

American and Soviet adolescents' attitudes towards the future: The relationship between fear of nuclear war and optimism

By: [Jonathan Tudge](#), Eric Chivian, John Robinson, Vladimir Andreyenkov, and Nikolai Popov

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Abstract:

Despite continuing efforts to achieve a major and lasting arms control agreement, the existence of large numbers of nuclear weapons is perceived by many as constituting a grave threat to the future of the world. This concern is not restricted just to adults: children and adolescents have indicated that they, too, fear a nuclear war. In conversations with psychologists and psychiatrists, children have revealed stark images of such a war, and have indicated that their plans for the future are affected by those fears. Survey research also suggests that significant percentages of children and adolescents worry about nuclear war.

Keywords: USSR | Soviet Union | United States | nuclear war | pessimism | optimism

Article:

Despite continuing efforts to achieve a major and lasting arms control agreement, the existence of large numbers of nuclear weapons is perceived by many as constituting a grave threat to the future of the world. This concern is not restricted just to adults: children and adolescents have indicated that they, too, fear a nuclear war. In conversations with psychologists and psychiatrists, children have revealed stark images of such a war, and have indicated that their plans for the future are affected by those fears. Survey research also suggests that significant percentages of children and adolescents worry about nuclear war.

The prospect of our youth growing up suffering from emotional stress, with concomitant behavioral problems, is hardly one to give us comfort. On the other hand, casual observation of children and adolescents does not provide a picture of traumatized youth; students make plans for the future, worry about getting good grades for college entry, plan to marry and have children. It is difficult to reconcile these plans with the fact that large numbers of children and

adolescents surveyed by various researchers in different countries say that they are very worried by the threat of nuclear war. We clearly must be cautious before assuming that an expressed fear of nuclear war leads to a psychological state of stress or despair or to negative behavioral consequences.

The purpose of this paper is to examine the connection between worry about nuclear war and attitudes toward the future. In particular, we are interested in knowing whether children and adolescents who say that they are worried about nuclear war have a more pessimistic world outlook than those who are less worried, and whether the relationship is moderated by their knowledge of the consequences of such a war. Furthermore, we wished to know the extent to which the relationship varies in two countries (the United States and Soviet Union) and, within each country, whether the relationship differs by age and gender.

An interest in the beliefs and attitudes of youth toward nuclear weapons and nuclear war is almost as old as the weapons themselves. The first study of adolescent views on this topic was conducted in 1947 by Remmers and his colleagues [1]. Only a quarter of their sample of 10,000 high-school students from across the country did *not* expect the United States to be at war with the Soviet Union within the next five years.

Perhaps not surprisingly, psychologists' concern with adolescents' attitudes toward nuclear war has tended to coincide with periods of increasing tension in the world. The Berlin Wall and the Cuban missile crisis no doubt played a part in reviving the issue at both a scholarly and an emotional level. In 1962 only 17% of a randomly selected sample of 2,000 high-school students believed that the chances for peace were greater than even, and 70% felt reasonably sure that an attack on the United States would be with nuclear weapons [2]. Interview data obtained in the early 1960s from a sample of 10–17-year-olds [3] and information from junior-high and high-school students [4] revealed similar findings: that 25%–0% of these samples felt that a nuclear war was either 'very possible' or 'certain.'

The depressing images of the future revealed by these adolescents hardly resulted in an increase in interest in the questions, at least on the part of the academic community. As Chivian and his colleagues put it: "Awareness of this issue seemed, like the testing of nuclear weapons, to have gone underground" [5]. However, the last decade has seen a revival of interest in this topic; and it is now difficult to agree with Smith,¹ who in 1982 complained about the paucity of hard data on this topic, as a large number of studies on adolescent beliefs about nuclear war have since been conducted in many countries around the world.

According to the literature, one impression revealed through interviews and analysis of responses to questionnaires is that teen-agers are growing up feeling depressed and pessimistic about the future. "Time and time again, in response to questions about nuclear conflict, [adolescents] said—and they said it bitterly—that they would pay the biggest price. They would be denied a chance to live, to love, to work, to bear children and raise a family" [6]. Austin & Mack [7] have made similar points, as have Goodman and her colleagues [8]. Stillion and her co-workers [9], reporting the results of a multinational study, found that between a third and a half of the subjects

¹ B. Smith (1982) The threat of nuclear war: Psychological impact. Address to the Psychologists for Social Responsibility, Eugene, OR.

in each of six countries said that they were pessimistic when they thought about nuclear war—although, as the authors pointed out, over half of their sample reported no such pessimistic feelings. Lewis and his colleagues [10] reported that approximately a quarter of their random, representative, and national sample of almost eight thousand Canadian students from grades 7 to 12 felt that the nuclear threat was influential in their desire to "live for today and forget about the future," and that it was influential in their future marriage and family plans.

These findings are not restricted to adolescents. Newcomb [11], in his sample of 700 19-24-year-olds, found that anxiety about nuclear war was associated with less purpose in life, more depression, and more drug use. Haste [12] assumes that "everybody's scared," but that various coping mechanisms are used to allow people to cope.

The relationship between expressed worry about nuclear war and attitudes toward the future is not clear-cut, however. Diamond & Bachman [13] have found it necessary to differentiate between "concern" (which they liken to "worry," but without the affective component implied by "worry") and "despair"; they argue that these constructs are not only different but uncorrelated. In their data, students who scored high on "concern" did not differ from their classmates in terms of their level of optimism about the future; but those who scored high on "despair" were far more likely than their peers to feel worthless, alienated, and dissatisfied with life. Because these data include only high-school seniors, however, it is unclear whether younger adolescents would respond in similar fashion.

