay of Gratification	Impulsivity	Venturesomeness
Future Time Orientation	-			
Delay of Gratification	.48 * <u>n</u> = 437	-		
Impulsivity	-.39 * <u>n</u> = 404	-.29 * <u>n</u> = 407	-	
Venturesomeness	-.06 <u>n</u> = 414	-.09 <u>n</u> = 418	.26 * <u>n</u> = 393	-
Locus of Control (a)	-.41 * <u>n</u> = 411	-.22 * <u>n</u> = 414	.35 * <u>n</u> = 392	-.06 <u>n</u> = 399

(a) LOC is scored in the direction of externality.

* $p < .0001$.

common variance accounted for by these correlations ranged from a high of 23% between the FTO and DG scales to only 4.8% between the DG and LOC scales. Finally, the correlation between the Direct and Indirect measures of concern was .39 ($N = 437$, $p < .0001$), with approximately 15% shared variance between these two scales.

Correlational Analysis of the Data

To investigate the relationship between adolescents' concern over the threat of nuclear war, their orientation towards the future and feelings of self-control, the Direct and Indirect measures of concern were correlated with each of the five personality correlates. The results of this analysis are presented in Table 4.

The responses to the open-ended question asking students to list their three most important concerns about the future were classified into nine separate categories according to the nature of the response. Concerns were classified as nuclear war only if reference was made to "nuclear", "atomic", or "the bomb". A number of respondents indicated that they worried about "war" for specific reasons (e.g., the possibility that they or someone they loved may be forced to participate in armed combat) while others listed conventional war specifically. All general references to war were classified under the

Table 4

Intercorrelations Between the Measures of Concern and the
Personality Correlates

	Direct	Indirect	War
Future Time Orientation	.21 * $\underline{n} = 437$.003 $\underline{n} = 433$.10 $\underline{n} = 440$
Delay of Gratification	.09 $\underline{n} = 441$.06 $\underline{n} = 437$.08 $\underline{n} = 444$
Impulsivity	.02 $\underline{n} = 409$.07 $\underline{n} = 404$	-.03 $\underline{n} = 410$
Venturesomeness	-.08 $\underline{n} = 419$.02 $\underline{n} = 414$	-.13 $\underline{n} = 421$
Locus of Control	-.07 $\underline{n} = 414$	-.06 $\underline{n} = 410$	-.07 $\underline{n} = 417$

* $p < .0001$.

category of world unrest. This conservative approach was adopted to ensure that the Indirect score - which is based upon the inclusion of nuclear war as a concern - would be sensitive only to the amount of concern expressed about the threat of a nuclear conflict and not war in general. Consequently, only those subjects who made specific reference to nuclear war received an Indirect score greater than zero. To ensure that this procedure would not result in the exclusion of some subjects who were concerned about nuclear war but failed to mention it specifically, an additional concern variable called "War" was created by combining the nuclear war and world unrest categories. Thus, if a subject made reference to war (nuclear, conventional or unspecified) a new score was calculated according to the procedure described in the instruments section used to assign Indirect scores. This new variable was also included in the correlational analysis.

As seen in Table 4, a high score on the FTO scale was positively related to the amount of concern over the threat of nuclear war as measured by the Direct scale ($r = .21$, $p < .0001$). Those students who expressed greater concern also tended to anticipate and think about the future more than those who were less concerned about the threat of nuclear war. However, only 4.4% of the

variation in FTO scores was associated with changes in scores on the Direct concern scale. None of the other correlations were significant, and the War score did not yield remarkably different results than the Indirect score.

Comparison of High Versus Low Concern Groups

In order to determine how those who were extremely concerned about the threat of nuclear war differed from those who were less concerned, subjects scoring higher than 19 on the Direct concern scale were compared to those scoring less than 13 on the same scale. The former were designated as the high concern group and represented the top 18% of the Direct score distribution ($n = 80$). The latter were designated as the low concern group and consisted of those receiving a Direct score at or below the 20th percentile ($n = 91$).

The means for the high and low concern groups on the scales measuring the personality correlates are presented in Table 5. Analogous to the results of the correlational analysis, an analysis of variance procedure revealed that with regards to the personality correlates the high concern group scored significantly higher on the FTO scale than the low concern group, $F(1, 166) = 15.14, p < .0001$. An estimate of omega squared indicated that 7.9% of the

Table 5

Means for the High and Low Concern Groups on the
Personality Correlates

	High Concern	Low Concern
	<u>n</u> = 80	<u>n</u> = 91
Future Time Orientation *	39.79	36.76
Delay of Gratification	7.33	6.91
Impulsivity	9.70	9.25
Venturesomeness	9.77	10.36
Locus of Control	7.52	8.10

* $p < .0001$

total variance in FTO scores is attributable to the amount of concern expressed by the subjects. The high and low concern groups did not differ significantly on any of the other personality correlates, $F(1, 167) = 1.65$ for DG, $F(1, 152) = .45$ for impulsivity, $F(1, 158) = 1.45$ for venturesomeness, and $F(1, 158) = .80$ for LOC.

The results of a chi-square analysis indicated that the proportion of males and females in the high and low concern groups were not equal, $\chi^2(1, N = 171) = 28.65$, $p < .0001$. Although females comprised approximately 74% of the entire sample, a full 86% of the high concern group were female while only 53% of the low concern group were female. Thus female subjects were overrepresented in the high concern group and underrepresented in the low concern group, while the opposite was true for the proportions of males. Those students in the high concern group also tended to be younger (mean = 16 years, 5 months) than those in the low concern group (mean = 16 years, 9 months), but the difference was not statistically significant, $F(1, 169) = 6.72$.

Description of Students' Concerns about the Future

As was mentioned previously, the students' concerns about the future were classified into nine different categories on the basis of content and general theme.

These categories were not determined a priori, rather, the types of concerns expressed determined the categories which were used. Only the nine most frequently mentioned themes were included. All other concerns and those which were too vague to classify were included in the "Other" category. The following is a list of the categories employed along with a description of the types of responses included in each.

(1) Nuclear War - references to war or international conflict which included the word nuclear, atomic, the bomb, or some related term.

(2) World Unrest - references to the present world situation in general, terrorism, conventional or otherwise unspecified war.

(3) Family - concerns regarding family relationships or the safety and well-being of family members.

(4) Career - statements concerning future occupation, making proper career choices, and unemployment.

(5) Present School - references to current grades, upcoming exams, and graduating from high school.

(6) Dating and Marriage - matters related to relationships with the opposite sex and future marriage partners.

(7) Death or Illness - concerns about one's own

death or the possibility of contracting a severe illness (e.g., cancer, aids).

(8) Future Education - references to gaining admission into college or university and choosing an appropriate program.

(9) Personal Success - concerns about one's degree of success, fulfillment or happiness in life.

(10) Other - responses not otherwise classified, including those which were given infrequently and vague references to the future (e.g., concerned about what is going to happen tomorrow or what the future might be like).

Approximately 38% of the total sample listed nuclear war as one of their three most important concerns. A chi-square analysis revealed that the nature of concerns for males and females did not differ significantly, however there were significant differences in the concerns listed when the subjects were compared separately by grade, $\chi^2(18, N = 440) = 31.92, p < .05$ for the first concern, $\chi^2(18, N = 434) = 38.18, p < .01$ for the second concern, and $\chi^2(18, N = 400) = 34.57, p < .01$ for the third concern.

