THE PROSPECT OF NUCLEAR WAR: BELIEFS OF CANADIAN MILITARY PERSONNEL AND UNIVERSITY STUDENTS

BY

BRIAN R. THOMPSON

A Thesis

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in Partial Fulfillment of the Requirements

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ABSTRACT

In January and February 1990, Canadian soldiers' and university students' concerns about the prospect of nuclear war were assessed using the Spontaneous Concern About Nuclear Threat Scale (SCANTS), the Nuclear Locus of Control (NLOC), and the Nuclear Likelihood Questionnaire (NLQ). In January 1991, the Gulf War occurred and the threat of nuclear war appeared to become a more salient issue to many people. The Thompson (1990) study was replicated in May and June 1991 using male and female military personnel from Regular and Reserve elements of the Canadian Armed Forces and students enrolled in Introductory Psychology as subjects. The SCANTS data did not support the hypothesis that Canadian civilian and military concern about nuclear war has increased as a result of the Gulf War. As predicted, on the NLOC military respondents indicated less control over "the system" than university students. On the NLQ, males indicated less likelihood of nuclear war than females for all three future dimensions. Significant correlations were not found between the SCANTS and the personality factors in the Interpersonal Adjective Scales Revised - Big Five (IASR-B5).

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The Prospect of Nuclear War: Beliefs of Canadian Military Personnel and University Students

For the first time since the Korean War, Canadian servicemen and women engaged in offensive operations as they helped enforce United Nations resolutions against Iraq for its August 2, 1990 invasion of Kuwait. Although the 45 year Cold War between the United States and the Soviet Union (now the Commonwealth of Independent States) has officially ended, the military conflict in the Persian Gulf has prompted a re-examination of concerns and beliefs about nuclear arms control. The memory of the 1945 bombing of Hiroshima and Nagasaki may have faded, but the threat of global nuclear war continues to concern many people. As Tetlock, McGuire and Mitchell (1991) noted, "Whether the Cold War has ended or is in deep remission, the structural and psychological problems at the core of nuclear deterrence remain" (p. 240).

The Gulf War stimulated considerable discussion about the deployment of nuclear weapons. For example, Maclean's magazine correspondent John Holland (1991) was assigned to cover the Gulf War and recorded the following thoughts during one of the initial bombing raids.

> We could hear the dull thud of the bombs hitting close to the hotel, and the chatter of anti-aircraft fire. After several fear-filled hours in the shelter, a 1,250-square-foot room that accommodated about 85 people, some disturbing thoughts ran through my mind: Has Israel been dragged into the war? Will it go chemical or nuclear? Will I die not seeing the sunlight again? (p. 28)

Weapons experts state that the first air assault of the Gulf War hit Baghdad with 18,000 tons of high explosives - one and a half times the destructive force of the atomic bomb dropped on Hiroshima. It is not surprising that people of all ages are concerned about the prospect of global nuclear war, especially considering that today's nuclear weapons are capable of a thousand times more destruction than the atomic bombs dropped on Japan (Lifton & Falk, 1982).

Research over the past twenty years indicates that concern about nuclear war has increased in American college students. For example, Elder (1965) administered the Spontaneous Concern About Nuclear Threat Scale (SCANTS) to university students in 1965 and found that only 7.6% expressed concern about

nuclear war. In 1986, Mayton and Delamater replicated this study and found that the number of college students who mentioned nuclear war as being a salient issue in their lives had increased to 18.1%. The definition of salience in this research focuses on an individual's awareness of relevant thoughts, feelings, and actions about a particular issue (Fiske & Taylor, 1984).

Other research has demonstrated that the threat of nuclear war is also a concern among Canadian students. Hargraves (1984) found that 67% of children surveyed in Burnaby, British Columbia predicted that a nuclear war between the United States and Soviet Union would occur in their lifetime. Sommers (1984) reported that the threat of nuclear war was the foremost worry of 12 to 18-year-olds surveyed in Toronto, Ontario. Harvey, Howell, and Colthorpe (1985) found that the concerns of Canadian adolescents were similar to American and Soviet youths. Raundalen and Finney (1986) found that the threat of nuclear war was the greatest concern to children and adolescents comparing 10 future problems of the world. Taken as a whole, these findings are important because they suggest that young people in Canada cannot be shielded

from anxiety about nuclear war.

While concern about nuclear war may have increased, not all studies find that the threat of global nuclear war is a primary concern of today's youth. Schuman, Ludwig, and Krosnick (1986) found that the prospect of nuclear war is not regarded by Americans as more important than other major world problems. Perestroika reforms introduced by former Soviet Premier, Mikhail Gorbachev, and the subsequent adoption of these initiatives in Eastern Bloc countries suggest that issues such as unemployment, environment and the economy may be a greater concern for the citizens of these countries than the continued stockpiling of nuclear arsenals. For example, Russian citizens currently suffering from the steepest price hikes in post-Communist history may now be concerned about obtaining food and goods, rather than the prospect of nuclear war.

Whereas the perceived threat of nuclear war might have decreased among civilian populations, military personnel may have an entirely different perception. Military personnel are trained to survive and continue to fight in the event of a nuclear armed conflict. Vineberg (1965) argues that such skills allow the

soldier to exert some measure of control upon the environment, subsequently developing into feelings of self-confidence.

> In general it seems likely that soldiers would sustain the stresses of nuclear warfare better than would civilians. Since soldiers would have been trained for survival under conditions of nuclear warfare, they would be expected to have a somewhat better understanding of it, and to be somewhat less vulnerable to its stresses. (p. 11)

Research on non-military subjects indicates that persons who view nuclear war as less probable and more survivable worry less (Hamilton, Chavez, & Keitlin, 1986). Similarly, Vineberg (1965) posited that those persons lacking nuclear warfare survival skills will think that the threat of nuclear war is more intense than it may really be. As there were no empirical data available on the nuclear war threat concerns of military personnel, concerns of Canadian military personnel and university students were investigated by Thompson in January and February 1990. One year prior to the 1991 Gulf War, Thompson (1990) hypothesized that due to nuclear warfare survival training, soldiers would express less concern about nuclear war

on the SCANTS than university students who do not receive this training. In a study of thirty-three male soldiers and 29 male and 36 female university students, 9.1% of the Canadian soldiers spontaneously expressed concern about the prospect of nuclear war compared to 18.5% of the university students. From these data, Thompson (1990) concluded that glasnost and arms reductions in short range nuclear missiles had done little or nothing to alleviate student concerns about nuclear war since the Mayton and Delamater (1986) study.

In view of dramatic changes in the political and military zeitgeist, a follow-up study was proposed in order to assess whether with the occurrence of the Gulf War, Canadian university students and Canadian noncommissioned soldiers would exhibit greater concern about nuclear war on the Spontaneous Concern About Nuclear Threat Scale (SCANTS) and Nuclear Likelihood Questionnaire (NLQ) than those subjects tested by the author in January, 1990. While Soviet initiatives are generally perceived as positive by Western democracies, empirical evidence is lacking that shows these reforms have led to a decrease in the perceived threat of nuclear war. In fact, it could be argued

that tumultuous events in the Persian Gulf and unrest in the new Commonwealth of Independent States as well as other countries heightened the threat of nuclear war. A poll conducted by Decima Research between February 4 and February 9, 1991 found that 67% of Canadian respondents supported Canada's presence in the Gulf. Fifty-eight percent went further still by stating that they approved of Canada's level of participation in the war (Fulton, 1991). Due to the past year's strife, it was predicted that a greater number of military and civilian subjects would express concern about nuclear war in the present study than in the 1990 study.

In the 1990 study, significant age differences between soldiers and male and female university students ($F(3, 96) = 34.5$, $p<.001$) were found such that older subjects who were in the military reported less concern about the threat of nuclear war compared with younger university subjects. Since many military Reservists are university students, the present study used this population in order to control for age effects as well as to explore whether military Reserve results differ from military members of the Regular Force or from the Introductory Psychology students.