Deutsch [14], Beardslee & Mack [15], Tizard [16], and others have also pointed out that the relationship between an expressed fear of nuclear war and behavioral manifestations of those fears is by no means simple; one cannot simply assume a causal connection between them. Thus, responding on a questionnaire that one is "very worried" about nuclear war, combined with a realistic understanding of the likely consequences of such a war, does not necessarily cause adolescents to give up on school or decide that there is no point in planning for the future.

A further problem, often noted in the literature [14,17], is that anxiety or concern may be artificially stimulated by the mere fact of being asked to fill out a questionnaire that is known to be about nuclear war. If the respondents believe, moreover, that the people administering the questionnaire are part of an activist group, they may be more inclined to answer in what they perceive as the "expected" fashion.

Doubt has also been cast on the validity of much of the data collected because many researchers, as they themselves acknowledge, have based their findings on accidental or "opportunistic" samples that could not be considered to be representative of the adolescent population in the community or culture of interest. Self-selected samples are notoriously biased; people who are concerned with a particular issue are far more likely to fill in a questionnaire relating to it, thus ensuring findings of higher levels of concern than might be experienced by the population in general. Similarly, teachers or parents who are concerned about the issue are more likely to permit their students or children to respond to a questionnaire. Moreover, if they themselves are concerned, they are more likely to have discussed the issue with their children than parents or teachers who are less concerned.

These methodological problems have prompted harsh attacks on the validity of the data. Coles [17, 18] has concluded that adolescent worry about nuclear war has been vastly overrated in the literature, and that it is almost exclusively a phenomenon affecting middle-class children with activist parents. A related view is presented in a paper that relies to a surprising degree on *ad hominem* comments to make the point that the worry or anxiety that has been reported is merely a combination of biased sampling procedures and "coaching" or "terrorizing" by parents and/or other nuclear freeze activists [19]. Similarly, London [20] argues that much adolescent concern about the issue derives from the baleful influence of teachers involved in the nuclear freeze movement.

There are thus two issues to address. The first is the extent to which concern about the prospect of nuclear war is restricted to a small (but oversampled) percentage of the adolescent population; the second relates to whether adolescents can express a high degree of worry yet indicate that they are not overly pessimistic about the future.

It is true that much of the research conducted in the late 1970s and early 1980s was not highly sophisticated from a methodological point of view. However, a number of studies have been conducted that are good examples of methodological rigor, incorporating large, national, representative samples. For example, Bachman and his colleagues, in the Monitoring the Future project [13,21], collect yearly data on representative samples of high-school seniors across the United States. Their data only peripherally touch on the issue of war, but their findings (collected yearly from 1975 to 1984) that between 20% and 35% of seniors indicate that they feel that their lives will be cut short by biological or nuclear destruction are not so different from the figures reported by opportunistic samples. Solantaus and her colleagues [22], in Finland, and Goldberg and her co-workers [10,23], in Canada, have reported very similar findings.

One can assume from these findings that the concerns are not restricted to a small group of middle-class adolescents with activist parents, for the samples are representative, and the numbers are large. However, Bachman's data [13,21], although both random and representative of the entire United States, are generalizable only to seniors.

The research to be reported here may not be generalizable to the whole country, but it is the first study of a random sample of American adolescents aged 11 to 18. It is also cross-national in scope, being the first study of a random sample of adolescents in the Soviet Union.

Methodology of the present study

Subjects

For logistical and financial reasons, we decided not to attempt a national sample in both countries, but rather to sample from regions of each country that might be considered somewhat representative. Maryland was chosen as the sampling frame for the United States for a number of reasons, the main one being that its highly diverse population, with a mix of rural and urban counties, black and white communities, and range of socioeconomic groupings, enabled us to sample a wide range of adolescents. Nevertheless, it is important to bear in mind that these results may not be generalizable to the whole United States. However, we included in our

questionnaire two of the questions that have been included in the national Monitoring the Future project [21] in order to compare (at least on these two questions) our data with a national sample. Our findings on these questions are very similar to those reported by Diamond & Bachman [13].

A cluster sampling procedure was followed in which a random sample of counties was first selected, the probability of selection being proportional to size. This was followed by a random sampling of public junior and senior high schools (private and parochial schools were not included) within each county—again, proportional to population. Finally, a random sample of classes was chosen within each school to add up to a total of 200 students in each school, divided equally among the grades. The sample was selected so as to assure approximately equal numbers for each grade from 7 through 12, covering ages 12-18. Of the total of 25 schools selected statewide, 20 agreed to participate. The 1986 American sample consisted of 3,332 children, 1,634 boys (mean age, 14.97; SD, 1.69) and 1,698 girls (mean age, 14.91; SD, 1.71).

The Soviet sample also was not national, but was randomly drawn from two regions (*oblasts*) because, like Maryland, they can be considered somewhat representative of the European portion of the Russian Republic. We cannot generalize to the other republics, or to the relatively sophisticated centers of Moscow and Leningrad. Like Maryland, these two *oblasts* have a combined population of 4-5 million. The same cluster sampling procedures were followed, the sole exception being that at the final level of selection, we randomly selected children from classes rather than used the class as the final unit of selection. Forty schools were selected from the two *oblasts*, an average of 50 students being selected from each school. This yielded a 1986 Russian sample of 2,263 students, 980 boys (mean age, 13.16; SD, 1.49) and 1,283 girls (mean age, 13.31; SD, 1.59).

Two further samples were collected, two years later, from the same sites, although not from among the same students, in order to ascertain the extent of any changes in beliefs that might have occurred that might reflect the improved relations between the two countries between 1986 and 1988. In 1988, 1,348 Soviet adolescents and 1,735 American adolescents participated.

Methods

The measurement instrument was a questionnaire, the first draft of which was completed in the late spring of 1984 by Chivian and Tudge. It was subsequently revised by the present authors after pilot testing at several schools in the United States and at two sites in Moscow. In all cases in-depth discussions took place with the students following pilot tests of the questionnaire.