Table 6 presents the percentage of instances in which a category was listed as either a first, second, or third most important concern and the relative ranking of each

Table 6

Ranking and Percentages of Students' Combined Concerns about the Future

	Total Sample		Grade 10		Grade 11		Grade 12	
	<u>n</u> = 447		<u>n</u> = 202		<u>n</u> = 203		<u>n</u> = 42	
	Rank	%	Rank	%	Rank	%	Rank	%
Career	1	57.1	1	51.5	1	61.8	1	64.3
Nuclear War	2	38.3	2	46.0	2	30.5	2	31.8
World Unrest	3	25.3	3	23.8	3	29.1	6-7	14.3
Present School	4	17.4	5	18.3	5-6	13.8	4	31.0
Future Education	5	14.5	8	11.4	7-8	13.3	3	33.3
Dating & Marriage	6	14.3	7	11.9	4	14.8	5	23.8
Family	7	14.1	6	14.8	7-8	13.3	8-9	11.9
Death or Illness	8	11.9	4	18.8	9	6.4	8-9	11.9
Personal Success	9	10.3	9	5.9	5-6	13.8	6-7	14.3

Note. All of the above information is based on the frequency of responses in each category for the first, second, and third concerns combined.

for the total sample and the three grades separately. In the total sample, concern over future career was listed as one of the three most important concerns 57.1% of the time, followed by the threat of nuclear war (38.3%), world unrest (25.3%), present school (17.4%), future education (14.5%), dating and marriage (14.3%), family (14.1%), death or illness (11.9%), and personal success (10.3%). Concerns about future career were listed most often by students in all three grades, followed by concerns about nuclear war. World unrest was the third most frequent category listed by students in grades 10 and 11, while concerns about future education were mentioned more often by those in grade 12. In general, grade 10 students listed nuclear war as a concern more often than students in the higher grades, and students in grade 12 were more concerned about their present schooling and future education and less concerned about world unrest than students in grades 10 and 11.

The rankings for the five most frequently mentioned number one concerns in the total sample were almost identical to the ranking of the combined concerns presented in Table 6 (see Appendix E). Similarly, as in Table 6, students in grade 12 tended to list concern over their future education as a number one concern more often than students in grades 10 and 11, and students in grade

10 tended to list nuclear war more often and concerns about their future career less often than those in the higher grades.

Students' Beliefs and Opinions About Nuclear War

The response profiles for the 11 qualitative questions (including the 6 items from the Direct concern scale) on the threat of nuclear war are presented in Table 7. Over half of the respondents indicated that they felt a nuclear war would occur in their lifetime, and 85% believed that they would not survive a nuclear war if one did occur. Interestingly, only 17% agreed that the nuclear threat has affected their plans for the future. No sex differences were found on these three items.

An analysis of variance did reveal significant sex differences on four of the items from the Direct concern scale. In each case, female students indicated that they were more anxious or frightened about the threat of nuclear war than males were. Estimates of omega squared indicated that the practical significance of these findings is small, with the gender difference accounting for 3.9%, 2%, 3.3%, and 3% of the total variance for items d, f, h, and i respectively.

Almost 29% of the entire sample have had at least one dream or nightmare about nuclear war while less than 1%

Table 7

Means and Standard Deviations (Std) for Males and Females and Total Sample
Percentages for Questions Concerning Nuclear War

		Males		Females	
		Mean	Std	Mean	Std
a) I believe that a nuclear war will occur in my lifetime.		2.6	.91	2.6	.74
1. Strongly Disagree	7.9%	$F(1, 438) = 0.5, N.S.$			
2. Disagree	34.7%				
3. Agree	45.7%				
4. Strongly Agree	11.7%				
b) I believe that if a nuclear war does occur I will not survive.		3.2	.86	3.3	.75
1. Strongly disagree	3.4%	$F(1, 439) = 4.28, N.S.$			
2. Disagree	11.0%				
3. Agree	42.9%				
4. Strongly Agree	42.7%				
c) I never really think about nuclear war unless someone asks me about it or I hear someone else mention it.		2.6	.91	2.4	.95
1. Strongly disagree	18.8%	$F(1, 440) = 3.03, N.S.$			
2. Disagree	34.1%				
3. Agree	33.9%				
4. Strongly Agree	13.2%				

Table 7 (continued)

		Males		Females	
		Mean	Std	Mean	Std
d) I never feel the least bit afraid or anxious when I read an article or hear a newscast about the danger of nuclear war.		2.6	1.0	1.8	.83
1. Strongly disagree	37.6%	$F(1, 440) = 42.03, p < .0001$			
2. Disagree	36.1%				
3. Agree	18.2%				
4. Strongly Agree	8.1%				
e) Thinking about the nuclear threat has affected my plans for the future.		1.7	.88	1.8	.82
1. Strongly disagree	43.2%	$F(1, 441) = 2.49, N.S.$			
2. Disagree	39.6%				
3. Agree	12.5%				
4. Strongly Agree	4.7%				
f) I don't really care if a nuclear war occurs.		2.0	1.1	1.4	.70
1. Strongly disagree	64.6%	$F(1, 440) = 19.35, p < .0001$			
2. Disagree	23.1%				
3. Agree	6.9%				
4. Strongly Agree	5.4%				

Table 7 (continued)

		Males		Females	
		Mean	Std	Mean	Std
g) Have you ever had disturbing dreams or nightmares about nuclear war?		1.3	.63	1.5	.79
1. Never	71.1%	$F(1, 440) = 6.50, N.S.$			
2. Once	14.3%				
3. A few times	13.7%				
4. All the time	0.9%				
h) How often have thoughts about nuclear war caused you to have feelings of fear or anxiety?		1.9	.96	2.7	.80
1. Never	22.2%	$F(1, 440) = 39.95, p < .0001$			
2. Once	15.9%				
3. A few times	55.4%				
4. All the time	6.5%				
i) How frightened are you about the possibility of a nuclear conflict?		2.3	.99	3.0	.81
1. Not at all	10.1%	$F(1, 440) = 30.42, p < .0001$			
2. Very Little	19.5%				
3. Some	45.3%				
4. A lot	25.1%				

Table 7 (continued)

j) Do you feel that discussing and learning some facts in school about the threat of nuclear war would be helpful to you personally?

1. Yes	44.2%
2. No	24.4%
3. Not sure	31.4%

k) If such a program were to be started, at what grade do you think it should begin?

1. Should not be done	4.8%
2. Before grade 6	11.7%
3. Between grades 7 and 9	43.1%
4. Between grades 10 and 12	40.4%

Note. Items c, d, f, g, h, and i, comprised the Direct measure of concern over the threat of nuclear war.

reported that they have this type of experience all of the time. Over 12% of the students indicated that they do not really care if a nuclear war occurs.

The last two items on the survey were designed to elicit students' opinions regarding the teaching of nuclear issues in the classroom. Approximately 44% of the sample indicated that such a practice would be helpful to them personally, 24.4% said it would not be beneficial, and the remaining 31.4% were not sure. When asked to indicate the grade level at which such a program should begin, the vast majority specified the junior or senior high grades. Only 11.7% indicated that teaching about nuclear war should begin before grade six.

A total of 40 students offered their comments in response to the statement at the end of the survey. Of these, 18 made some reference to nuclear war and are reproduced in Appendix F. Six students included some comments regarding the teaching of nuclear war, with the majority being in favor of such a program. A number of respondents communicated feelings of cynicism and helplessness, while others made the point that the pending threat of nuclear war is no reason to give up on the future. One student made reference to the role of her religious beliefs in helping her cope with the threat of nuclear war.

