

The Q-Block Method of Indexing Q Typologies

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Introduction

William Stephenson's Q methodology has a marked advantage of bringing both system and depth into communication studies. Some communication researchers have been dismayed by its use with relatively small numbers of people, in some cases with only one person. This has raised the question of how the system and enrichment of Q can be combined with the precision of properly applied sample survey research methodology. Stephenson devoted a chapter in his book *The Study of Behavior* to such considerations.

Direct applications of Stephenson's Q techniques may not be economically feasible for large sample survey research due to their complexity and time needed for administration and analysis. However, Stephenson suggests "that certain kinds of facts which questionnaires may seek to study can be reached along Q technique lines." He outlines one method. This paper presents an elaboration in detail of such a method.

Specifically, the paper examines and presents a questionnaire technique which has utility in assigning people to Q typologies. It is a technique which can be readily applied in large sample survey research. The method involves the construction of "Q blocks," which are comparable in one sense to a series of small individual Q sorts. Detailed knowledge of a stable Q typology factor structure is necessary for construction of these Q blocks. This knowledge can be derived from direct application of Q techniques to a smaller, usually structured sample from the population in which the researcher is interested.

In recent years, there has been an increasing number of Q studies related to various aspects of the communication process. There have been studies of the patterns of newspaper reader interests and attitudes, patterns of interest, value and attitudes toward news and magazine pictures, patterns of role identification in advertising photographs, patterns of orientation and beliefs toward civil defense and their implications for public information programs, images of public libraries

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as they relate to public relations problems—to name some of the areas. One criticism which is often leveled against such studies is that the research is not carried beyond the stage of isolation and description of the Q types. The researchers often make recommendations on the basis of the types they have isolated, but critics may argue that no attempt is made to test out these recommendations and hypotheses independently. The proposed Q-block method of indexing Q typologies would facilitate follow-up studies of almost any magnitude desired either in the field or the laboratory. Such studies might not be economically feasible using standard Q techniques in data collection and analysis. Also, the block method would allow researchers to economically replicate or extend Q studies reported in the literature.

How to Construct a Set of Q Blocks

Perhaps the best way to explain the process of constructing a set of Q blocks is to describe how we applied the method in one study. At Michigan State University, we recently studied belief patterns about fallout shelters and radiation using Q technique.

We first developed a set of 57 statements representing a variety of orientations and beliefs about fallout shelters and radiation. One hundred and forty-nine respondents were asked to evaluate these statements. They sorted the items into 13 ranked piles ranging from those with which they agreed, believed or thought were true to those with which they disagreed, disbelieved, or thought were false.

After the sorting operation, a matrix of intercorrelations was formed by correlating every person's sorting with every other person's sorting. This matrix was submitted to factor analysis with persons as variables and statements as observations. A principal axis solution was obtained. This was submitted to a varimax rotation which produced orthogonal factors, each factor representing a group of persons whose beliefs fell into a common pattern. Hence, a factor represents an idealized type of person. In the civil defense study, four factors or types of persons were isolated.

An item pattern associated with each of these four factors or types of persons was estimated by weighting the persons most highly associated with a given factor to the degree with which they were related to that factor. The higher a person's loading on the factors the greater was the weight. These weights were applied to each item response and the weighted item scores were then summed across all persons on the factor. This produced an item array of weighted statement scores for each of the four factors or types. The four arrays of weighted statement scores were then converted to z-scores. The arrays of statement z-scores for each of the four fallout shelter types may be found in Appendix 1.

These arrays provide the necessary information for constructing the Q blocks.

We then examined the arrays and selected a number of item sets. Each set contained four items chosen to meet two criteria. First, each set included a statement from the array of each of the four shelter types at about the same level of acceptance. Second, each statement was one which the other types accepted substantially less. Such a set of four items constitutes a Q block.

Table 1 illustrates one of the Q blocks selected and shows the factor z-scores assigned to the statements by each of the four types. The process consists of selecting a set of items in which the z-score in each of the diagonal cells from upper left to lower right is substantially higher than the other three z-scores in both the row and column the diagonal cell is in. Ideally, the separation should be at least a standard score of 1.000. Four sets of such items or Q blocks were selected from the item arrays for the fallout shelter types. Appendix 2 displays the statements in each of the four Q blocks arranged according to the type with which each is associated.

Table 1: Q-block Questionnaire

| | | <i>Type Array z-scores for fallout shelter & radiation types, Q-block 4</i> | | | |
|--|---|---|---------------|---------------|---------------|
| <i>The type of which the statement is representative</i> | | <i>Type A</i> | <i>Type B</i> | <i>Type C</i> | <i>Type D</i> |
| <i>Type A</i> | It seems to me that, if the government wants us to have fallout shelters, it ought to start a program for building shelters. | 1.87 | -0.54 | -0.68 | 0.93 |
| <i>Type B</i> | Fallout shelters just won't do the job. All shelters do is make people think they are safe when they really aren't. | -0.85 | 2.44 | 0.014 | -0.55 |
| <i>Type C</i> | My fate is in the hands of God. There is no use building fallout shelters or anything like that, since what God wills will be done. | -1.25 | -2.11 | 2.94 | -1.58 |
| <i>Type D</i> | I see building a shelter as something like buying insurance. Better to spend a little now even if we never use it, so we'll have it <i>just in case</i> . | 0.45 | 0.82 | 0.64 | 1.78 |

Statements from the negative end of the arrays can also be used to construct Q blocks. When negative statements are used, you would

select a set of four statements in which the z-scores in the principal diagonal cells of Table 1 were substantially less than the z-scores in the row and column the diagonal cell is in.