The final form of the questionnaire was as follows. Part of the instructions stated: "This questionnaire is part of an international study to learn how young people in several countries view themselves, their world, and their future." The first three pages were concerned only with demographic information, leisure habits, religious and political affiliation (only for American respondents), plans for the future, expectations regarding their children's lives, and open-ended questions requesting them to express three wishes, their three greatest fears, and their perceptions of the "greatest problems facing the world today." The final section of the first part of the questionnaire was taken from one that had been used previously in California [24], England [25], and the Soviet Union [5]. It asked students to indicate how worried they were by 19 potentially

worrying problems, such as getting cancer, not being able to find a satisfying job, and getting hooked on drugs. Nuclear war was one of these 19 items, and this was the first time the issue was mentioned.

The second part of the questionnaire focused on nuclear weapons and war, on U.S.-Soviet relations, and on perceptions that citizens of both countries have of each other. The questions were worded so as to ensure that students were not led to answer in any particular way. For example, one section began by stating: "Different people have different beliefs about nuclear weapons. Some of these beliefs are found in the statements that follow. What do you believe?" For each statement that could be seen as being biased in one direction, another statement provided the opposite point of view.

Questionnaire administration

A researcher from the University of Maryland Survey Research Center administered all the questionnaires on site to English and Social Studies classes (as these contained all students from the grades of interest) in late April and in October and November of 1986, and again in April and May of 1988. The researcher read through the instructions, pointing out that the questionnaire was totally anonymous, and said that it was designed to learn how young people viewed themselves, their world, and their future. They were encouraged to give their personal opinions in response to the questions, and were told that it was not a test.

In the Tambov and Rostov regions of the USSR, the chosen students were taken from their classes and placed in a separate room, where the questionnaire was administered, primarily by two researchers from the Institute of Sociological Research in Moscow, although in the cities of Tambov and Rostov themselves, psychology and education students from the local universities undertook this task. One of the authors, Tudge, who speaks Russian, was present during the instruction period for those administering the questionnaire in Rostov in 1986. The students were instructed by the researchers from the Institute of Sociological Research, both verbally and by means of a three-page manual of instructions, which included items such as the importance of excluding school personnel from the room while the questionnaire was being administered, the fact that anonymity was to be stressed, and so on. Tudge was also present during survey administration in schools in both regions in 1986.

The original plan was to administer the questionnaire in both countries simultaneously during April 1986. However, the American data collection was begun two weeks after the Soviet data were collected—and the Chernobyl accident occurred in the interim. As a result, we decided to interrupt the collection of American data and to continue it in the fall, when a new collection of Soviet data was made. The procedures described above were those followed by the Soviet data collection that took place during the third week of October 1986. The American data were gathered from the last week of October through November 1986. The first collection of data therefore followed the Reagan-Gorbachev summit at Reykjavik.

Results

The results reported in this paper deal with the extent to which expressed worry about nuclear war relates to attitudes toward the future, particularly to a pessimistic view, and whether this varies by culture (United States and Soviet Union), gender, and age. Because the 1986 U.S. data collection occurred at two times (April-May and October-November 1986) whereas the Soviet data collection occurred in October, we shall report only the fall 1986 data. (The bulk of the analyses will refer solely to the 1986 samples; the 1988 samples will be discussed only to describe the extent, if any, of changes in beliefs that were found to have occurred between 1986 and 1988.) The 1986 U.S. sample thus consisted of 2,289 children (1,131 boys and 1,150 girls [the remainder did not specify gender]), aged 11-19 years (mean age, 15.03), and the 1986 Soviet sample consisted of 2,263 children (980 boys and 1,283 girls), aged 10-17 years (mean age, 13.25).²

In the second wave of data collection, two forms of the questionnaire were used. Approximately two-thirds of each sample used a revised form, while one-third used the old form. For purposes of comparison, we shall use the data derived solely from students who used the original form—in the USSR, 518 (239 boys and 270 girls; mean age, 14.79); and in the USA, 406 (201 boys and 202 girls; mean age, 15.33).

A number of measures addressed the issue of the extent to which the respondents were concerned about nuclear war. As previously noted, the first mention of the topic appeared in a list of 19 potentially worrying items to which the students were asked to respond according to a 4-point scale, ranging from "not at all worried" to "very worried." Another question asked explicitly, "Do you think about the likelihood of a nuclear war? ", to which students could respond "never," "sometimes," or "often." Following Diamond & Bachman [13], we shall refer to these two questions as indicating the respondents' degree of "worry."

The students were also asked to indicate the extent to which they agreed with the following two statements: "Nuclear or biological annihilation will probably be the fate of all mankind within my lifetime" and "The human race has been through tough times before and will do so again," to which they could respond according to a five-point scale from "disagree" to "agree." These two items were taken from the Institute for Survey Research Monitoring the Future questionnaire [13] and together formed the composite variable Diamond & Bachman termed "nuclear despair." As a further measure of despair, we included a question requesting respondents to indicate when, if ever, they felt a nuclear war would occur. Those responding that they felt it would occur sooner rather than later might be said to be in despair.

Initially we ran analyses of variance (using the SAS general linear models procedure [26]) to detect whether or not our sample varied in terms of culture, age, or gender (and in terms of any interactions).

² Analyses were run to determine whether the spring U.S. sample differed significantly from the fall sample on any of the variables of interest. We decided that it did not, as the proportion of variance accounted for by time of data collection was typically between 0.1 % and 1 % for 16 of the 18 variables of interest. The exceptions were in response to questions about the likely fate of the world and about whether the world's greatest problems were solvable. In both cases the spring subsample was significantly more pessimistic (regarding the fate of the world—spring, 3.20; fall, 2.70; $F 112.8$; $P < 0.0001$; regarding the problems—spring, 2.56; fall, 2.22; $F 99.3$; $P < 0.0001$). It is possible that the Chernobyl accident still weighed on the minds of the spring subsample, but if so it had little or no impact on any of the other variables of interest, for virtually no other differences in responses were found.