CHAPTER V

Discussion

Introduction

The primary purpose of the present study was to explore the relationship between adolescents' concern over the threat of nuclear war and some selected personality characteristics. However, there are a number of other interesting and instructive observations that may be gleaned from the survey results. Accordingly, the chapter begins with a discussion of the reliability and validity of the scales used in the study, followed by a discussion of the relationship between concern over the threat of nuclear war and the personality correlates, an examination of adolescents' reactions to the nuclear threat, a comparison of the Direct and Indirect measures of concern, and the implications of the present findings for nuclear education programs. The delimitations of the study are then presented, along with the conclusions and recommendations stemming from the present research.

Reliability and Validity of the Scales

Although still within an acceptable range for

personality measures and research purposes (Aiken, 1982), the reliabilities for the DG, Impulsivity, Venturesomeness, and LOC scales are slightly lower than those reported in the literature (see Table 1). In the present study the reliability of the abbreviated LOC scale was .75, which, while lower than that found using similar shortened versions, is comparable to the split-half reliabilites ranging from .74 to .81 for the full 40 item scale (Nowicki & Strickland, 1973). The differences between the reliabilities reported by Eysenck et al. (1985) for the Impulsivity and Venturesomeness scales and those obtained in the present study were most likely attributable to differences in the samples employed. Specifically, the Eysenck et al. sample consisted of subjects from Britain who ranged in age from 16 to 78 years, whereas the present study was restricted to Canadian adolescents between the ages of 14 and 20. A more homogeneous sample, as in the latter case, could conceivably lead to a more restricted range in scores and a lower estimate of scales unidimensionality.

There was a modest improvement (.62 to .67) in the reliability of the FTO scale over that reported by Gjesme (1979). The most probable explanation for this finding is that the wording and nature of the items on the scale are more suited for adolescents than the elementary students

which Gjesme employed in his research. An alpha coefficient of .82 clearly indicates the Direct concern score is a reliable measure of adolescents' concern over the threat of nuclear war.

The finding that females scored significantly higher than males on the FTO scale corresponds to the sex differences reported by Gjesme (1979, 1980) for elementary school students. In addition, all of the significant correlations between the personality correlates were in the appropriate direction given the constructs each of the scales represent (see Table 3). For example, higher scores on the Impulsivity scale were related to lower scores on the FTO scale and lower scores on the DG scale. Thus, impulsive students tended to seek immediate gratification more and anticipated the future less than those who scored low on the Impulsivity scale. Consistent with past research, the ability to delay gratification was positively related to a high future time perspective (Gjesme, 1979, 1980; Klineberg, 1968) and negatively related to externality as measured by the LOC scale (Strickland, 1973). Finally, as one would expect given the similarity between the constructs of impulsivity and venturesomeness, the scores on these scales were moderately but significantly correlated (Eysenck et al., 1985). Overall, these findings provide support for the

construct validity of the five scales and affirm their appropriateness for use in the present study.

The Relationship Between Concern Over the Threat of Nuclear War and the Personality Correlates

Contrary to the expectations of many mental health professionals, the results of the present study suggest that the threat of nuclear war is not related to the personality variables investigated. More specifically, there is no evidence to suggest that the degree of adolescents' impulsiveness, venturesomeness, ability to delay gratification, or LOC orientation, as measured in this study, is related to the degree of their concern over the threat of nuclear war.

A significant positive correlation between scores on the FTO scale and scores on the Direct measure of concern was found, indicating that those students who anticipated and thought about the future the most also tended to report greater concern over the threat of nuclear war. This finding is contrary to what many have speculated (e.g., Beardslee & Mack, 1981; Blackwell & Gessner, 1983). Rather than concern over the threat of nuclear war being associated with the propensity to give up on the future and adopt a "live for today" attitude, concern over the nuclear threat appears to be related to considerable

involvement in the future. The most plausible interpretation of this finding is that some individuals are naturally more inclined to think about and ponder the future than others. This propensity to consider the future predisposes them to develop a concern over the possibility of a nuclear conflict. Thus, if one is to speculate about a causal relationship between these two variables, it is most likely a high future time orientation that results in concern over the threat of nuclear war rather than vice versa.

As was mentioned previously, due to a number of shortcomings of the FTO scale the preceding interpretation is highly tentative. However the reliability of the scale was improved somewhat in the present study over that reported by Gjesme (1979, 1980), and the intercorrelations of the scales presented in Table 3 appear to support its validity. The present interpretation is also supported by the subjects' responses to the item "Thinking about the nuclear threat has affected my plans for the future" (see Table 6). Nearly 83% of the total sample disagreed or strongly disagreed with this statement. Furthermore, in their comments at the end of the survey several of the students emphasized the irrationality of allowing the "possibility" of a nuclear war to influence one's plans for the future. Thus from the adolescents' perspective,

most do not feel that the nuclear threat affects the way in which they plan for the future, a finding also reported by others (Goldberg et al., 1985; Goodman et al., 1983; Harvey et al., 1985).

None of the correlations between the personality correlates and the Indirect measure of concern or the War variable were significant. This finding reinforces the conclusion that the threat of nuclear war does not influence these personality characteristics as analyses using a number of different methods of measuring concern over the nuclear threat produced nearly identical results.

One could still maintain that adolescents are influenced by the threat of nuclear war, but for methodological reasons the present study did not uncover any evidence of these effects. It is possible that the personality measures employed were not sufficiently sensitive to detect the subtle differences that may exist between subjects who reported varying degrees of concern. Furthermore, these personality measures are based on self-report data, which may or may not be representative of actual behavior. There is also the possibility that adolescents are influenced by the nuclear threat in other ways not examined in the present study. However, the variables investigated were identified from a review of

the literature as being the ones most susceptible to the nuclear threat, and it seems unlikely that the inclusion of other factors would have yielded significantly different results.

On a more fundamental level, the rationale and design of the present study was based on the assumption that if concern over the nuclear threat does affect adolescents then those who report greater concern should differ on the personality variables investigated from those who report less concern. However, it may be argued that the method used to assess the degree of concern over the threat of nuclear war was flawed for the following reason. Some of the subjects who reported that they were not concerned at all may actually have been more troubled by the nuclear threat than those who reported a high degree of concern. Denial is a form of coping that is often employed when the realities and consequences of an impending threat are too great for an individual to live with. Thus, rather than scoring high on the measures of concern, some of the students who were the most troubled by the threat of nuclear war may have scored very low. Unfortunately this limitation would be inherent in virtually all techniques designed to measure variables such as concern over the threat of nuclear war, and in the absence of any external criterion with which to validate the measures used in this

study, the most parsimonious interpretation would be to accept the results at face value.

Thus, one needs to explain why concern over the threat of nuclear war does not appear to affect the lives of adolescents. There are at least four possibilities in this connection. One explanation is that many of the students did not perceive nuclear war to be a threat. Indeed, 42.6% of the sample disagreed or strongly disagreed with the statement "I believe that a nuclear war will occur in my lifetime". Anxiety appraisals, as described by Lazarus and Averill (1972), are "cognitive processes mediating between the environmental situation and the emotional reaction" (p. 242). Lazarus and Averill have postulated a three stage appraisal process consisting of primary appraisals, secondary appraisals, and reappraisals. Primary appraisal is a cognitive judgement concerning the potential of a situation: whether it is relevant or irrelevant, harmful or beneficial to the individual. Secondary appraisal involves a judgement about an individual's own abilities and the resources that are available to help him or her cope with the situation. Reappraisal refers to changed evaluations based on new information, feedback from one's own actions, and personal reflection.

Those subjects who did not feel that nuclear war was

a threat may have arrived at this conclusion through their primary appraisal of the current situation. In their opinion, the evidence that a nuclear war is imminent or even likely may not be sufficiently convincing. Alternatively, they may not have understood or been fully aware of all the available evidence and as a result made their assessment of the situation on the basis of incomplete or inaccurate information.