It was hypothesized that Reservists would display a tendency to fall between the Regular military and university subjects since they combine aspects of both populations. It can be further argued that since Reservists receive less Nuclear Biological Chemical Defence training than their Regular Force counterparts, their concerns would be "middle ground".

While the SCANTS assesses an individual's concern about the threat of nuclear war, it does not measure an individual's estimate of the "likelihood" of nuclear war. Erdahl and Rounds (1986) suggest that likelihood estimates about the probability of nuclear war can provide useful information about anxiety about nuclear war, behavioral responses to the threat of nuclear war, and opinions about arms control. They developed the Nuclear Likelihood Questionnaire (NLQ) to measure perceptions of the probability of nuclear war in near, foreseeable, and distant future.

In January and February 1990, Thompson (1990) administered the Nuclear Likelihood Questionnaire (NLQ) to military and university student respondents and found that although the populations sampled were generally optimistic about the near future (4.5% of the combined sample expressed likelihood of nuclear

war in this time frame), they were pessimistic about the possibility of a nuclear war in the distant future (42.7% likelihood). Looking at results within these populations, military personnel indicated a belief that nuclear war was significantly less likely to occur in the near future than students (2.7% and 5.2% respectively). Thus, it was hypothesized that military personnel administered the NLQ in 1991, would view the prospect of nuclear war as significantly less likely to occur in the near, foreseeable and distant future than students. This was partially based on the Thompson (1990) findings as well as the "nuclear survival" training that military personnel receive.

An alternate explanation to the lower nuclear likelihood scores predicted for soldiers is that this attitude serves as a mechanism to cope with the anxiety associated with the thought that there ultimately is no effective defence from nuclear weapons.

> Growing up in a social environment 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. (Escalona, 1982, p. 601)

Interpreting low probability scores as the result of a coping mechanism such as choosing not to think of nuclear war is controversial because people who do not report nuclear war may simply have other things on their mind, such as raising a family (Smith, 1988). In this respect, an individual may truly be concerned about the prospect of nuclear war; however, it may not be reflected on an indirect measure such as the SCANTS.

While developments in the Persian Gulf may have led to an increase in the perceived threat of nuclear war, it is reasonable to assume that other factors were involved in individual or group perceptions of the Gulf War. Gender (Nelson & Slem, 1984; Schuman, Ludwig, & Krosnick, 1986), personality traits (Escalona, 1982; Mayton, 1986), and causal attributions (Erdahl & Rounds, 1986) may also be important variables to consider when discussing perceptions of the threat of nuclear war.

Thompson (1990) found that female students believe nuclear war was more probable in the near future than either civilian or military males. This finding is not surprising as different attitudes are

often found by men and women towards nuclear threat issues (e.g., McCleney & Neiss, 1989; Newcomb, 1986). Fiske (1985) reports that women generally report more fear about the threat of nuclear war than men, but posits that this difference may be due to a socialized unwillingness by males to reveal fear. White (1984) suggests that "macho pride" is second only to fear as a motive leading to the nuclear arms race and war. The explanation that men are more likely to respond with "machismo" is difficult to corroborate as males may either be denying or disbelieving that nuclear war may occur. Although Plous (1989) found that women set the odds of nuclear war occurring significantly higher than did men, no reason is given for the occurrence of gender differences. Silverman and Kumka (1987) argued that while women see no winners within the context of a nuclear exchange, men tend to focus on the competitive aspects of winning or losing rather than the human dimension of nuclear war.

Other research has shown that women are consistently less accepting of the use of nuclear weapons than men (Fiske, 1985) and that women believe that nuclear war is more probable and more potentially destructive than men (Nelson & Slem, 1984). Gender

differences were further supported by a study conducted at the University of Manitoba (Silverman & Kumka, 1987). Males were found to be more pro-force than females, and a fundamentally different "world orientation" of males and females was reflected in their different attitudes toward nuclear war and disarmament.

Theoretically, the concept of denial or refusing to think about nuclear war has been postulated as a coping mechanism, especially in males. Newcomb (1968) suggests that people who think nuclear war is not probable are manifesting denial. Lifton and Falk (1982) further state that the denial of nuclear threat serves a protective psychic function. This has adaptive implications for both military personnel and university students since it is highly plausible that repressing concern about nuclear war serves as an effective coping mechanism.

Men are nearly twice as likely as women to deny the possibility of nuclear war (Schuman et al., 1986). Jensen (1987) states although most theoreticians argue that masculinity is instrumental to the relationship between war attitudes and gender, "further research is required to clarify the possible relationships between

gender-related variables and war attitudes" (p. 256). Despite recent world affairs (e.g., the Persian Gulf conflict), gender differences in nuclear threat perceptions have likely remained constant. Therefore, women are hypothesized to express greater concern about nuclear war (as measured on the SCANTS) and to rate a greater likelihood of nuclear war (as measured on the NLQ) than will male subjects, regardless of whether they are military or civilian. A limitation of the Thompson (1990) study was that the only female subjects used were university students. Thus, the present study will have both Regular and Reserve force females as subjects, as well as female university students.

In addition to gender, researchers have studied the relationship between personality and the threat of nuclear war. Escalona (1982), for example, reviewed the relationship between nuclear threat perception and selected personality traits and concluded that personality variables do not appear to affect an individual's perception of war. Mayton (1986) also found a minimal association with authoritarian personality characteristics and nuclear war threat perception. He examined the relationship between

Rotter's (1966) general dimensions of locus of control (internal and external) and beliefs about the likelihood of nuclear war and found that the correlation coefficients were mostly nonsignificant. The only nuclear threat perception factor positively correlated with locus of control was the perception that civil defence programs may reduce casualties and save lives. Subjects with an external locus of control tended to view civil defence activities as effective in reducing casualties, whereas subjects more internal in their locus of control tended to perceive civil defence as ineffective.

The lack of support for an association between locus of control and nuclear threat perception may be attributable to the use of a cross-situational measure of locus of control. Lefcourt (1982) and others (e.g., Cutrona, Russell, & Jones, 1984) have proposed that locus of control varies situationally and should therefore be tailored to specific issues. They posit that a situation-specific locus of control scale provides a more valid measure of causality attributions than can be obtained with a cross-situational locus of control instrument.

To this end, Erdahl and Rounds (1986) developed a

Nuclear Locus of Control (NLOC) scale to assess beliefs as to whether nuclear war or nuclear policy decisions are, or can be, influenced by internal control (personal control over the system), external control (powerful others), or chance. The NLOC is based on the rationale that individuals who believe the world is chaotic, think and behave in a manner different from individuals who believe the world is ordered. Support for this conceptualization is provided by Lefcourt (1982) who found that people able to attain valued outcomes through either their position or group involvement (e.g., the military) are likely to have an internal locus of control.

The NLOC employed by Thompson in 1990 predicted that soldiers would have an internal NLOC, thus placing less emphasis on the influence of powerful others and greater emphasis on personal control over the system than students. This hypothesis was partially based on a study by Bickman (1974) that found men in uniform are generally seen as having more authority and power than non-uniformed men in the same situation. Results of the Thompson (1990) study were in the opposite direction than hypothesized. An explanation of these unexpected findings may be that

while military personnel are taught to survive in the event of nuclear war, they are also trained in a system where following orders from powerful others is required. Runyon (1973) supports this explanation stating that externals prefer an authoritarian infrastructure which emphasizes uniformity rather than self-directedness. By viewing nuclear war policy as controlled by external or powerful others, soldiers may be freed from assuming personal responsibility.