Because the Soviet sample consisted primarily of children aged 10-16 years while the American sample was composed almost exclusively of children 12-18 years old, we included in these analyses only respondents aged 12-16.

With a data set of this size, very small mean differences in scores can yield results that are statistically, but not practically, significant. For example, statistical significance can be obtained with mean differences in scores of 0.1 on a 5-point scale. For this reason we decided to use proportion of the variance explained as a measure of the impact of each of the independent variables of interest. The samples did not vary sufficiently by age or by gender to justify their inclusion in the model, as the total proportion of the variance accounted for by age, gender, and all interaction terms was in no case greater than 3%. The samples were therefore collapsed across age and gender—but the data are presented separately for the two cultures of interest.

Adolescents in both countries tended to state that they either were "moderately worried" or "very worried" about nuclear war. This is particularly true of the Soviet sample, over 90% of whom responded in 1986 that they were "very worried" compared with 54% of their American counterparts. In terms of the rank order of the 19 potentially worrying items, the Soviet adolescents ranked nuclear war at the top, closely followed by "death of one's parents," whereas the American sample reversed this order. As can be seen in Table 1, the mean scores for this item were close to the top of the scale, particularly for the Soviet sample.

Table 1. Mean Differences for the Worry and Despair Questions (1986 Data)

	American sample			Soviet sample			R ²	F ^a
	Mean	SD	n	Mean	SD	n		
Worry								
Worry	3.11	1.09	2,280	3.89	0.44	2,192	0.18	994.2
Think	1.97	0.59	2,261	2.12	0.70	2,235	0.01	60.3
Despair								
When	4.28	1.20	1,676 ^b	5.66	0.84	1,495 ^b	0.30	1,367.1
Fate	2.69	1.15	2,085	1.88	1.16	2,135	0.11	518.9
Tough	3.66	1.12	2,141	3.33	1.57	2,125	0.01	61.3

^a All P values <0.0001.

^b Those responding "don't know" were dropped from this analysis.

Worry: How worried are you by ... nuclear war?

Not at all worried (1), a little worried (2), moderately worried (3), very worried (4).

Think: Do you think about the likelihood of nuclear war?

Never (1), sometimes (2), often (3).

When: If a nuclear war happens, when might it take place?

In the next 5 years (2), in the next 20 years (3), in my lifetime (4), after my lifetime (5), I do not think it will ever happen (6), don't know (dropped).

Fate: Nuclear or biological annihilation will probably be the fate of all mankind within my lifetime.

Disagree (1), mostly disagree (2), neither (3), mostly agree (4), agree (5).

Tough times: The human race has come through tough times before and will do so again.

Disagree (1), mostly disagree (2), neither (3), mostly agree (4), agree (5).

Despite the improvements in relations between the two countries that occurred between 1986 and 1988, no major differences were detected in rank orderings in 1988, although the degree of worry expressed was less. Nuclear war still ranked as the primary source of concern for the Soviet sample, but the percentage responding that they were "very worried" was somewhat lower

than in 1986 (88% compared with 93%). The American sample continued to rank it as the second most important source of worry (after death of parents), 46% (compared with 54%) responding that they were "very worried."

On the other hand, as can be seen in Table 1, there was little evidence of an expectation that nuclear or biological annihilation would be the fate of the world, and many responded that they did not expect to see nuclear war occurring during their lifetime. Again, these views were held more clearly by the Soviet teen-agers than by the Americans. These results appear to support Diamond & Bachman's argument [13] that although adolescents in both countries appear to be concerned about nuclear war, they are not in despair. In fact, unlike Diamond & Bachman, who found no correlation between the worry and the despair items, we observed (particularly for the American sample) a slight tendency for those who indicated that they were more worried to be *less* likely to indicate that they were in despair (see Table 2).

Table 2. Correlations between Worry and Despair (1986 Data)

		U.S. sample				
		Worry		Despair		
		Worry	Think	When	Fate	Tough times
Worry						
	Worry	1.0	0.28	-0.17	0.18	
	Think		1.0	-0.15	0.10	
Despair						
	When			1.0	-0.27	0.12
	Fate				1.0	-0.16
	Tough times					1.0
		Soviet sample				
		Worry		Despair		
		Worry	Think	When	Fate	Tough times
Worry						
	Worry	1.0	**			
	Think		1.0	-0.11		
Despair						
	When			1.0	-0.16	*
	Fate				1.0	**
	Tough times					1.0

Note: Only correlations (Kendall's τ) above 0.10 reported. All are significant at the $P < 0.0001$ level. * $P < 0.01$; ** $P < 0.001$. For descriptions of the worry and despair items, please see Table 1.

Nevertheless, in 1986 almost 10% of the Soviet teen-agers indicated that they thought that nuclear war might occur while they were still alive, and no fewer than 41 % of the Americans felt that it could occur during their lifetime—7% of them saying that they expected its occurrence within the next 5 years. Similarly, 10% of the Soviet sample and 29% of the American sample responded "agree" or "mostly agree" to the statement about the fate of the world. Interestingly, while the same percentage of Soviet students responded in 1988 as in 1986, only 15% (half as many as in 1986) of the U.S. sample responded that they agreed or mostly agreed with this statement. Also, there was a marked decline in the percentage of American respondents who believed that nuclear war would occur in their lifetime—33%, down from 41%—although this is still a far higher percentage than that shown by the Soviet sample (11 % in 1988).