Situational variables also affect the appraisal process, especially during secondary appraisal when the individual is evaluating a threat in light of the coping resources available. At this point the security and faith an individual has in his or her parents and in other significant adults may play an important role in determining whether or not nuclear war will be perceived as a threat. Darr (1963) suggested that "how a child experiences the nuclear threat depends on the adult environment through which this threat is filtered" (p. 203). Support for this contention has been provided by Wrightsman (1964) who found a positive relationship between parents' degree of concern over nuclear war and the extent of their son's worry. Thus, the adult environment in which an adolescent is living, both at home and at school, may influence their perception of and consequent reaction to the nuclear threat. Though highly

speculative, it is possible that the subjects in the present study, being from schools with a religious orientation, had the benefit of highly supportive and caring environments. Their appraisal of the current nuclear situation may have been more pessemistic and their reaction to it more extreme had they been in a less secure environment with fewer emotional supports.

A second explanation is that the majority of the subjects may have developed some effective method of coping with this threat. Coping has been defined as "any adaptive process used to erect a barrier against the experience of overwhelming anxiety that would otherwise accompany traumatic events" (Hogman, 1983, p. 53). Many of these students seem to have developed a variety of coping strategies which allow them to function effectively in spite of the impending threat. Some do not deny the reality of the threat, but simply choose not to think about it. They actively supress unpleasant thoughts about nuclear war that may otherwise cause anxiety and discomfort. Others do deny the possibility that a nuclear war could ever occur. They express faith in political leaders and believe that they would never let something so terrible ever occur. Still another possible reaction to the nuclear threat is to believe that a nuclear conflict would not be as widespread or disasterous as some would

have us believe, and that with proper preparation the effects on mankind may not be that bad (Lerner, 1965). Indeed, 14.4% of the adolescents surveyed believe that they could survive a nuclear war. All three of these viewpoints represent coping strategies that were discernible in the present sample: They all permit individuals to live a relatively normal life free from excessive concern over the nuclear threat, and allow them to direct their energies towards coping with the more traditional problems that face maturing adolescents.

A third explanation as to why the threat of nuclear war does not appear to affect the lives of adolescents can be derived from a theoretical model of fear and anxiety proposed by Beck and Emery (1985). They define fear as a cognitive process which involves the intellectual appraisal of a situation, while anxiety is conceptualized as the emotional response to that appraisal. Fear is simply an anticipation of danger (Beck, 1972), such as when someone expresses a fear of dentists. A fear becomes activated when an individual is physically or psychologically exposed to the threatening situation (e.g., sitting in a dentist's office), and only then does he or she experience anxiety. Latent (unactivated) fear is not associated with any unpleasant emotional state until it is activated and anxiety is experienced.

This conceptualization of fear and anxiety is different from the one used in the present investigation. Nevertheless, it does have implications for the present discussion. Even if an individual perceives nuclear war to be a threat, this fear may be latent and would be activated (i.e., anxiety would be experienced) only when he or she is encouraged to think about nuclear war or when confronted with a situation in which the a nuclear conflict is perceived to be highly probable. Many of the subjects who responded to the survey may have been fearful about nuclear war, according to the definition provided by Beck and Emery (1985), but unless this fear is activated and anxiety is experienced it may have little or no influence on their lives. Without the experience of an unpleasant emotional state associated with a threatening stimulus one is not likely to become preoccupied to the point of feeling overwhelmed or helpless. Furthermore, even when this fear does become activated it would likely be temporary in nature, and would return to a latent state soon after the confronting situation subsided. Viewed in this manner it may be seen how adolescents can fear nuclear war and yet not be significantly influenced by this threat.

Finally, an explanation that is related to the preceding one is that the threat of nuclear war is simply

too distant and too far removed from everyday life for it to seriously affect the daily functioning of most individuals. Other issues such as future career plans, concerns about present and future education, and relations with the opposite sex also weigh heavily on the minds of adolescents. These concerns are much more pressing and have more immediate consequences in a personal way than the threat of nuclear war. Students are likely confronted with these issues on a daily basis, and are frequently forced to make important personal decisions regarding these issues. As a result, concern over the threat of nuclear war may be overshadowed by these more immediate and demanding concerns.

Adolescents' Reactions to the Nuclear Threat

Although the results of this study generally suggest that adolescents' concern over the threat of nuclear war does not have a conscious or unconscious effect on their lives, the students in the present sample were nevertheless pessimistic about the possibility of a nuclear holocaust. Over half of the respondents indicated that they believe a nuclear war will occur within their lifetime, and an even greater percentage felt that they would not survive such an event.

It appears that the majority of these students are

able to live the double life that Lifton (1982) referred to. They are aware of the distinct possibility of a nuclear war and the disastrous consequences that could result, but are able to conduct their lives as if the threat did not exist.

A minority of subjects, however, were extremely concerned about the nuclear threat. Approximately 20% listed nuclear war as their number one concern about the future, and another 17% agreed that their future plans were influenced by this threat. Four respondents indicated that they experienced disturbing dreams and nightmares about nuclear war all of the time, while 6.5% reported that they experienced feelings of fear and anxiety related to nuclear war all of the time. One student wrote "the threat of nuclear war always lingers in the far depths of my mind. It's like it's controlling every aspect of my life".

How do these highly concerned adolescents differ from the rest of the sample? From the comparison of the high versus low concern groups and the mean scores for males and females on the Direct concern scale it was evident that females tended to be more concerned about nuclear war than males. In addition, although the difference was not statistically significant, those in the high concern group tended to be younger than those in the low concern group.

These findings corroborate the results of previous research in the area and suggest that females are generally more concerned than males and that concern over the nuclear threat tends to decrease with increasing age.

Goldberg et al. (1985) found that the students in their sample who worried about nuclear war daily also worried more about unemployment and their own career plans than other students. This suggests that these individuals may have an overall high level of anxiety that is evident in a variety of different areas, of which the threat of nuclear war is just one. Their fear of nuclear war may simply be a visible symptom of a greater underlying emotional disturbance.

Goldberg et al. (1985) also discovered that students reporting daily fear expressed more optimism regarding their own ability to do something about preventing a nuclear war. Similarly, Lerner (1965) found that when students were exposed to an information pamphlet that resulted in an increase in the belief that a nuclear war would occur, there was a concurrent increase in the belief that with proper preparation the majority could survive a nuclear war. Unfortunately the pamphlet that these students received included information on how to survive a nuclear conflict. Consequently it was not clear whether the increase in their belief about survivability was a

function of their stronger conviction that a nuclear conflict would occur, or a direct result of the stimulus material employed. Nevertheless, it is possible that in order to cope with the nuclear threat individuals may alter their beliefs and perceptions in the manner suggested by the theory of cognitive dissonance (Festinger, 1957). With the admission that a nuclear war is likely to occur sometime in the future, there may also be a change in other beliefs that serve to reduce the threat. Rather than denying the possibility or simply choosing not to think about it, some students may adopt the perspective that they can survive a nuclear war or that they can have some personal influence in averting such a disaster altogether. Whether or not the highly concerned students in the present study reacted to the nuclear threat in this fashion is not discernible from the data.

Fear can be both adaptive and maladaptive. Within limits it can serve to motivate individuals toward some form of preventative action, but excessive fear may lead to emotional paralysis where one is completely overwhelmed and unable to function normally (Group for the Advancement of Psychiatry, 1964). From the present results it does not appear that the daily functioning of the highly concerned subjects was actually impaired by the threat of

nuclear war.