On the other hand, university students are challenged to ask questions and are more likely to become involved in autonomous activities (e.g., anti-nuclear groups) than military personnel. In fact, Horvath (1991) found that nuclear-related concerns and fears are predictive of hard core anti-nuclear activities among undergraduate students. McCleney and Neiss (1989) state that increasing a sense of control and power over political events is central to increasing activism. In addition, Rigby, Metzer, and Dietz (1990) conducted research in 1986 on subjects from four different countries (Australia, West Germany, Netherlands and the United States) and found that individuals who supported nuclear disarmament were significantly more likely than others

to be less favourably disposed to institutional authority and more anxious about nuclear war.

Using this conceptualization, it is not surprising that military personnel placed greater emphasis than students on powerful others. Since it appears that students are more commonly nuclear disarmament advocates than military personnel, this study hypothesized that students would indicate greater control over "the system" than military personnel.

Given the lack of significant findings and the paucity of research examining the association between other personality variables and concerns about nuclear war, an exploratory approach was adopted for this portion of the study. Five factors of personality have consistently been reported in the personality literature. In fact, McCrae and Costa (1986) argue that a five-factor paradigm is "both necessary and reasonably sufficient for describing at a global level the major features of personality" (p. 1001). Personality dimensions which may be associated with differences in concern about nuclear war were assessed by the Interpersonal Adjective Scales Revised - Big Five (IASR-B5; Trapnell & Wiggins, 1990). The IASR-B5

consists of a brief adjective rating form that is designed to measure behavioral blends of dominance and nurturance, as well as conscientiousness, neuroticism, and openness to experience.

It is probably not surprising that IAS research found aggression to correlate with dominance (Wiggins & Holzmuller, 1981). Therefore, dominant subjects may show greater support for the use of nuclear weapons and subsequently display less concern about nuclear war than submissive subjects. One might expect that those subjects who express no concern about nuclear war would be more likely to rate assured-dominant interpersonal behaviours as self-descriptive over subjects expressing concern about nuclear war. However, Feshbach (1987) found a marginally significant relationship between individual personality measures of aggression and nuclear disarmament. Despite this, Feshbach cautions that with more sensitive measures, it is possible that group aggression, such as that reflected in war, may in fact be related to individual aggression. As such, it was speculated that subjects indicating no concern about the threat of nuclear war on the SCANTS would score higher on the dominance factor of the IASR-B5

than those subjects indicating concern on the SCANTS.

In sum, the dependent variables of interest in this study were nuclear war concern, nuclear locus of control and the perceived likelihood of nuclear war. Independent variables were population (student, military reservist or regular force), gender, and interpersonal style.

Summary of Hypotheses

The first hypothesis was that because of the Gulf War and general global unrest, male and female university students, and male Regular force military members of the PPCLI, would exhibit greater spontaneous concern about nuclear war on the SCANTS and estimate a greater likelihood of nuclear war on the NLQ for the near, foreseeable, and distant future than would subjects tested by Thompson in 1990.

The second hypothesis was that a greater percentage of Canadian university students, independent of gender, would express concern about nuclear war on the SCANTS than Regular Force Canadian military personnel. In addition, it was speculated that military Reservists would express less concern about nuclear war on the SCANTS than Canadian university students and greater concern about nuclear

war on the SCANTS than Regular military personnel.

The third hypothesis was that on the NLQ, Regular and Reserve military personnel, combined, regardless of gender, would view the prospect of nuclear war in the near, foreseeable, and distant future as being significantly less likely than university students.

The fourth hypothesis was that female subjects, both civilian and military, would express greater concern about nuclear war on the SCANTS and estimate a greater likelihood of nuclear war on the NLQ for the near, foreseeable, and distant future than would males, both military and civilian.

The fifth hypothesis was that military respondents (Regular and Reserve combined) regardless of gender, would indicate less internal (system) control on the NLOC than university students.

The sixth hypothesis was that military respondents (Regular and Reserve combined) would place greater emphasis in powerful others (external control) on the NLOC than students.

In the exploratory personality factor research, it was speculated that subjects indicating no concern about the threat of nuclear war on the SCANTS would be associated with higher levels of dominance on the

IASR-B5 than those subjects indicating concern on the SCANTS.

Method

Subjects

A sample of 279 military (Regular and Reserve) and university subjects was used (see Footnote 1). The university sample was composed of 43 female and 36 male Canadian citizens enrolled in Introductory Psychology at the University of Manitoba. These students were obtained from the Introductory Psychology subject pool and received one hour of experimental credit for their participation.

The Regular force military subjects were 35 male soldiers from Second Battalion, Princess Patricia's Canadian Light Infantry (2PPCLI), as well as 45 servicemen and 34 servicewomen from various military support occupations employed at Canadian Forces Bases Winnipeg and Portage La Prairie. Soldiers were recruited by contacting the Commanding Officer of 2PPCLI stationed at Canadian Forces Base Winnipeg. Regular Force support personnel such as administration clerks, military police and cooks were used in order to match male and female military occupations as closely as possible. They were obtained by making

requests through the Commanding Officers of Canadian Forces Bases Winnipeg and Portage. In addition, 45 male and 40 female servicemembers from the Primary Reserve were selected as subjects. Reserve servicemembers were members of the Militia and were obtained through the assistance of the Manitoba Militia District Personnel Selection Officer.

Both university students and military subjects were afforded the same opportunity to decline from participating. Since military personnel received no reimbursement for participation, pressure was not exerted to persuade individuals to participate in the study as it was felt that unenthusiastic subjects would not produce credible data (see Footnote 2). All military subjects were of the rank of Master Corporal and below in order to match age of servicemembers and students as closely as possible. No significant difference was found between mean ages for males (M = 24.9 years) and females (M = 24.3 years; $F(1, 274) = .11$, $p=.74$). However, there was a significant age difference between university (M = 23.1 years) and military (M = 25.3 years) subjects $F(1, 274) = 5.76$, $p<.02$). The military subject group was comprised of male and female members of the Regular Force, Reserves

and PPCLI. No significant interaction was found between sex and group, $F(1, 274) = 0$, $p=.99$.

Materials

Both military and civilian subjects were assessed on four dependent measures: the Spontaneous Concern About Nuclear Threat Scale, the Nuclear Locus of Control, the Nuclear Likelihood Questionnaire, and the Interpersonal Adjective Scale Revised - Big Five.

The Spontaneous Concern About Nuclear Threat Scale (SCANTS) provides an indirect approach measure of the salience of nuclear war issues (see Appendix A). The SCANTS is comprised of ten incomplete sentences consisting of five presentations of "I worry about ..." followed by five presentations of "One of my fears regarding the future is ...". Subjects were asked to complete each of the sentences in a way that expresses their true feelings and to respond differently to each sentence stem. No examples were provided to respondents, nor were issues related to peace and the current world situation discussed. Hamilton (1987, cited by Mayton, 1987) described acceptable test-retest reliability where 80.5% of subjects responded with the same concerns over a one month interval. Validity is supported by the

significant correlations between the indirect SCANTS and several direct nuclear attitude scales (Mayton, 1987).

Spontaneous concern about nuclear war was scored as a dichotomous variable; respondents were scored either as concerned if they mentioned nuclear war in one of their ten responses or as unconcerned if no mention of nuclear war was made. The presence or absence of concern was scored by two independent raters who reviewed the responses and ascertained whether any reference to nuclear war was made in response to the incomplete sentences. Examples of the responses which have been used to classify respondents as being spontaneously concerned about the nuclear threat are presented in Table 1. Both raters evaluated all questionnaires and the inter-rater agreement rate was perfect (100%). In order to control for bias effects raters were blind as to the

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Insert Table 1 about here

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study's hypotheses, as well as to whether respondents were military or civilian.