Is it the case that these adolescents, who qualify as being "in despair" in Diamond & Bachman's view, are particularly pessimistic about their future? We included in our questionnaire a number of questions relating to optimism/pessimism; two of them came before any mention of nuclear war. The first stated: "In your opinion, if you have children, life for them on our planet will be . . . better than for you, the same as for you, worse than for you, don't know." The second followed an open-ended question requiring them to indicate what they thought the greatest problems facing the world were and asked: "Do you think these problems can be solved?" Several other questions relating to optimism were asked after we had first mentioned nuclear war. Some of them had to do with the future in general, while others concerned U.S.-Soviet relations.

It may be the case that despair about the nuclear threat is so pervasive that even before the issue is brought up in conversation or in the context of a questionnaire, people feel depressed about life [14, 17]. Alternatively, it may be that adolescents' responses to questions about nuclear war and the future are often pessimistic simply because the issue has just been raised. Because we asked the first two questions relating to pessimism before raising the issue of nuclear war, we should be able to detect whether or not introducing the issue had any marked impact upon the pessimism of our sample's responses. If this were so, we should find the relationship between worry and pessimism more marked *after* raising the issue than before.

Table 3. Mean Levels of Pessimism (1986 Data)

	American sample			Soviet sample			R ²	F ^a
	Mean	SD	n	Mean	SD	n		
Pessimism								
Children's lives	1.56	0.77	1,744 ^b	1.06	0.32	1,727 ^b	0.13	440.2
Solutions	2.22	0.93	2,243	1.42	0.71	2,222	0.21	949.8
Future	2.38	0.98	2,252	2.08	1.00	2,097	0.02	90.1
Prevent war	1.94	1.04	2,185	1.54	0.96	2,145	0.05	192.3
Cooperation	2.25	1.14	2,180	1.46	0.89	2,161	0.14	582.7
Relations	2.72	0.94	2,171	2.05	0.91	2,113	0.12	485.8

^a All P values <0.0001.

^b Those responding "don't know" were dropped from this analysis.

Before the mention of nuclear war

Children's lives: In your opinion, if you have children, life for them on our planet will be: Better than for you (1), the same as for you (2), worse than for you (3), don't know (dropped).

Solutions: Do you think [the greatest problems facing the world today] can be solved?

Definitely yes (1), probably yes (2), not sure (3), probably no (4), definitely no (5).

After the mention of nuclear war

Future: When you think about the future, do you generally feel:

Prevent war: Do you think that a nuclear war can be prevented?

Cooperation: Do you believe that the USA and the USSR can develop cooperation and friendly relations?

Relations: When you think about the future of United States-Soviet Union relations, do you generally feel:

Responses to "Future" and "Relations": Very optimistic (1), fairly optimistic (2), not sure (3), fairly pessimistic (4), very pessimistic (5).

Responses to "Prevent war" and "Cooperation": Definitely yes (1), probably yes (2), not sure (3), probably no (4), definitely no (5).

As can be seen in Table 3, adolescents in both countries did not score high on pessimism in 1986 and appeared rather optimistic about the future. This was particularly true of the Soviet sample,

despite so many of these students' indicating that they were very worried about nuclear war. The Soviet subjects, on average, responded that they were very optimistic, both about personal issues (the questions about their children's lives and about the future) and about the more geopolitical issues such as the future of U.S.-Soviet relations. The American students were generally less optimistic than their Soviet counterparts, but still displayed a good deal of optimism about the future.

Interestingly, the 1988 Soviet adolescents revealed some decrease in optimism: 67% (compared with 71% in 1986) responded that life for their children would be better than their own, 61% (compared with 67%) believed that the major problems facing the world could "definitely" be solved, and only 23% (down from 37% two years earlier) stated that they felt "very optimistic" about the future. Similarly, and despite the improvement in U.S.-Soviet relations, the Soviet teens were less optimistic about the future of those relations, 26% responding that they were "very optimistic" compared with 34% in 1986. However, 81% believed that cooperation could still be developed with the United States (up from 72% in 1986). There was virtually no change in the percentage believing that nuclear war could be prevented (69% compared with 68%).

The American students, on the other hand, revealed higher degrees of optimism in 1988 than in 1986 about improved relations between the two countries, although they were still less optimistic than their Soviet counterparts. Thus, 37% (up from 29%) responded that the USA and the USSR "definitely" could develop cooperation, and 46% (compared with 43%) "definitely" believed that nuclear war could be prevented. However, like the Soviet students, there was a decline in the number of Americans who in 1988 thought that their children's lives would be better than their own (42% compared with 49%), and only 18% (compared with 20% in 1986) responded that they were "very optimistic" about the future.

Analysis of variance of the 1986 data revealed, as was the case with the worry and despair items, that there was no significant variation in our sample according to either age or gender (the total amount of variance accounted for by these main effects and the interaction terms was consistently less than 2%), but that the mean scores of Soviet teen-agers on these pessimism items differed significantly from those of the Americans. We shall therefore present the correlations between the measures of worry and pessimism separately for the two cultures.

As Table 4 shows, the pattern of correlations (Kendall's τ) between the items focusing on worry about nuclear war and the pessimism items *prior* to mention of nuclear war is not greatly different from the pattern of correlations with the pessimism items that occurred *after* the issue of nuclear war was raised.

Interestingly, the pattern of correlations between the items focusing on despair and on pessimism is slightly different, at least for the American sample. The correlations with the despair items were slightly greater once the issue of nuclear war was raised, indicating that adolescents who seemed to be more in despair were also likely to be more pessimistic. It should be noted, however, that these correlations, although quite significant, are not high. In the Soviet case, there is no evidence that mention of nuclear war raised levels of either worry or despair.