If one is to speculate about a group of students who have been influenced the most by the threat of nuclear war it would be those who express a type of cynical resignation about the future. Over 12% of the total sample indicated that they agreed or strongly agreed with the statement "I don't really care if a nuclear war occurs". One student stated that he wanted "to be at point zero when a nuclear bomb goes off" while another reasoned "if it happens it happens, and because of the blasts, I'd feel no pain anyways." It appears that these individuals have succumbed to the idea that mankind is doomed, and feel totally helpless in the face of this seemingly hopeless situation. Unfortunately, this supposition cannot be verified in the present study.

Direct Versus Indirect Measures of Concern

The correlation between the Direct and Indirect measures of concern was not as high as one might expect given that both of these scales were designed to tap the same dimension, albeit in a different manner. However, because only 38% of the total sample listed a nuclear related response as one of their three most important concerns about the future, the majority of the subjects received an Indirect score of zero. As a result, there

was a high concentration of scores at the bottom end of the Indirect score distribution, and the variability that did exist on this scale was due only to those who mentioned nuclear war spontaneously. It is quite possible that the relative lack of variation in the Indirect scores for the sample as a whole was responsible for the low correlation between this scale and the Direct measure of concern.

An alternative explanation is that these two scales represent fundamentally different methods of assessing concern over the threat of nuclear war, and that a high degree of congruence between them should not be expected. The Direct measure includes references to nuclear war that may draw out feelings of concern and fear that are normally suppressed, and in some instances may actually arouse anxiety that may otherwise not have been present. As such, it measures how sensitive respondents are to the nuclear issue. Those who are the most sensitive should be influenced the most by statements or suggestions about the threat of nuclear war, a condition that should be reflected in their responses. In contrast, the Indirect measure identifies those who are actively thinking about the nuclear threat. No suggestions or ideas are presented that could cause anxiety about any particular topic. When viewed in this way it is not surprising that the

correlation between these two scales was only .39.

The present study does not permit any statements to be made concerning the appropriateness or the validity of direct versus indirect methods of assessing concern over the nuclear threat. But what is clear is that the two methods yield somewhat different results.

Implications for Nuclear Education

The students in the sample were divided in their opinion of the usefulness of discussing and learning about nuclear issues in school. A large proportion (31.4%) of the sample said they were not sure if this type of program would be of any personal benefit, while 24.4% indicated that it definitely would not help them. However, only 4.8% indicated that such a program should not be implemented at all in the schools. Some of the students referred to this issue in their comments at the end of the survey. Most expressed the opinion that teaching students about nuclear war would be a positive step, while a few suggested that such a practice would only breed fear and anxiety.

The two most often stated purposes of nuclear education programs (sometimes referred to as peace education programs) are to decrease the amount of fear and anxiety students experience over the threat of nuclear

war, and to stimulate preventative action that will reduce the likelihood of a nuclear war ever occurring. The former is typically addressed by providing information about nuclear war and giving students an opportunity to discuss their feelings and concerns. The latter purpose stems from the belief that reactions such as denial and avoidance of the nuclear threat are actually maladaptive and potentially self-destructive because they do not serve to prevent such a disaster. Many argue that we should break down this mental set and help children and adolescents think about nuclear war, while at the same time instill a sense of personal efficacy that will result in action (De Rivera, 1984; Lifton, 1982; Mack, 1981; Mann, 1983).

What are the implications of nuclear education programs for the current emotional welfare of the students? There is as yet no evidence to suggest that increased knowledge results in decreased levels of fear and anxiety. Furthermore, the present results indicate that most of the adolescents surveyed are already coping effectively with the threat of nuclear war. As for promoting action through nuclear education, research has indeed shown that those students who felt the most fearful about nuclear war are also the most likely to feel that they have the most personal influence in this regard

(e.g., Goldberg et al., 1985). However, it is erroneous to assume that breaking down the defense mechanisms of denial and avoidance will necessarily lead all students to adopt the viewpoint that they can have some personal influence. There is a very real danger that forcing students to "face reality" may make them more vulnerable to feelings of helplessness and despair.

Delimitations of the Study

The surveys were completed during a period of international tension and concern. Two incidents which received worldwide attention were dominating the media at that time and were undoubtedly a topic of discussion in many classrooms. The first, which occurred approximately two weeks before the surveys were distributed, was the U.S. air raid on Libya. The second incident was the nuclear power plant accident at Chernobyl that took place a few days prior to the completion of the surveys. These events may have increased the students' sensitivity to the nuclear issue in general and heightened their awareness of the threat of international conflict. Consequently, the subjects may have been more preoccupied with these concerns than they normally would be and the results may not accurately reflect the usual feelings of these adolescents. However, the topic of nuclear power was

listed so infrequently as a concern that it appears the accident at Chernobyl may not have had a significant effect on the subjects. The effects of the Libyan incident are unknown, but it seems reasonable to assume that together these two events may have influenced the responses of some of the students, particularly those who were already inclined to worry about such topics. Had the surveys been completed during a time when nuclear issues and the possibility of an international conflict were less in the forefront, the subjects' reported degree of concern over nuclear war may have been somewhat lower as well.

Another possible limitation of the study was the method used to obtain a measure of adolescents' concern over the threat of nuclear war. The impersonality of a questionnaire and the public setting (school classroom) in which the survey was completed may have encouraged a response indicating public concern rather than private or personal concern. As a result, there may have been a tendency for the respondents to report whatever they perceived the public's degree of concern to be, rather than reporting their own individual degree of concern.

One important aspect of any research project is generalizability. Initially it was hoped that high school students from both the public and separate school systems would be included in the sample. However, only three

separate schools with religious affiliation agreed to participate. This resulted in a relatively selective sample for two reasons. First, as a group the students from the separate schools may have different beliefs and values, and view the world from a different perspective than students from other schools. Second, it is quite likely that the administration and teachers from the schools who were receptive to the research project were generally more tolerant of issues such as the threat of nuclear war than the administrators and teachers from the schools who declined to participate. The class discussions and general atmosphere within these respective schools may well reflect these differing attitudes, with teachers in the former schools being more willing and eager to discuss the threat of nuclear war. As a result, the students who completed the surveys may be more aware of and sensitive to the nuclear issue than other students in the public school system. For these reasons, the present findings may not be generalizable to all Winnipeg high school students.

Conclusions and Recommendations

This study attempts to bridge the gap between the issue of concern over the threat of nuclear war and the consequences that this threat is presumed to have on

adolescents. The results indicate that the majority of the adolescents surveyed were concerned, and in many cases pessimistic about the threat of nuclear war. However, this concern does not appear to be negatively associated with their ability to delay gratification, their orientation towards the future, their impulsivity, their venturesomeness, or their LOC orientation.

These findings challenge the belief reported in the literature that adolescents are deeply disturbed by the threat of nuclear war. An examination of the written comments by the subjects in this study helps explain how interview studies, especially those which report selected responses, could arrive at the conclusion that adolescents are disturbed by the threat of nuclear war. However, when the responses of the entire sample are considered a somewhat different picture emerges. Many of the subjects did not perceive nuclear war to be a serious threat, while others appeared to have developed effective methods of coping with the threat of nuclear war. To be sure, some students did express a great deal of concern and a few indicated that the threat of nuclear war had affected their lives on a daily basis. Nevertheless, these students clearly constituted a minority and the correlational analysis employed in the present study indicated that there were no negative effects associated

with a high degree of concern.