The Nuclear Locus of Control (NLOC; Erdahl &

Rounds, 1986) assessed subjects beliefs as to whether nuclear war was controlled by the system (internal), powerful others (external) or chance factors. There were fifteen questions (see Appendix B), with five in each of the three areas. Subjects were instructed to respond in terms of their own perceptions and not what they considered to be true for people in general. Responses were made on a 6-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree). Subscores in the three areas were obtained by summing the item responses. The higher the scale score (range from 5 to 30), the more a person perceived his/her life to be controlled by the source indicated. The NLOC was reported to possess acceptable reliability (Rounds & Erdahl, 1988). Internal consistency estimates (Cronbach's alpha) were .87, .76, and .85 on the Internal, Powerful Others, and Chance subscales, respectively. Test-retest reliability coefficients over a four week period were .85 (Internal), .86 (Powerful Others), and .78 (Chance).

Since the NLOC was originally developed for American respondents, five items on the NLOC were modified by replacing references made to American content with references to NATO. For example, the

test item reading "Other powerful people determine U.S. nuclear policy decisions" was amended to read "Other powerful people determine NATO nuclear policy decisions".

The Nuclear Likelihood Questionnaire (NLQ; Erdahl & Rounds, 1986) is an 8-item open-ended scale that asks for percentage estimates of the likelihood of nuclear war for each of eight time frames ranging from the next week to ever (see Appendix C). These percentages are summed and averaged to produce scores for the near (items 1 to 4), foreseeable (items 5 and 6), and distant (items 7 and 8) future. Erdahl and Rounds (1986) report that internal consistency estimates (coefficient alpha) were .91 for the near future, .90 for the foreseeable future, and .84 for the distant future scales.

The Interpersonal Adjectives Scale Revised - Big Five (IASR-B5; Trapnell & Wiggins, 1990) provides a measure of various blends of agreeableness (love), dominance (extraversion), conscientiousness (will to achieve), openness to experience (intellect), and neuroticism (see Appendix D). Subjects rate the self-descriptive accuracy of 124 single adjectives (e.g., dominant) on a 8-point Likert scale ranging

from one to eight (one being least like themselves and eight being most like themselves). McCrae and Costa (1989) found that dominance and nurturance correspond closely to the IASR-B5 interpersonal dimensions of surgency/extraversion and agreeableness. The circumplex model of interpersonal behaviour contains orthogonal axes of dominance (ranging from assured-dominant to unassured-submissive) and nurturance (ranging from warm-agreeable to cold-hearted). The IASR-B5 circumplex model is reported to have highly satisfactory psychometric properties, even in relatively small samples of subjects (Wiggins, 1979; Wiggins, Trapnell, & Phillips, 1988). Trapnell and Wiggins (1990) also report strong support for the structural validity of the IASR-B5. Reliability estimates based on alpha coefficients for the five factors were all greater than .87.

Procedure

All subjects were blind to the study's investigation of nuclear war issues. University students were administered questionnaires in a classroom at the University of Manitoba. Regular military personnel were administered questionnaires in classrooms at Canadian Forces Base Winnipeg and

Portage La Prairie. Reserve military personnel were administered questionnaires in a classroom at Minto Armoury.

Upon arrival at the designated room, subjects were instructed to seat themselves at a desk on which a copy of the SCANTS had been placed facedown. Once seated, the experimenter informed subjects that they would be administered four separate questionnaires. A set of general instructions were then read aloud (see Appendix E). Subjects were assured that their answers would be kept anonymous and that they were free to withdraw at any time during the study.

The four questionnaires were administered in the following order: SCANTS, IASR-B5, NLOC and NLQ. Administration of all four questionnaires generally took less than an hour. Subjects were instructed to provide demographic information concerning their age, sex and citizenship in the space allocated on the top of the SCANTS. Because the SCANTS is a nonreactive measure which does not directly ask about nuclear war issues, it was administered prior to and separate from the other questionnaires. In order that responses were not affected by the topic of nuclear war reflected in the third (NLOC) and fourth (NLQ)

questionnaires, the experimenter distributed the IASR-B5 and glossary after each respondent completed the SCANTS. Upon completion of all four questionnaires, subjects were thanked for their participation.

University students were informed that a copy of the final results of the study would be made available by contacting the experimenter's office. Military subjects were told that a copy of the final thesis would be forwarded to their Commanding Officers.

Results

The first hypothesis was not supported by the SCANTS data but was supported by the NLQ data. Only PPCLI subjects were used in the analysis of this hypothesis because the 1990 military subjects only consisted of male members of PPCLI. Dichotomous SCANTS data from the 1990 and 1991 studies were analyzed via chi-square in order to determine whether or not changes in concern about the threat of nuclear war had occurred in male (χ^2 (1, n = 36) = 10.36, p<.01) or female university students (χ^2 (1, n = 43) = 3.43, ns), or male military (PPCLI) subjects (χ^2 (1, n = 35) = .029, ns). Contrary to expectations, 1991 university males reported significantly less

concern than 1990 subjects. Comparative SCANTS data for 1990 and 1991 are presented in Table 2. To

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Insert Table 2 about here

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analyze the NLQ data, 2 (1990/1991) X 3 (male university/female university/PPCLI) ANOVAs were conducted for near, foreseeable, and distant future data. Contrary to the SCANTS analysis, a significant main effect was found for year for near $\underline{F}(1, 203) = 13.29$, $\underline{p}<.0005$, foreseeable $\underline{F}(1, 203) = 15.17$, $\underline{p}<.0001$, and distant $\underline{F}(1, 203) = 5.41$, $\underline{p}<.02$ dimensions of the future. No significant main effect was found for the groups nor was any significant interaction found.

The second hypothesis was not supported by the data. Chi-square analysis of dichotomous SCANTS data (mention or not mention nuclear war) for the Regular military, Reserve military and university students was not significant, χ^2 (2, $\underline{N}$ = 279) = .78, ns. The speculation that in 1991, military Reservists (9.4%) would express less concern about nuclear war on the SCANTS than Canadian university students (7.6%) and greater concern about nuclear war on the SCANTS than

Regular military personnel (6.1%) was not supported.

To analyze the third and fourth hypotheses, 2 (male/female) X 2 (military personnel/university student) ANOVAs were conducted for near, foreseeable, and distant future data obtained from the 1991 NLQ. Contrary to the third hypothesis, university students and military did not differ on near $F(1, 274) = .08$, foreseeable $F(1, 274) = .48$, and distant $F(1, 274) = .70$ future. Consistent with the fourth hypothesis, however, males and females were significantly different for near $F=(1, 274) = 3.56$, $p<.06$, foreseeable $F(1, 274) = 5.69$, $p<.02$, and distant $F(1, 274) = 4.56$, $p<.03$. Table 3 shows that for all three

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Insert Table 3 about here

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dimensions of the future, males indicated the likelihood of nuclear war as being less than did females. In 1991, males (7.5%) and females (7.7%) did not significantly differ in their spontaneous concern about nuclear war, χ^2 $(1, N = 278) = .006$, $p=.94$.

To test the fifth and sixth hypotheses, 2 X 2 ANOVAs were conducted between gender (male and female) and population (students and military) for all NLOC

subscales (powerful others, system, and chance). For the fifth hypothesis, military respondents indicated significantly less internal control on the NLOC than university students $F(1, 274) = 4.79$, $p<.03$. There was also a marginally significant main effect for gender on the internal control scale $F(1, 274) = 2.89$, $p<.09$ with females reporting higher internal control than males. For the sixth hypothesis, military respondents did not place the predicted greater emphasis on powerful others than university students $F(1, 274) = .04$, ns. No significant effect for gender was found on the internal control scale. Although no prediction was made about the chance variable, a significant main effect was found for both group $F(1, 274) = 5.11$, $p<.03$ and gender $F(1, 274) = 8.79$, $p<.004$. Military and male respondents respectively scored higher on the chance scale. However, the interaction was nonsignificant.

Based on the total 1991 sample, SCANTS data (mention or not mention nuclear war) and the five factors from the IASR-B5 (dominance, nurturance, conscientiousness, neuroticism and openness) were correlated using Pearson correlation coefficients. Table 4 shows that for the total 1991 sample, none of

the IASR-B5 personality variables correlates significantly with the expression of concern as indicated by subjects on the SCANTS. The NLOC also did not correlate significantly with the SCANTS.