Table 4. Correlations of Worry and Despair with Pessimism (1986 Data)

	American sample				
	Worry			Despair	
	Worry	Think	When	Fate	Tough times
Pessimism					
Children's lives				*	
Solutions	_*				**
Future			_*	0.11	-0.13
Prevent war	**	_*	-0.12	**	-0.18
Cooperation	**	**	**		-0.12
Relations			_*	**	**
	Soviet sample				
	Worry			Despair	
	Worry	Think	When	Fate	Tough times
Pessimism					
Children's lives	**		-0.15	0.11	
Solutions	_*		-0.13	0.13	**
Future	**		**	*	_*
Prevent war	_*	**	-0.17	0.16	**
Cooperation		-0.11	-0.16	0.12	_*
Relations	_*		-0.11	0.13	**

Note: Only correlations (Kendall's τ) above 0.10 reported. All are significant at the $P < 0.0001$ level. * $P < 0.01$; ** $P < 0.001$.

For descriptions of the worry and despair items, please see Table 1; for descriptions of the pessimism items, please see Table 3.

It is conceivable, of course, that some of the respondents looked ahead and so, by mistake, noticed the mention of nuclear war before we intended. This would certainly have the effect of reducing any differences in the pattern of correlations. Nevertheless, to support the thesis that raising the issue of nuclear war is likely to artificially raise levels of pessimism, one would need evidence of some degree of pessimism; and even after the questionnaire first raised the issue, our respondents appeared to be optimistic rather than pessimistic about the future.

These findings appear to indicate that expressed worry about nuclear war is not strongly associated with pessimism. Could it be that these adolescents, who appear so optimistic, have an unrealistic perception of the likely consequences of an all-out nuclear war? This can be assessed by reference to a number of questions relating to the consequences of such a war and to the likelihood of their or their families' surviving in the event of war.

Analysis of variance again indicated that the sample did not differ in terms of age and gender; however, despite the fact that the Soviet responses often differed significantly from those of the American adolescents, the proportion of the variance explained was very low (see Table 5). In other words, the mean differences between the two cultures were of statistical, but not practical, significance. Adolescents in both countries, no matter what age or gender, seemed to have fairly realistic beliefs about the possible consequences of a worldwide nuclear war. However, despite the low mean differences between the two cultures, it is still possible that the pattern of correlations between consequences and pessimism could be different in our two samples.

Table 5. Mean Levels of Beliefs about the Likely Consequences of a Nuclear War (1986 Data)

	American sample			Soviet sample			R ²	F
	Mean	SD	n	Mean	SD	n		
Consequences								
You survive	2.79	0.46	2,068 ^a	2.81	0.54	1,535 ^a	0	1.31 (ns)
Family	2.81	0.44	2,026 ^a	2.79	0.57	1,582 ^a	0	0.92 (ns)
Winter	2.11	1.02	2,215	1.86	1.20	2,199	0.01	53.8***
Survival	3.87	1.00	2,215	4.05	1.07	2,158	0.01	33.2***
Shelters	3.43	1.13	2,183	3.58	1.30	2,125	0.001	16.6***
No survival	2.50	1.08	2,198	2.22	1.36	2,144	0.01	55.9***
No winner	1.92	1.13	2,199	1.79	1.31	2,123	0.002	12.53**

^a Those responding "don't know" were dropped from this analysis.

••p <0.001; •••p <0.0001.

You survive: In your opinion, what are your chances of surviving in the event of a worldwide nuclear war?

Very good (1), 50:50 (2), poor (3), don't know (dropped).

Family: In your opinion, what are your family's chances of surviving in the event of a worldwide nuclear war?

Very good (1), 50:50 (2), poor (3), don't know (dropped).

Different people have different beliefs about nuclear weapons. Some of these beliefs are found in the statements that follow. What do you believe?

Winter: After a worldwide nuclear war, the world will be so cold and dark and radioactive that almost no one will survive (known as nuclear winter).

Survival: Although nuclear weapons are very destructive, their effects have been highly exaggerated, and many millions will survive a worldwide nuclear war.

Shelters: The majority of the population can survive a worldwide nuclear war if there are enough fallout shelters, food, water, and other supplies.

No survival: Even in fallout shelters, with enough food and other supplies, almost no one will survive a worldwide nuclear war.

No winner: There can be no winner in a worldwide nuclear war since most countries will be totally destroyed.

Responses: Definitely yes (1), probably yes (2), not sure (3), probably no (4), definitely no (5).

If optimism about the future were related to a lack of realism about the likely consequences of a nuclear war, we should expect those with a more optimistic stance (low scores on the pessimism items) to score low on "survival" and "shelters" and high on "winter," "no survival," and "no winner" compared with those who were more pessimistic. For neither sample was this borne out (see Table 6): in the American sample, only 6 of 30 of the correlations were above 0.1, and most were in the opposite direction. The Soviet sample provided even stronger evidence that there was no link between optimism (low scores on the pessimism items) and a rosy view of the consequences of war: 10 of the 30 correlations were above 0.1 (although none reached 0.2), and all were in the opposite direction. This tendency is most apparent if we examine only those pessimism items that relate specifically to war and U.S.-Soviet relations ("prevent," "cooperation," and "relations"). It is necessary to stress the fact that correlations in the 0.10-0.20 range are not particularly compelling as evidence of a tight link among the variables. Nevertheless, there appears to be no correspondence between an optimistic viewpoint and unrealistic perceptions of the likely consequences of a nuclear war.

Similarly, there appears to be very little evidence that those who worried more about the prospects of a nuclear war or who might be said to be in despair about it differed much in terms of their understanding of the likely consequences of such a war from their counterparts who worried less (see Table 7). There was, however, a tendency for those adolescents in both

countries who thought that a nuclear war was unlikely to occur (high scores on "when") to agree with statements that a nuclear war would not be survivable (low scores on "winter," "no survival," and "no winner") and to disagree with the obverse opinion (low scores on "survival" and "shelters").