One of the purposes of an exploratory study is to identify meaningful and productive avenues of research for further inquiry. A more focussed examination of students who are highly concerned about the nuclear threat is required to provide some answers to the following questions: Is anxiety over the threat of nuclear war specific or is it associated with a generalized anxiety-prone personality? Is this fear of a chronic or temporary nature? Do these students typically exhibit a high degree of anxiety over other issues as well? What kind of coping strategies do they employ? What types of coping strategies are the most effective? Answers to questions like these potentially enhance our understanding of individual reactions to the nuclear threat, and may result in practical guides to assist teachers, counsellors and parents to comfort and help those adolescents who are extremely concerned about the threat of nuclear war.

From the present findings it would seem prudent to suggest that similar research be conducted with other samples using a variety of techniques to measure the variables of interest. Corroborating evidence from studies with younger and older students and students from a more varied population is required to ensure the generalizability of the present results.

Further research is also required to investigate the effects of different types of nuclear education programs on students with varying degrees of concern regarding the threat of nuclear war. Overall, the students in the present study indicated that they would welcome a nuclear education program, although a minority of students expressed some reservations. However, the results of this study clearly challenge the assumption that all students are equally concerned about nuclear war and that they are all equally unable to cope with this threat. Within the classroom, the best approach may be to discuss the topic of nuclear war only as students themselves raise the issue. If nuclear education programs are instituted, it may be wise to offer them to the students as an extracurricular activity or an elective class, leaving the decision to participate up to the individual. In this way those who feel the need to increase their awareness of this issue and want to discuss their concerns would be given an opportunity to do so, while others who feel more vulnerable and less comfortable with the nuclear threat would not be needlessly subjected to information that may only serve to increase their anxiety.

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Appendix A

Summary Research Proposal

RESEARCH PROPOSAL: THE RELATIONSHIP OF ADOLESCENTS' CONCERN OVER THE THREAT OF NUCLEAR WAR AND SEVERAL PERSONALITY DIMENSIONS.

TO: _____ School Division Board of Trustees

I would like to thank you in advance for taking the time out of your busy schedules to consider this proposal to do research in the _____ School Division. I am a graduate student in Educational Psychology, specializing in the area of School Psychology at the University of Manitoba. This study is being conducted under the direct supervision of my thesis advisor, Dr. Riva Bartell, as a partial requirement for my Master's of Education degree. My interest in this subject stems from a genuine concern over the well-being of our youth, and a desire to contribute to our understanding in an area about which we know very little. The following is a summary of the rationale, purpose, and procedures of the study

INTRODUCTION

We are living in a nuclear age. News of recent nuclear developments and antinuclear demonstrations have become common place, and media productions such as "The Day After" and "If You Love this Planet" further increase our awareness and sensitivity to this topic. Previous research has consistently shown that most children and adolescents believe a nuclear war will occur within their lifetime, and that they personally will not live through it (Blackwell and Gessner, 1983; Escalona, 1965; Goodman, Mack, Beardslee & Snow, 1983). This pessimism has prompted many mental health professionals to consider the implications of growing up without the promise of a future. What effect does growing up in a nuclear age have on the developing adolescent?

It has been suggested that the nuclear threat impedes the development of some important individual characteristics, and in some instances may lead to severe emotional problems and delinquent behavior (Blackwell & Gessner, 1983; Goodman et al., 1983; Mann, 1983). Unfortunately, very little evidence exists to substantiate these claims. If there are adverse consequences, then research should be conducted to determine the most appropriate way of helping

students to cope with their fears in a constructive manner. However, if for most children there are no substantial short or long term effects, then direct intervention may serve no useful purpose, and in some cases may be harmful.

The purpose of this study is to obtain some insight into the way adolescents feel about the threat of nuclear war, and provide an unbiased assessment of the ways in which this threat may affect them. The individual characteristics to be examined include their orientation towards the future, their self-control, and the extent to which they see themselves in control of their own lives. It is anticipated that this information will be of interest to both educators and parents. A deeper understanding of adolescents' feelings regarding this issue should help parents and individual teachers to be more sensitive to the needs of adolescents. Furthermore, the findings of this study should prove valuable to those responsible for making decisions regarding curriculum planning and school policy.

SUBJECTS

The research proposal calls for the participation of subjects in grades 10 and 11. Methodologically, it is suggested that all students enrolled in grades 10 or 11 social studies courses be allowed to participate. However, the number that would eventually take part would depend upon the decisions of the Superintendent and the Board of Trustees, as well as the principals, teachers, and individual students who are asked to participate. A letter informing parents about the general nature of the study, as well as a waiver form to be completed and returned if they do not want their child to participate (attached), will be sent home with the students.

THE SURVEY

The survey (attached) is prefaced by a cover letter and consists of 4 basic sections. First, a number of background questions are included which will provide information used to describe the characteristics of the sample. The second section is designed to assess students' spontaneous concerns about the future. It is important that the students do not have prior knowledge about the questionnaire which may influence their responses in this section. For this reason, the topic of nuclear

war is not specifically mentioned in the cover letter. Next a series of scales measuring the variables of interest are presented. Finally, questions dealing directly with the students' perceptions of nuclear war are asked. The entire survey takes approximately 20 minutes to complete.

PROCEDURES

Once permission to proceed has been obtained at the administrative level, letters will be sent to the designated high school principals advising them of the nature of the study and asking for their cooperation. The letters informing parents of the study as well as waiver forms will be delivered to participating teachers for distribution to their students. It is hoped that the surveys will be completed under the teachers' supervision by the end of March, and collected by the researcher soon after.

CONFIDENTIALITY

Anonymity of responses is assured as students will be instructed not to write their names on the survey. In addition, the students have the individual right to choose not to participate in the study, and will be advised of this in the cover letter. The results will be analyzed in the aggregate with no reference to individual schools, classrooms, or students. A detailed summary of the overall findings will be provided to the school district as well as those principals and teachers who participated. In addition, I will be available to meet with students and other interested parties upon request to discuss the findings.

If you have any questions or concerns regarding this proposal, please do not hesitate to contact me at the address below. Thank you once again for your time.

Sincerely,

Garth Stewart

303 - 270 Beliveau Rd.
Winnipeg, Manitoba
R2M 1T4
Telephone: 256-9971

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Appendix B

Letter to Parents

Dear Parent,

I am undertaking a study on adolescents' concerns about the future and it's relationship to their feelings of control, and the degree to which they are anticipating and planning for the future. This research is part of my Master's in Education thesis required by the University of Manitoba.

For the purposes of this study, your son or daughter will be asked to fill out a survey form during class time. Responding to the questionnaire will be voluntary and anonymous. At no point will any student be asked to provide his or her name. All information gathered will be confidential, and the analysis of the results will be done on group basis.

I would very much appreciate your cooperation in this matter. However, if you do not wish your son or daughter to participate in this study, please sign below and return this form to their school by April 11th. If you have any questions or require additional information please feel free to contact me at 256-9971.

Thank you for your time.

Yours truly,

Garth Stewart

I do not want my child to participate in this study.

Signature

Date _____ Student's name _____

Appendix C
Survey Instrument

Dear Student:

I would like to thank you in advance for participating in this study. As a student at the University of Manitoba, the completion of a research project such as this is a necessary requirement for my graduation. The attached survey contains questions concerning your feelings about yourself and your thoughts about the future. I value very much the opinions of young adults like yourself as you represent the future generation of our society. You are the future! I hope that by having you complete this survey I will have a better understanding of what you feel and believe, and that you will become more aware of your own feelings and opinions.