Insert Table 4 about here

However, the expression of concern on the SCANTS was moderately associated with only one variable - subjects indicating a high likelihood of nuclear war in the near future on the NLQ, r (278) = .13, p<.03. The higher the reported likelihood of nuclear war, the higher the reported concern about nuclear war. Although this correlation is significant, it must be remembered that it only accounts for less than 2% of the variance. Correlational analyses of male subject data found a significant correlation between the SCANTS and the NLQ time dimension of the near future, r (161) = .19, p<.02.

Analyses of female subject data found a significant correlation between the SCANTS and the IASR-B5 neuroticism factor, r (117) = .20, p<.05. Because of the number of correlations performed, it was expected that some statistical significance may be

found due to chance.

Discussion

While this research was taking place, the rapidity of international changes was breathtaking. Some of the historical events witnessed included: the end of the Cold War, the unification of Germany, the occurrence of the Gulf War, and the political disintegration of the former Soviet Union, to name a few (see Footnote 3). Although the conflict in the Persian Gulf threatened to escalate into nuclear war, this study provides minimal support for the hypothesis that concern about nuclear war is on the rise at this time in history. The hypothesis that because of the Gulf War and general global unrest, male and female university students and male Regular force military members of the PPCLI would exhibit greater spontaneous concern about nuclear war as measured by the SCANTS than that reported by subjects tested in 1990 was not supported by the data. In particular, 1991 university males reported significantly less concern than 1990 subjects. This unexpected result is perhaps partially explained by past research that posits that males may either be denying or disbelieving that nuclear war may occur.

Contrary to the SCANTS analysis, a significant difference was found between 1990 and 1991 for the NLQ data for all three dimensions of the future. Those subjects tested prior to the Gulf War responded that the likelihood of Nuclear War was significantly less likely than those subjects tested after the Gulf War. The Gulf War experience may have contributed to the perception that there is a greater likelihood that the world's nuclear arsenals would be deployed. However, based upon the findings of this study, it is incorrect to assume that either Canadian civilian or military concern about nuclear war has increased as a result of the Gulf War.

One explanation for the different results found between the SCANTS and NLQ measures was suggested by Schuman et al. (1986). Standard open-ended questions on questionnaires such as the SCANTS, may be too limited leading to superficial responses that reflect what is momentarily salient to the subject, rather than eliciting more considered judgements. However, Elder (1965) argued that an indirect approach is the best methodology for revealing true emotional responses to nuclear war. Nonetheless, closed questions, such as those presented in the NLQ, offer

the subject a chance to respond as they wish to a common subject such as the likelihood of nuclear war. The theory posited by Schuman et al. (1986) is corroborated by the findings of this study in that the SCANTS data were nonsignificant, whereas the NLQ data were significant. However, the expression of concern on the SCANTS was associated with those individuals who felt there was a relatively high likelihood of nuclear war in the near future on the NLQ. This finding indicates that the more one is concerned about the prospect of nuclear war, the more likely one feels that nuclear war may occur.

Fiske (1987) argues that salience alone will not precipitate attitude change; however, it will result in more extreme or intense responses than would otherwise have been made. While spontaneous concern about nuclear war was not significantly different between years on the SCANTS for Canadian soldiers and female university students, it was significantly less for male university students. On the other hand, the indicated likelihood of nuclear war on the NLQ was considerably greater in 1991 than in 1990 for all three dimensions of the future. Means and standard deviations for 1990 and 1991 NLQ data reported in

Table 3 corroborate Fiske (1987) in that once respondents are reminded of the nuclear war threat, they respond with a greater intensity. Therefore, the data collected after the Gulf War is more extreme than that collected prior to the occurence of the Gulf War.

The second hypothesis was that military Reservists would express less concern about nuclear war on the SCANTS than Canadian university students and greater concern about nuclear war on the SCANTS than Regular military personnel. This study found that military personnel do not significantly differ from civilians in their concern about nuclear war. For the most part, this study found quite similar proportions of military and civilian subjects were concerned about nuclear war (see Table 2). This is contrary to the 1990 finding where 9.1% of military respondents expressed concern about nuclear war, while 18.5% of the university students sampled expressed nuclear war concerns. It must be noted that the 1990 military sample was entirely composed of male soldiers from the PPCLI who would likely be involved in front-line combat in the event of war. On the other hand, the majority of the 1991 Regular and Reserve military sample was composed of male and female servicemembers,

who because of employment in support occupations, would be less likely to see actual combat. However, despite this contrast, no significant difference was found between Regular and Reserve military respondents concerns about nuclear war.

The hypothesis that military personnel, regardless of gender, would view the prospect of nuclear war in the near, foreseeable, and distant future as being significantly less likely than university students was not supported by the data. The hypothesis that female subjects, both civilian and military, would express greater concern about nuclear war on the SCANTS was also not supported by the data. In fact, both male and female subjects, regardless of being civilian or military, expressed similar levels of spontaneous concern about nuclear war on the SCANTS. However, female subjects did estimate a greater likelihood of nuclear war on the NLQ for the near, foreseeable, and distant future than did male subjects. These results suggest that once women are cued to the variable of nuclear war, they perceive it more likely to occur than men, a finding that is consistent with past research (Nelson & Slem, 1984; Schuman et al., 1986).

It is interesting to observe that regardless of gender, military personnel and university students all believe that as the time frame increases, so does the likelihood of nuclear war (see Table 3). These increasing probabilites suggest that although individuals are generally optimistic about tomorrow, they possess a certain pessimism about the possibility of a nuclear war occurring in the distant future.

As predicted, military respondents (Regular and Reserve combined), regardless of gender, indicated less system (internal) control on the NLOC than university students. This relationship was expected since a basic premise of the military is that soldiers must follow orders without question. However, the hypothesis that military respondents (Regular and Reserve combined) would place greater emphasis in powerful others (external control) on the NLOC than students was not supported by the data. Similarity between military personnel and university students may be due to the fact that success in university study as in military training, is dependent upon fulfilling the demands of powerful others. However, the fact remains that in 1991, no significant difference was revealed between university and military respondents for the

external control variable, whereas in 1990, a significant difference was found. The difference between 1990 and 1991 may be due to the composition of the military sample. In 1990, the military sample was entirely composed of male soldiers from the PPCLI. In 1991, 85% of the military sample was composed of male and female members of the Regular and Reserve Force employed in support occupations. In this respect, it may be argued that servicemembers in support roles may perceive the influence of powerful others as less significant than operational soldiers.

The exploratory personality factor research speculated that subjects indicating no concern about the threat of nuclear war on the SCANTS would be associated with higher levels of dominance on the IASR-B5 than those subjects indicating concern on the SCANTS, but none of the five IASR-B5 personality variables (dominance, nurturance, conscientiousness, neuroticism and openness) correlated with the expression of concern as indicated on the SCANTS (see Table 4). However, for female subjects, salience of nuclear war was significantly but minimally associated with neuroticism. This finding is clearly consistent with theoretical gender expectations about nuclear war

anxiety. Due to the measures employed in this study, it is difficult to assess whether nuclear denial occurred with male respondents due to gender. The relationship between the salience of nuclear war and personality clearly needs further assessment. However, results of this study indicate that the five personality factors measured by the IASR-B5 are not suitable as a predictor of nuclear war concern.

A number of research areas are prompted by this study. For example, future studies may find it helpful to incorporate a self-esteem variable to examine whether people who demonstrate low self-esteem view the future less positively or are more prone to nuclear war concern than those with high self-esteem. Since all military subjects in this study were non-commissioned members (NCMs), examining officers responses to the same questionnaires may be of interest. In this respect, since officers largely control the actions of the military, they might have a different mindset about nuclear war than NCMs.