Table 6. Correlations of Pessimism and Beliefs about Consequences (1986 Data)

	American sample					
	Pessimism items					
	Children's lives	Solution	Future	Prevent war	Cooperation	Relations
Consequences						
You survive	0.13			–**	–**	
Family	0.11			–*		
Winter				0.10	0.10	
Survival	*			–**		
Shelters	0.10					
No survival	–*			0.12	**	
No winner		**	*	0.19	0.15	
	Soviet sample					
	Pessimism items					
	Children's lives	Solution	Future	Prevent war	Cooperation	Relations
Consequences						
You survive						
Family	–0.12			–**	–**	
Winter		–		0.15	0.14	**
Survival	–**	–**	–**	–0.15	–0.14	–0.11
Shelters				–0.15	–0.15	–**
No survival			**	**	**	**
No winner		*	*	0.18	0.17	0.12

Note: Only correlations (Kendall's τ) above 0.10 reported. All are significant at the $P < 0.0001$ level. * $P < 0.01$; ** $P < 0.001$.

For description of the pessimism items, please see Table 3; for description of the consequences items, please see Table 5.

It may be the case that these low correlations are simply a result of the fact that adolescent opinion is not at all stable; one would also find very low correlations among variables if these teen-agers were responding more or less randomly. This would be in line with other research in the area of political socialization that has found not only low correlations between adolescents and their parents and teachers and views expressed in the media [27-29] but little stability over time in adolescent responses [30]. To the extent to which the issues are relatively remote from their day-to-day lives, as Coles [17] has argued, this lack of coherence may be understandable.

Nevertheless, although the correlations were not high (typically they did not rise above 0.3), Tables 8 (for the pessimism questions) and 9 (for the consequences questions) show clearly that there was some stability of intercorrelations within classes of items—that is, respondents who scored high on one of the pessimism questions were reasonably likely to score high on another. The lack of correlations among classes (i.e., between worry about nuclear war and views of the consequences) is thus unlikely to be simply the result of a lack of coherence or stability in the respondents' views.

Table 7. Correlations of Worry and Despair with Consequences (1986 Data)

	American sample				
	Worry		When	Despair	
	Worry	Think		Fate	Tough times
Consequences					
You survive		–**			
Family		*			
Winter	–**	–**		–**	
Survival	**	0.11			
Shelters	–*	*		–**	–*
No survival	–*	–**			
No winner		–0.13			
	Soviet sample				
	Worry		When	Despair	
	Worry	Think		Fate	Tough times
Consequences					
You survive		**			
Family		0.14			
Winter		–0.12		**	
Survival		**	*	–0.11	**
Shelters		0.11		–**	
No survival		–**			
No winner		–**		**	

Note: Only correlations (Kendall's τ) above 0.10 reported. All are significant at the $P < 0.0001$ level. * $P < 0.01$; ** $P < 0.001$.

For descriptions of worry and despair items, please see Table 1; for descriptions of the consequences items, please see Table 5.

Table 8.

	American sample					
	Pessimism items					
	Children's lives	Solution	Future	Prevent war	Cooperation	Relations
Pessimism						
Children's lives	1.0	**	**		*	**
Solutions		1.0	0.10	0.23	0.21	0.12
Future			1.0	0.11	0.11	0.21
Prevent war				1.0	0.45	0.15
Cooperation					1.0	0.26
Relations						1.0
	Soviet sample					
	Pessimism items					
	Children's lives	Solution	Future	Prevent war	Cooperation	Relations
Pessimism						
Children's lives	1.0	0.12	*	0.12	0.10	**
Solutions		1.0	0.19	0.24	0.22	0.20
Future			1.0	0.14	0.12	0.31
Prevent war				1.0	0.50	0.20
Cooperation					1.0	0.23
Relations						1.0

Note: Only correlations (Kendall's τ) above 0.10 reported. All are significant at the $P < 0.0001$ level. * $P < 0.01$; ** $P < 0.001$.

For description of the pessimism items, please see Table 3.

Table 9. Correlations of Questions about Likely Consequences of Nuclear War

	American sample						
	Consequences						
	Con1	Con2	Con3	Con4	Con5	Con6	Con7
Consequences							
You survive (Con1)	1.0	0.77	-0.21	0.22	0.19	-0.16	-0.18
Family (Con2)		1.0	-0.21	0.19	0.21	-0.13	-0.16
Winter (Con3)			1.0	-0.28	-0.14	0.27	0.26
Survival (Con4)				1.0	0.24	-0.22	-0.21
Shelters (Con5)					1.0	-0.31	-0.18
No survival (Con6)						1.0	0.27
No winner (Con7)							1.0
	Soviet sample						
	Consequences						
	Con1	Con2	Con3	Con4	Con5	Con6	Con7
Consequences							
You survive (Con1)	1.0	0.77	-0.12	0.12	**	-*	-0.10
Family (Con2)		1.0	-0.15	0.18	0.12	-**	-0.15
Winter (Con3)			1.0	-0.25	-0.15	0.16	0.22
Survival (Con4)				1.0	0.37	-0.18	-0.22
Shelters (Con5)					1.0	-0.26	-0.17
No survival (Con6)						1.0	0.38
No winner (Con7)							1.0

Note: Only correlations (Kendall's 't') above 0.10 reported. All are significant at the $P < 0.0001$ level. * $P < 0.01$; ** $P < 0.001$.

For description of the consequences items, please see Table 5.