When completing this survey it is important that you answer all of the questions and try to be as honest as you can. There are no right or wrong answers. In the first section there are a few questions which ask for some personal background information. This is done so that I will have a general description of the students who completed the survey. Do not write your name anywhere on the survey as it is to be answered anonymously. I value your individual feelings very much, but I will combine the answers of the whole group, and as such your individual responses will not be shared with anyone. It should not take you more than 25 minutes to complete the entire survey.

I sincerely hope that you will complete the survey. However, your participation in this study is voluntary. If at any time you wish to stop answering the questions you may do so. If you do decide not to complete the survey, I would ask that you please sit quietly and allow others to finish responding. Thanks again for your cooperation.

Yours truly,

Garth Stewart

I. Background information

- What is your age? years months
- What grade are you in? _____
- What is your sex? (please circle one) Male Female
- What is your father's occupation? _____
- What is your mother's occupation? _____

II. Concerns about the future

6. Please name, in order of importance, the 3 things that worry you most about the future. On the first line write the thing that worries you most, and so on.

Most important concern _____

2nd most important concern _____

3rd most important concern _____

7. Now indicate how often you worry about each of the above concerns.

	<u>not at all</u>	<u>once a month</u>	<u>once a week</u>	<u>everyday</u>	<u>all of the time</u>
most important concern	1	2	3	4	5
2nd most important concern	1	2	3	4	5
3rd most important concern	1	2	3	4	5

NOTE: Please do not come back and change any of the above responses after you have completed the remaining sections of the survey.

III. Feelings about yourself and the future

Please indicate how well each of the following statements describes you by circling the number that corresponds to the way you feel.

	<u>not true</u> <u>at all</u> <u>of me</u>	<u>not too</u> <u>true</u> <u>of me</u>	<u>fairly</u> <u>true</u> <u>of me</u>	<u>very</u> <u>true</u> <u>of me</u>
8. I always seem to be doing things at the last moment.	1	2	3	4
9. I have been thinking a lot about what I am going to do in the future.	1	2	3	4
10. I tend to postpone unpleasant duties even if I could perform them immediately.	1	2	3	4
11. I find it hard to get things done without a deadline.	1	2	3	4
12. I need to feel rushed before I can really get going.	1	2	3	4
13. I would rather wait a long time to obtain a large gift than have a small gift immediately.	1	2	3	4
14. Half a year seems to me a long time.	1	2	3	4
15. I think about the future only to a very small extent.	1	2	3	4
16. I am most concerned about how I feel now in the present.	1	2	3	4
17. Usually I do first the things I really like to do even if there are more urgent things to do.	1	2	3	4
18. I am not so very much concerned about things a little ahead in time.	1	2	3	4
19. It's really no use worrying about the future because what will be will be.	1	2	3	4

	not true at all <u>of me</u>	not too true <u>of me</u>	fairly true <u>of me</u>	very true <u>of me</u>
20. I reflect a great deal about the future and I feel it is rapidly approaching.	1	2	3	4
21. First of all I prefer to finish a job that I have to do and then I start doing the things I really like.	1	2	3	4
22. It often seems like the day will never end.	1	2	3	4
23. I often find myself looking for ways to kill time.	1	2	3	4
24. I would rather have a gift right now than wait a year for a somewhat nicer gift.	1	2	3	4
25. The future seems very vague and uncertain to me.	1	2	3	4
26. Usually I feel time is going too fast.	1	2	3	4

Answer each of the following questions by putting a circle around the "YES" or the "NO" beside each item. There are no right or wrong answers, and no trick questions. Work quickly and do not think too long about the exact meaning of the question.

27. Do you believe that most problems will solve themselves if you just don't fool around with them?	YES	NO
28. Would you enjoy water skiing?	YES	NO
29. Do you often buy things on impulse?	YES	NO
30. Usually do you prefer to stick to brands you know are reliable to trying new ones on the chance of finding something better?	YES	NO
31. Do you generally do and say things without stopping to think?	YES	NO
32. Are you often blamed for things that just aren't your fault?	YES	NO
33. Do you often get into a jam because you do things without thinking?	YES	NO
34. Do you quite enjoy taking risks?	YES	NO
35. Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway?	YES	NO
36. Are you an impulsive person?	YES	NO
37. Would you enjoy parachute jumping?	YES	NO
38. Do you feel that most of the time parents listen to what their children have to say?	YES	NO

- | | | |
|--|-----|----|
| 39. Do you usually think carefully before doing anything? | YES | NO |
| 40. Do you think hitch-hiking is too dangerous a way to travel? | YES | NO |
| 41. When you get punished does it usually seem it's for no good reason at all? | YES | NO |
| 42. Most of the time do you find it hard to change a friend's (mind) opinion? | YES | NO |
| 43. Do you like diving off the highboard? | YES | NO |
| 44. Do you often do things on the spur of the moment? | YES | NO |
| 45. Do you feel that it's nearly impossible to change your parent's mind about anything? | YES | NO |
| 46. Do you welcome new and exciting experiences and sensations, even if they are a little frightening and unconventional? | YES | NO |
| 47. Do you mostly speak before thinking things out? | YES | NO |
| 48. Do you feel that when you do something wrong there's very little you can do to make it right? | YES | NO |
| 49. Would you like to learn to fly an aeroplane? | YES | NO |
| 50. Do you often get involved in things you later wish you could get out of? | YES | NO |
| 51. Do you believe that most kids are just born good at sports? | YES | NO |
| 52. Do you get so 'carried away' by new and exciting ideas that you never think of possible snags? | YES | NO |
| 53. Do you feel that one of the best ways to handle most problems is just not to think about them? | YES | NO |
| 54. Do you find it hard to understand people who risk their necks climbing mountains? | YES | NO |
| 55. Do you need to use a lot of self-control to keep out of trouble? | YES | NO |
| 56. Would you agree that almost everything enjoyable is either illegal or immoral? | YES | NO |
| 57. Do you feel that when a kid your age decides to hit you, there's little you can do to stop him or her? | YES | NO |
| 58. Do you sometimes like doing things that are a bit frightening? | YES | NO |
| 59. Are you often surprised at people's reactions to what you do or say? | YES | NO |
| 60. Generally do you prefer to enter cold water gradually, to jumping or diving straight in? | YES | NO |
| 61. Do you think an evening out is much more successful if it is unplanned or arranged at the last moment? | YES | NO |
| 62. Have you felt that when people were mean to you it was usually for no reason at all? | YES | NO |
| 63. Most of the time, do you feel that you can change what might happen tomorrow by what you do today? | YES | NO |
| 64. Do you usually work quickly, without bothering to check? | YES | NO |
| 65. Would you enjoy the sensation of skiing very fast down a high mountain slope? | YES | NO |
| 66. Do you believe that when bad things are going to happen they are just going to happen no matter what you try to do to stop them? | YES | NO |
| 67. Do you often change your interests? | YES | NO |
| 68. Most of the time do you find it useless to try to get your own way at home? | YES | NO |

- | | | |
|--|-----|----|
| 69. Would you like to go scuba diving? | YES | NO |
| 70. Before making up your mind, do you consider all the advantages and disadvantages? | YES | NO |
| 71. Do you feel that when somebody your age wants to be your enemy there's little you can do to change matters? | YES | NO |
| 72. Would you enjoy fast driving? | YES | NO |
| 73. Do you prefer to "sleep on it" before making decisions? | YES | NO |
| 74. Do you usually feel that you have very little to say about what you get to eat at home? | YES | NO |
| 75. Do you feel that when somebody doesn't like you there's little you can do about it? | YES | NO |
| 76. Would you be put off a job involving quite a bit of danger? | YES | NO |
| 77. When people shout at you do you shout back? | YES | NO |
| 78. Do you usually feel that it's almost useless to try in school because most other kids are just plain smarter than you are? | YES | NO |
| 79. Are you the kind of person that believes that planning ahead makes things turn out better? | YES | NO |
| 80. Do you usually make up your mind quickly? | YES | NO |
| 81. Most of the time, do you feel that you have little to say about what your family decides to do? | YES | NO |

IV. Feelings about nuclear war

The following questions deal with your feelings about an issue that is important to us all. Please think carefully about each question and answer them as honestly as you can by circling the number that best describes the way you feel.