It has been implied that the more aware of nuclear issues that an individual is, the more likely they are to do something about it. Perhaps it could be examined whether civilian and military populations

differ in their anti-nuclear and pro-nuclear thoughts. This paper has suggested that students are predisposed to disarmament activism as a result of their perception of nuclear issues. It would be interesting to examine if students actually have a better knowledge of nuclear issues than soldiers. Nevertheless, it is not sufficient to say that the university system fosters activism whereas the military system does not.

One limitation of this study is that university students are not representative of the Canadian population, so it is unclear if the results would generalize to a nonstudent population. For practical reasons, the samples for this study were not chosen by a deliberate sampling process but on an as-available basis. Although there may be a certain degree of randomness in this exigency, there is no guarantee that the samples are representative of their parent populations.

The subject of nuclear war is far too serious to be relegated to a diminished position simply because of recently reported reductions in nuclear stockpiles held by the United States and the Commonwealth of Independent States. However, nuclear weapons cuts do

indicate that perhaps superpowers are beginning to believe that wars fought with nuclear weapons cannot be won. Whatever the case, the results of this study found that Canadian university students and military personnel still have genuine concerns about nuclear war. Therefore, it is necessary to continue studying this subject and expending energy toward the deterrence of global nuclear war.

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Appendix A

Age _____ Sex _____ Citizenship _____

Complete each of the following sentences in a way that expresses your feelings. Please respond differently to each.

1. I worry about

2. I worry about

3. I worry about

4. I worry about

5. I worry about

6. One of my fears regarding the future is

7. One of my fears regarding the future is

8. One of my fears regarding the future is

9. One of my fears regarding the future is

10. One of my fears regarding the future is

Appendix B

This questionnaire is a series of attitude statements. Each represents a commonly held opinion, and there are no right or wrong answers. You will probably disagree with some items and agree with others. I am interested in the extent to which you agree or disagree with such matters of opinion.

Read each statement carefully. Then indicate the extent to which you agree or disagree by circling the number behind each statement. The numbers and their meaning are indicated below:

If you agree strongly - circle 6

If you agree somewhat - circle 5

If you agree slightly - circle 4

If you disagree slightly - circle 3

If you disagree somewhat - circle 2

If you disagree strongly - circle 1

First impressions are usually the best in such matters. Read each statement, decide if you agree or disagree and the strength of your opinion, and then circle the appropriate number. Give your opinion on each of the statements. If the numbers to be used in answering do not adequately indicate your opinion, then use the one which is closest to the way you feel.

1.	Only people high up in government can have an impact on nuclear arms control.	1 2 3 4 5 6
2.	By efforts on my part, I can affect NATO policies involving the number and types of nuclear weapons.	1 2 3 4 5 6
3.	The occurrence of nuclear war in my life would simply be due to bad luck.	1 2 3 4 5 6
4.	Other powerful people determine NATO nuclear policy decisions.	1 2 3 4 5 6
5.	My input can make a difference in the arms race.	1 2 3 4 5 6
6.	Whether or not the number of NATO nuclear weapons are increased or decreased is a matter of fate.	1 2 3 4 5 6
7.	This country is run by a few people in power and only they can influence NATO nuclear policy decisions.	1 2 3 4 5 6
8.	I can help reduce the threat of nuclear war.	1 2 3 4 5 6
9.	Nobody has any control over the possibility of nuclear war.	1 2 3 4 5 6
10.	I can make a contribution to decisions about nuclear bombs.	1 2 3 4 5 6

11.	It seems that the likelihood of nuclear war is greatly influenced by chance happenings.	1 2 3 4 5 6
12.	Bureaucracies and government systems are the single most important determining factor in the arms race.	1 2 3 4 5 6
13.	If I put my mind to it, I could have an influence on NATO nuclear policy decisions.	1 2 3 4 5 6
14.	Nuclear war is a matter of chance.	1 2 3 4 5 6
15.	I feel that only a few powerful people have any important influence over whether or not there is a nuclear war.	1 2 3 4 5 6

Appendix C

This is a measure of how likely you think nuclear war is in the future. You are being asked to estimate the chances that nuclear war will occur in the time periods listed below. For each time period, please estimate, in percentages, how likely it is that nuclear war will occur. Use percentages from 0% to 100%, where 0% means that you believe there is no chance that nuclear war will occur, and 100% means that you are certain that nuclear war will occur during this time.

For example, if you think that nuclear war is very likely in the next 5 years you might answer 80%. Or if you think that nuclear war is very unlikely in the next 5 years you might answer 10%.

How likely is it that nuclear war will occur:

1. ____% in the next week.
2. ____% in the next month.
3. ____% in the next year.
4. ____% in the next 5 years.
5. ____% in the next 10 years.
6. ____% in the next 25 years.
7. ____% in your lifetime.
8. ____% ever (beyond your lifetime).

Appendix D

INTERPERSONAL ADJECTIVE SCALES - BIG FIVE (IASR-B5)

On the two following pages, you will find a list of words that are used to describe people's personal characteristics. For each word in the list, indicate how accurately the word describes you. The accuracy with which a word describes you is to be judged on the following scale:

1	2	3	4	5	6	7	8
Extremely inaccurate	Very inaccurate	Quite inaccurate	Slightly inaccurate	Slightly accurate	Quite accurate	Very accurate	Extremely accurate

Consider the word BOLD. How accurately does that word describe you as a person? If you think that this word is a quite accurate description of you, write the number "6" to the left of the item:

__6__ BOLD

If you think that this word is a slightly inaccurate description of you, write the number "4" next to it; if it is very accurate write the number "7", and so on.

If you are uncertain of the meaning of a word, please refer to the glossary included with this questionnaire.

1	2	3	4	5	6	7	8
Extremely inaccurate	Very inaccurate	Quite inaccurate	Slightly inaccurate	Slightly accurate	Quite accurate	Very accurate	Extremely accurate

_____(1)	INTROVERTED	_____(32)	HYPERSENSITIVE
_____(2)	ASSERTIVE	_____(33)	EXTROVERTED
_____(3)	TIMID	_____(34)	UNPHILOSOPHICAL
_____(4)	UNARGUMENTATIVE	_____(35)	AT EASE
_____(5)	ORGANIZED	_____(36)	ORDERLY
_____(6)	BOASTFUL	_____(37)	COCKY
_____(7)	SOFTHEARTED	_____(38)	PLANFUL
_____(8)	RUTHLESS	_____(39)	DOMINANT
_____(9)	KIND	_____(40)	UNSEARCHING
_____(10)	TENSE	_____(41)	ANTI-SOCIAL
_____(11)	HIGHSTRUNG	_____(42)	PERKY
_____(12)	CHEERFUL	_____(43)	FORCEFUL
_____(13)	UNSPARKLING	_____(44)	WILY
_____(14)	TRICKY	_____(45)	UNDISCIPLINED
_____(15)	UNCONVENTIONAL	_____(46)	SLY
_____(16)	INEFFICIENT	_____(47)	SYSTEMATIC
_____(17)	UNAGGRESSIVE	_____(48)	SELF-CONSCIOUS
_____(18)	UNREFLECTIVE	_____(49)	IRONHEARTED
_____(19)	RELAXED	_____(50)	THOROUGH
_____(20)	CALCULATING	_____(51)	UNTIDY
_____(21)	ENMITY	_____(52)	UNBOLD
_____(22)	ANXIOUS	_____(53)	NEIGHBOURLY
_____(23)	ABSTRACT-THINKING	_____(54)	UNORDERLY
_____(24)	PHILOSOPHICAL	_____(55)	SHY
_____(25)	TENDER	_____(56)	UNDEMANDING
_____(26)	HARDHEARTED	_____(57)	MEEK
_____(27)	UNNEIGHBOURLY	_____(58)	REFLECTIVE
_____(28)	WORRYING	_____(59)	INQUISITIVE
_____(29)	LITERARY	_____(60)	UNWILY
_____(30)	UNCHARITABLE	_____(61)	UNSYSTEMATIC
_____(31)	UNCUNNING	_____(62)	SELF-ASSURED