Conclusions

Our samples of adolescents in the state of Maryland in the United States and in the regions of Tambov and Rostov in the Soviet Union indicated that they were very worried about nuclear war. When asked, before any mention of war, to respond in 1986 to an open-ended question about their "three wishes" and "three greatest fears," 23.2% of the American sample placed "peace" or "no war" among their wishes, and 31.7% said that "war" or "nuclear war" was among their "greatest fears" (the Soviet sample has yet to be analyzed). Similarly, when presented with 19 potentially worrying items, 54% of the American sample and no fewer than 93% of the Soviet sample responded in 1986 that they were "very worried" about nuclear war. The percentages were somewhat reduced, but still very high, in 1988—46% of the U.S. sample and 88% of the Soviet sample responded that they were "very worried." However, as we have reported elsewhere [31], the Soviet respondents expressed a greater degree of worry about all items except not being able to find a satisfying job (in 1986 and 1988) and getting cancer (only in 1988). This was true for items such as "being the victim of a violent crime" or "getting hooked on drugs," despite the fact that there is no reason to believe that the regions of Tambov and Rostov are more crime- or drug-ridden than Maryland—in fact, the reverse is more likely to be the case.

There was also some tendency for our respondents to generalize their worry. The pattern of correlations of worry about nuclear war with the remaining 18 potentially worrying items revealed, for the 1986 American sample, correlations ranging typically from 0.21 to 0.37 (with "being considered physically unattractive," "people not liking me," and "not being able to find a satisfactory job" correlating less and the correlation between "nuclear power plant accident" and

"nuclear war" being the highest, at 0.52). The correlations were typically lower for the Soviet sample, all ranging from 0.10 to 0.29 (the highest being with a power plant accident). This pattern of correlations indicates that those who worried more about nuclear war were somewhat more likely to show higher degrees of worry about other items.

Because of the intercorrelation of the worry items and the greater tendency for the Soviet adolescents to express worry, it was necessary to examine the rank ordering of worries rather than the simple means. Four of the top five worries of the Soviet sample in 1986 were issues of global concern—world hunger, nuclear power plant accident, and environmental pollution, in addition to nuclear war (the exception being "death of parents," ranked number 2), whereas four of the top five American concerns were personal issues ("nuclear war," ranked number 2, being the exception). The same pattern was evident in terms of the American responses to open-ended questions about wishes for the future and greatest fears. (Interestingly, the 1988 Soviet sample included the same concerns in their top five, whereas concern about world hunger was included among the top U.S. worries in 1988.)

Unlike the assumptions made by some researchers, we found little evidence of any correlation between worry and pessimism about the future in either culture of interest. In fact, the pattern of correlations in both the Soviet and the American samples revealed that those who responded that they were most worried were slightly more likely to indicate that they were optimistic, not pessimistic, about the future. In common with the findings reported by Diamond & Bachman [13], we found some evidence for a relation between despair and pessimism in that adolescents who scored higher in terms of despair (they were more likely to believe that a nuclear war was likely to occur and to agree with the statement that biological or nuclear annihilation was the likely fate of the world, and less likely to agree that the human race had come through tough times before and would do so again) were more likely to indicate that they were pessimistic about the future. This should not come as any great surprise, of course: to be in despair about the future is, almost by definition, a pessimistic state of mind.

As reported by Diamond & Bachman, there was no evidence that those who scored high on the worry questions scored high on despair. In fact, the reverse tendency was noted; particularly in the American sample, those who indicated higher levels of worry seemed to be less in despair. Especially noticeable, in fact, is that so few of our respondents expressed pessimistic views about the future or seemed to be in despair. Clearly, this has nothing to do with unrealistic notions of the likely consequences of a worldwide nuclear war, for the adolescents in both countries appeared knowledgeable on this score. Also striking is the fact that only 9% of the 1986 Soviet sample believed that a nuclear war would occur during their lifetime (11 % in 1988); 56% of the 1986 sample indicated that they did not believe it would ever happen (compared with 49% in 1988). By contrast, only 13% of the 1986 American sample believed that such a war would never occur (17% of the 1988 sample), and no fewer than 41 % (33% in 1988) indicated that they believed it might occur during their lifetime. We thus have the seemingly paradoxical finding that the Soviet adolescents expressed more worry about nuclear war than their American counterparts, but seemed more sure that it would not occur.

As we have discussed elsewhere [32], cross-cultural data, particularly those deriving from questionnaires, do not lend themselves to easy interpretation. Careful translation of the

questionnaire items does not eliminate the problem of subtle differences in meaning. For example, if in one society, but not the other, adolescents believe that it is "not cool" to admit to being worried, the same degree of concern might be expressed very differently. Without the benefit of in-depth interviews with representative samples of youth in the two countries, it is difficult to provide much more than speculation about the reasons for the differences in degree of optimism expressed, or why the Soviet adolescents indicated higher degrees of worry about nuclear war.

One possible explanation, however, is that although Soviet youths are encouraged to consider matters of global concern, the future has, until recently, almost uniformly been presented in schools and the mass media as generally bright and filled with promise. This was particularly true in the years before Gorbachev's accession to power and the advent of *glasnost*, when the present could be described as problematic, but when great improvements were anticipated in the near future. This is no longer the case, and the Soviet media now paint as bad a picture of Soviet contemporary life *and* prospects for the immediate future as anything likely to be seen in the American press. There may now be much less of a contrast with the U.S. media, which generally seem preoccupied with bad news and crises that appear to have few, if any, solutions.

A further factor that might account for the different levels of optimism in the two countries has to do with the way in which the nuclear threat has been portrayed in the Soviet media. On television and radio and in the press, a good deal of time and space has been devoted to the issue. The view has been that if there were a nuclear war, it would almost certainly become a global conflict and that life as we know it would end. But *because* that is the likely consequence, the Soviet people are repeatedly told that their country, which suffered so greatly in World War II, will do everything possible to prevent another war. Furthermore, 'people of goodwill' in other countries, as well as the Soviet population, young and old, are actively involved in the "struggle for peace." Vast numbers of Soviet children and adolescents are engaged in this "struggle," designing posters, sending letters to world leaders, and generally making their opinions known. Although these activities may not have a direct impact on the current international situation, they may have beneficial psychological effects in serving to make children more optimistic about the future.

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