- | | <u>strongly</u>
<u>disagree</u> | <u>disagree</u> | <u>agree</u> | <u>strongly</u>
<u>agree</u> |
|---|------------------------------------|-----------------|--------------|---------------------------------|
| 82. I believe that a nuclear war will occur in my lifetime. | 1 | 2 | 3 | 4 |
| 83. I never really think about nuclear war unless someone asks me about it or I hear someone else mention it. | 1 | 2 | 3 | 4 |
| 84. I believe that if a nuclear war does occur I will not survive. | 1 | 2 | 3 | 4 |
| 85. I never feel the least bit afraid or anxious when I read an article or hear a newscast about the danger of nuclear war. | 1 | 2 | 3 | 4 |
| 86. Thinking about the nuclear threat has affected my plans for the future. | 1 | 2 | 3 | 4 |

- | | <u>strongly</u>
<u>disagree</u> | <u>disagree</u> | <u>agree</u> | <u>strongly</u>
<u>agree</u> |
|---|-------------------------------------|---------------------------------|---|---|
| 87. I don't really care if a nuclear war occurs. | 1 | 2 | 3 | 4 |
| | <u>never</u> | <u>once</u> | <u>a few</u>
<u>times</u> | <u>all the</u>
<u>time</u> |
| 88. Have you ever had disturbing dreams or nightmares about nuclear war? | 1 | 2 | 3 | 4 |
| 89. How often have thoughts about nuclear war caused you to have feelings of fear or anxiety? | 1 | 2 | 3 | 4 |
| | <u>not at</u>
<u>all</u> | <u>very</u>
<u>little</u> | <u>some</u> | <u>a lot</u> |
| 90. How frightened are you about the possibility of a nuclear conflict? | 1 | 2 | 3 | 4 |
| | <u>yes</u> | <u>no</u> | <u>not sure</u> | |
| 91. Do you feel that discussing and learning some facts in school about the threat of nuclear war would be helpful to you personally? | 1 | 2 | 3 | |
| | <u>should not</u>
<u>be done</u> | <u>before</u>
<u>grade 6</u> | <u>between</u>
<u>grades</u>
<u>7 and 9</u> | <u>between</u>
<u>grades</u>
<u>10 and 12</u> |
| 92. If such a program were to be started, at what grade do you think it should begin? | 1 | 2 | 3 | 4 |

Thank you for sharing your feelings with me by completing this questionnaire. If there are any comments you would like to make concerning any part of this survey, please feel free to do so on the back of this page.

Items comprising each scale

Indirect concern:

6,7.

Direct Concern:

83, 85, 87, 88, 89, 90.

FTO:

8, 9, 11, 12, 14, 15, 16, 18, 19, 20, 22, 23, 25, 26.

Delay of Gratification:

10, 13, 17, 21, 24.

Impulsivity:

29, 31, 33, 36, 39, 44, 47, 50, 52, 55, 56, 59, 61, 64,
67, 70, 73, 77, 80.

Venturesomeness:

28, 30, 34, 37, 40, 43, 46, 49, 54, 58, 60, 65, 69, 72,
76.

LOC:

27, 32, 35, 38, 41, 42, 45, 48, 51, 53, 57, 62, 63, 66,
68, 71, 74, 75, 78, 79, 81.

Appendix D

Instructions to the Teachers

To the teacher

Re: Completion of the surveys

Thank you for agreeing to administer this survey in your class. It is important that the students do not have any prior knowledge about the survey which may influence their responses in the first few sections. For this reason I would ask you not to mention that the survey deals directly with the topic of nuclear war. Simply distribute the surveys to the students, excluding those who have returned a signed parental consent form asking that they be excused from the study, and instruct them to read the cover letter carefully and then proceed according to the directions provided.

Once again, I appreciate your cooperation in this matter. For those who are interested a summary of the results will be sent to your school as soon as they are available.

Yours truly,

Garth Stewart

Ranking and Percentages of Students' Number One Concerns about the Future

	Total Sample		Grade 10		Grade 11		Grade 12	
	<u>n</u> = 447		<u>n</u> = 202		<u>n</u> = 203		<u>n</u> = 42	
	Rank	%	Rank	%	Rank	%	Rank	%
Career	1	27.1	2	22.0	1	30.8	1	33.3
Nuclear War	2	20.9	1	26.5	2	15.7	2	19.1
World Unrest	3	9.8	3	10.5	3	10.1	5-6	4.8
Present School	4-5	6.3	4	8.0	6	4.0	4	9.5
Future Education	4-5	6.3	5	5.5	5	5.6	3	14.3
Personal Success	6	4.5	8	2.5	4	6.6	5-6	4.8
Family	7-8	2.3	6-7	3.5	8	1.5	-	0
Death or Illness	7-8	2.3	6-7	3.5	9	1.0	7	2.4
Dating & Marriage	9	2.1	9	1.5	7	3.0	-	0
Other	-	18.4	-	16.5	-	21.7	-	11.8

Appendix E

Appendix F

Excerpts from Student Comments

Concerning the Threat of Nuclear War

Letting students realize the dangers of nuclear war at a young age may prevent a nuclear war in the future...

I just don't bother to worry about it (nuclear war). If it happens it happens, and because of the blasts, I'd feel no pain anyways.

Nuclear war is constantly on my mind and it worries me very much. I would like to learn more about it in school.

Learning facts about nuclear war can only invoke unnecessary fear.... We cannot, must not, breed fear.

Personally the threat of nuclear war doesn't bother me because I really think it will never come to be.

Nuclear war is scary and it's something I do not want to think about. The threat of nuclear war always lingers in the far depths of my mind. It's like it's controlling every aspect of my life. I hate war!

The world will end in 5 - 7 years. I want to be at point zero when a nuclear bomb goes off.

For the last question (At what grade should the teaching of nuclear war begin?) it should be 10 - 12 because I saw a film on nuclear war and it scared the living @*!?* out of me.

Will there be a program (on nuclear war)? Will I be able to take it?

Whether there is a nuclear war or not....at no time will I ever give up on a dream.

Too much stress on nuclear war.

I really wish the government would pay more attention to what we have to say.

I honestly don't know if a nuclear war will occur but I hope it doesn't.

I feel that it (nuclear war) should not affect my future.... Why should I stunt my personal growth by preparing for a "it might happen"?

Since "we" are the future, why should "we" be the ones to suffer from someone else's mistakes who's not going to live any longer anyways? Shouldn't we be the ones to determine the future since we are the ones that have to live in it? Because of Nuclear war we dream more. Long before our generation, kids our age dreamed about what they were going to be in the future but our generation dreams about if we get a future at all!

Nuclear war doesn't bother me that much because what will be will be. I believe in God and heaven so my faith helps me a lot.

Little kids are scared because they don't know anything, just that they could be blown up at any time.... If basic facts were given in the beginning, if young children knew they could do something about it then they wouldn't be so scared.

I believe that nuclear war is definitely a threat to our society. But I have strong faith in our political leaders and I believe that they will protect us. I find myself worrying about nuclear war often but I believe this is no reason to alter your plans and change your ambitions.