1	2	3	4	5	6	7	8
Extremely inaccurate	Very inaccurate	Quite inaccurate	Slightly inaccurate	Slightly accurate	Quite accurate	Very accurate	Extremely accurate

_____(63) DISSOCIAL
_____(64) JOVIAL
_____(65) DOMINEERING
_____(66) NEAT
_____(67) UNABSTRACT
_____(68) TENDER-HEARTED
_____(68) UNWORRYING
_____(70) UNIMAGINATIVE
_____(71) TIDY
_____(72) WARMTHLESS
_____(73) UNSLY
_____(74) ENTHUSIASTIC
_____(75) FIRM
_____(76) IMPRACTICAL
_____(77) UNCALCULATING
_____(78) QUESTIONING
_____(79) ACCOMMODATING
_____(80) UNCHEERY
_____(81) UNCOMPLEX
_____(82) CALM
_____(83) CONVENTIONAL
_____(84) INDIVIDUALISTIC
_____(85) FRIENDLY
_____(86) CUNNING
_____(87) SELF-CONFIDENT
_____(88) UNAUTHORITATIVE
_____(89) UNCRAFTY
_____(90) UNSYMPATHETIC
_____(91) CHARITABLE
_____(92) COLDHEARTED
_____(93) GUILT-PRONE
_____(94) NERVOUS
_____(95) BROADMINDED
_____(96) DISTANT
_____(97) FORCELESS
_____(98) EFFICIENT
_____(99) FRETFUL
_____(100) OVEREXCITABLE
_____(101) GENTLE-HEARTED
_____(102 DISORGANIZED
_____(103) UNPLANFUL
_____(104) UNANXIOUS
_____(105) UNSELFCONSCIOUS
_____(106) UNRELIABLE
_____(107) OUTGOING
_____(108) SYMPATHETIC
_____(109) BOASTLESS
_____(110) UNNERVOUS
_____(111) UNLITERARY
_____(112) IMAGINATIVE
_____(113) PERSISTENT
_____(114) RELIABLE
_____(115) CRAFTY
_____(116) UNAGITATED
_____(117) STABLE
_____(118) UNINQUISITIVE
_____(119) UNSOCIABLE
_____(120) UNARTISTIC
_____(121) SELF-DISCIPLINED
_____(122) FORGETFUL
_____(123) CRUEL
_____(124) BASHFUL

1. **Introverted:** feels more comfortable by oneself; is less interested in other people
2. **Assertive:** tends to be aggressive and outspoken with others
3. **Timid:** tends to be fearful or uncomfortable around others
4. **Unargumentative:** tends to avoid arguments or fights
5. **Organized:** efficient, planful; maintains order in possessions
6. **Boastful:** tends to brag
7. **Soft-hearted:** tends to be easy-going or gentle with others
8. **Ruthless:** pursues one's own interests regardless of the effect on others
9. **Kind:** thoughtful and caring for others
10. **Tense:** edgy; "uptight"; worried
11. **Highstrung:** skittish; easily annoyed or upset; oversensitive
12. **Cheerful:** happy, usually in good spirits
13 **Unsparkling:** not lively or entertaining with others
14. **Tricky:** can be deceiving toward others in order to get something; able to fool others

15. **Unconventional:** likes to be unusual, "radical", or different from the norm
16. **Inefficient:** often wastes time; doesn't plan well; easily side-tracked
17. **Unaggressive:** tends to be mild mannered, not forceful around others
18. **Unreflective:** not given to careful pondering of issues
19. **Relaxed:** calm; easy-going ; not easily bothered or distressed
20. **Calculating:** tends to use or manipulate others to your own advantage
21. **Enmity:** stable moods; even-tempered; rarely gloomy or overexcitable
22. **Anxious:** apprehensive or worried; tense
23. **Abstract-thinking:** theoretically minded; likes to reflect about ideas
24. **Philosophical:** likes to think about profound or "deep" questions about life; abstract
25. **Tender:** warm and loving with others
26. **Hard-hearted:** unconcerned and unfeeling toward others
27. **Unneighbourly:** unfriendly, aloof toward others, avoid contact with others

28. **Worrying:** tends to dwell on problems or troubles; apprehensive
29. **Literary:** interested in refined literature and other scholarly writings
30. **Uncharitable:** dislike helping others; tends to judge others harshly
31. **Uncunning:** not crafty or sly, tends to judge others harshly
31. **Hypersensitive:** abnormally sensitive; overreacts to real or imagined criticism
33. **Extroverted:** like being with others; outgoing and lively around others
34. **Unphilosophical:** not troubled by or concerned about serious or abstract questions; unreflective
35. **At Ease:** relaxed; comfortable; not easily embarrassed
36. **Orderly:** organized; likes to have everything just so methodical
37. **Cocky:** self-centred; conceited; thinks highly of one's own abilities
38. **Planful:** likes to plan things out or carefully arrange things beforehand
39. **Dominant:** tends to lead others, like to command, take charge in a group

40. **Unsearching:** not meditative or reflective; not bothered or concerned with "the meaning of life"
41. **Antisocial:** dislike the company of others; behaviour not affected by social rules
42. **Perky:** lively, energetic around others
43. **Forceful:** tends to take charge or assert control
44. **Wily:** crafty, cagey, or tricky
45. **Undisciplined:** lacking self-restraint; easily side-tracked; procrastinating; disorganized
46. **Sly:** crafty, secretive, or cunning when dealing with others
47. **Systematic:** likes to do things following a certain routine, or plan; methodical
48. **Self-conscious:** easily embarrassed; uncomfortable when being observed by others
49. **Iron-hearted:** tends to be stern or harsh with others
50. **Thorough:** does tasks carefully and conscientiously; pays close attention to details
51. **Untidy:** messy; disorganized; sloppy
52. **Unbold:** not daring or courageous
53. **Neighbourly:** friendly; likes to get involved with people around you
54. **Unorderly:** not well organized or arranged; tends

to be haphazard toward things

55. **Shy:** lacking self-confidence; tends to be uncomfortable around others
56. **Undemanding:** doesn't demand or expect much from others
57. **Meek:** timid, has trouble being assertive or standing up to others
58. **Reflective:** meditative; introspective; likes to ponder questions carefully; enjoys deep thought
59. **Inquisitive:** curious; has wide interests; seems interested in everything; likes to ask questions
60. **Unwily:** not tricky or crafty
61. **Unsystematic:** does things haphazardly; doesn't stick to plans or pre-set routine; inefficient
62. **Self-assured:** confident, certain of oneself
63. **Dissocial:** doesn't care for the company of others
64. **Jovial:** cheerful; playful others
65. **Domineering:** tends to control or manipulate others
66. **Neat:** likes to have things in proper place; tidy, meticulous
67. **Unabstract;** concrete; thinks in a practical, uncomplicated way
68. **Tender-hearted:** easily feels love, pity or sorrow for others

68. **Unworrying:** doesn't dwell on problems; not apprehensive
70. **Unimaginative:** not creative or inventive; not original
71. **Tidy:** likes to keep things organized an neat; dislikes clutter or disorder
72. **Warmthless:** has no feeling of pleasure or affection for others
73. **Unsly:** not tricky or cunning; tends to be genuine; sincere; trusting
74. **Enthusiastic:** enjoys active involvement with others
75. **Firm:** steadfast; does not give in easily; gets others to do things your way
76. **Impractical:** tends to consider unfeasible, or unworkable ideas; talks about things rather than doing them
77 **Uncalculating:** doesn't try to manipulate others or maximize one's own gain
78. **Questioning:** information or knowledge-seeking; wants to understand everything; curious
79. **Accommodating:** obliging, tends to do favours for others
80. **Uncheery:** not lively or jolly around others

81. **Uncomplex:** simple; uncomplicated
82. **Calm:** relaxed; tranquil; takes things in stride
83. **Conventional:** traditional; tends to stick to the mainstream values of the culture
84. **Individualistic:** unique; independent way of doing things; original
85. **Friendly:** open, accepting, warm around others
86. **Cunning:** crafty, skilful at manipulating other, devious
87. **Self-confident:** sure of oneself around others, comfortable meeting people
88. **Unauthoritative:** doesn't try to influence others; goes with others; opinions
89. **Uncrafty:** not tricky or sly when dealing with others
90. **Unsympathetic:** not interested or concerned about others' feelings or problems
91. **Charitable:** generous, like to help others
92. **Coldhearted:** have little warmth or feeling for others; unfeeling; harsh
93. **Guilt-prone:** tends to worry about having done something wrong; dwells on mistakes; worrying
94. **Nervous:** uneasy; apprehensive or worried
95. **Broadminded:** enjoys a wide diversity of standards

of behaviour; liberal-thinking

96. **Distant:** tends to be cold toward others; tends to stay away from others
97. **Forceless:** not forceful with others; timid or weak, find it hard to be assertive
98. **Efficient:** does things carefully and quickly; doesn't waste time
99. **Fretful:** agitated; easily distressed; worrying
100. **Overexcitable:** over-reacts to stress or excitement; overemotional; easily agitated
101. **Gentle-hearted:** warm or kind with others
102 **Disorganized:** tends not to do things in a well-planned or orderly way; untidy or inefficient
103. **Unplanful:** tends not to organized or plan things ahead of time; unsystematic
104. **Unanxious:** not tense or edgy
105. **Unselfconscious:** not easily embarrassed; not uncomfortable or nervous
106. **Unreliable:** Irresponsible; can't always be counted on to do things promised to do; undependable
107. **Outgoing:** enjoy meeting other people
108. **Sympathetic:** feel interested or sensitive to the feelings and problems of others
109. **Boastless:** don't like to brag

110. **Unnervous:** calm; not anxious or edgy
111. **Unliterary:** not especially interested in literature or creative writing
112. **Imaginative:** creative; tends to think of different or original ideas or ways of doing things
113. **Persistent:** doesn't give up even when others think you are wrong
114. **Reliable:** responsible; doesn't forget to do things; dependable
115. **Crafty:** can mislead or manipulate others for ones own purposes
116. **Unagitated:** not worried or upset
117. **Stable:** even-tempered; not excitable or overemotional; well-adjusted
118. **Uninquisitive:** not curious; not especially concerned to know many things
119. **Unsociable:** doesn't enjoy meeting people or being in the company of others
120. **Unartistic:** not creative; not imaginative
121. **Self-disciplined:** good at sustained effort; not easily distracted; not impulsive; tends to put work before play
122. **Forgetful:** scatterbrained or absent-minded; tends to forget appointments, dates

123. **Cruel:** able to cause pain and suffering to others; unfeeling

124. **Bashful:** tends to shy away from public attention

Appendix E

The purpose of this research is to study the way that people perceive their environment. You can be assured of your anonymity and that your responses will not be revealed to any people not directly related to this research project.

Everyone perceives the world in their own way. This means that different people have different perceptions of the same situation and that your perceptions are probably not the same as others. Therefore, there are no right or wrong answers to the questions.

Now please turn to the questionnaire on the table. At the top of the page please fill in your age, sex and citizenship in the appropriate spaces. Next read the instructions that follow at the top of the page. If after reading the instructions you are having some difficulty, raise your hand. If you don't have any trouble, answer the questions that follow at your own speed. When you have finished, leave your completed questionnaire on your desk and you will be given another questionnaire to complete. There will be four questionnaires in total. Thank you.

Footnotes

[1] Theoretical sample size of 42 subjects per cell was determined for a 3(Regular, Reserve and University) X 2(male and female) ANOVA at the .05 level of significance with power of .7 for detecting a medium (0.5) effect size (Olejnik, 1985).

[2] The NLQ scores of three military subjects from the 1990 study were deleted from the analyses because their scores on this measure were deemed to be outliers. They had responded that the prospect of nuclear war was 100% in the near, foreseeable, and distant future which is an impossible scenario.

[3] A timeline of critical events follows:

Nov. 7, 1989 - Dismantling of the Berlin Wall begins

Jun. 1, 1990 - Bush and Gorbachev agree to cut long-range nuclear weapons by 30%

Jul. 6, 1990 - NATO officially declared Cold War end

Aug. 2, 1990 - Iraqi troops invade Kuwait

Oct. 3, 1990 - East and West Germany formally unite

Jan.16, 1991 - Gulf War commences

Mar.31, 1991 - Warsaw Pact military alliance disbanded

Table 1

Scoring Guidelines for the

Spontaneous Concern About Nuclear Threat Scale (SCANTS)

Typical Concern Terminology	Typical Borderline Nonconcern Terminology
(score 1)	(score 0)
Nuclear war	War
Nuclear destruction	Peace or peace of world
World War III	World destruction
Atomic or nuclear weapons	World becoming communist
Nuclear stupidity	World preservation
Getting nuked	World affairs
Blowing up the world	Human extinction

Note. From "Salience of the Nuclear Threat: Operationalization through spontaneous concern" by D. M. Mayton, 1987, obtained through personal correspondence with the author.

Table 2

Subject Responses on the Spontaneous Concern About Nuclear Threat Scale (SCANTS)

	1990		1991	
	n	%	n	%
Total	98	15.3	278	7.5
Male	62	16.1	161	7.5
Female	36	13.9	117	7.7
Total Military	33	9.1	199	7.5
Regular Force	33	9.1	114	6.1
Males	33	9.1	45	4.4
Females	-	-	34	5.9
PPCLI Males	33	9.1	35	8.6
Reserve Force	-	-	85	9.4
Males	-	-	45	8.9
Females	-	-	40	10.0
Total University	65	18.5	79	7.6
Male	29	24.1	36	8.3
Female	36	13.9	43	7.0

Note. The % values indicate the percentage of the sample that spontaneously expressed concern about nuclear war.

Table 3

Mean (%) and SDs for the Nuclear Likelihood Questionnaire (NLQ)

		Near Future		Foreseeable Future		Distant Future	
	n	M	SD	M	SD	M	SD
1990 Total	95	4.5	5.6	20.8	20.4	42.7	31.2
1991 Total	278	8.9	12.7	32.1	26.7	51.0	32.9
Male	161	7.5	10.9	28.3	26.2	47.0	32.7
Female	117	10.8	14.6	37.3	26.7	56.6	32.5
Total Military	199	8.6	12.5	32.3	27.3	51.6	33.4
Regular Force							
Males	45	5.7	6.5	23.6	26.8	38.5	32.9
Females	34	9.9	11.8	38.0	26.8	64.5	30.1
PPCLI Males	35	8.5	8.1	38.1	32.0	56.3	36.5
Reserve Force							
Males	45	8.2	15.5	25.8	20.0	49.3	30.3
Females	40	11.4	16.7	39.7	27.9	53.7	33.3
Total University	79	9.7	13.2	31.5	25.3	49.6	31.7
Males	36	8.0	10.9	27.9	24.6	45.6	29.9
Females	43	11.0	14.8	34.5	25.8	53.0	33.1

Table 4

Pearson Correlations between the SCANTS and other measures

	SCANTS		
	Total (N = 278)	Males (N = 161)	Females (N = 117)
IASR-B5			
Dominance	.02	-.04	.13
Nurturance-Love	-.08	-.05	-.14
Conscientiousness	-.04	-.02	-.06
Neuroticism	.10	-.03	.20*
Openness to experience	-.01	-.01	-.01
NLQ			
Near future	.13*	.20*	.08
Foreseeable future	.07	.09	.05
Distant future	.07	.03	.13
NLOC			
Powerful Others	.08	.13	.02
System	-.10	-.08	-.13
Chance	.09	.13	.05

* p<.05 (two-tailed tests).