How the Q Blocks are Scored

Appendix 3 is a questionnaire using the four Q blocks. Respondents would be asked to rank order the four statements from most accepted to most rejected for each Q block independently. The instructions for this rank ordering should be similar to those used in the original Q study from which the blocks were developed. The similarity between a Q block and a Q sort can be readily seen.

Appendix 4 shows an example of the scoring procedure that could be used. Four scores would be derived for each respondent, one for each of the four types. Each score would be the sum of the ranks assigned to the four statements—one from each Q block—associated with that particular type. The four scores for each subject would provide the basis for assignment to a type of orientation toward fallout shelters. One possible criterion for assignment could be on the basis of the highest score. In the scoring example in Appendix 3, the respondent would be assigned to Type A.

If Q blocks based on negative items from the arrays were used, the rank orders assigned by respondents would have to be reflected to obtain type scores. That is, in the case of a four-item block, 4 would be recorded as 1, 3 as 2, 2 as 3 and 1 as 4. Then the ranks of both positive and negative Q blocks could be added together.

It should be noted that this is not the only scoring procedure which could be used. However, the one outlined here is probably one of the quickest and easiest to execute. More reliable scores, for example, could be developed through the use of beta weights derived from multiple correlations between items and total scores.

How Well Do Q Blocks Work?

The next logical question is: How well do Q blocks work? How consistently can you assign people to Q typologies using the Q blocks? Do you obtain results that are similar to those you would obtain if you had used standard Q techniques? How closely does the matrix of Q block scores correspond to a factor matrix derived from correlated Q sorts? We tested two Q-block questionnaires to investigate these questions.

In the Fall of 1961 we asked the Department of Communication graduate students and faculty at Michigan State University to Q sort a number of university courses. They were asked to decide how much value each course had had or might have for the person's career. Four types were isolated. Twenty-four Q blocks were constructed from the factor arrays—13 positive ones and 11 negative ones.

A year later we again asked the students and faculty to sort the course descriptions, but this time they were also asked to complete the Q-block questionnaire. An independent factor analysis of these sorts was computed. Essentially the same four factors emerged as in the previous year. In addition, each 1962 sort was correlated with the 1961 factor arrays. This produced a matrix of correlations which can be viewed as an approximation of the original factor matrix. In this way we had computed two sets of data. One consisted of factor loadings derived from the 1962 Q sorts. The other consisted of correlations of the 1962 sorts with the factor arrays computed from the 1961 sorts. If the basic evaluation patterns had remained unchanged over the year, we would expect the two sets of scores to be highly similar. In fact, they were. The correlations for types 1, 2, 3 and 4 were, respectively: 0.95, 0.94, 0.78 and 0.89 (N=98). These values would strongly suggest that the evaluative patterns had remained unchanged. Furthermore they indicate that the correlations with the original factor arrays were a good approximation of the 1962 factor loadings, and vice versa. Finally, it would appear that the Q sorts were reliable instruments.

We next assigned subjects to the four types in several ways: by 1962 Q-block scores, by 1962 factor loadings, and by correlations of 1962 Q sorts with 1961 factor arrays. At this point we should raise a few considerations about these various measures. Which of them might be used as the best criteria for testing the Q-block scores? We recall that the blocks were derived from the original 1961 factor analysis. Yet this factor structure represents an attitudinal configuration obtained at a certain point in time. Because of the influence of various events (i.e., instructors, classes, career choices) the configuration may change. When we use Q blocks based on a particular analysis, we are testing, among other things, the extent to which the structure remains stable. Yet in this paper our concern lies chiefly with the validity and reliability of the block method as an approximation to the Q sort. For this reason, the better criterion is the correlation of the 1962 sorts with the 1961 factor arrays. To the extent that the configuration remains stable, the 1962 factor loadings would do as well. But since instability might intervene, we would expect them to correlate with the blocks to a lesser degree.

Comparisons of the two criteria with the block scores are presented in Tables 2 and 3. As will be noted, overall agreement of types assigned is highest between block scores and correlations with factor arrays—78 percent versus 72 percent for factor loadings. But we should also consider the case of mixed types—those persons who are highly related to two or more types rather than one alone. When we assign subjects to mixed as well as pure types, the agreement increases to 90 per cent for the array correlations, 81 percent for the factor loadings.

Also, it will be noted that the agreement is higher when the Q-block factor scores are derived from all blocks rather than when only positive or negative ones are used. This certainly suggests the utility in using sets of items from both ends of the factor arrays when constructing Q blocks.

In addition to percentage agreement, we can examine the correlation between the block scores and criteria scores. These relationships we give in Tables 4 and 5 and suggest that the ordering of people on the factors is quite similar when compared to either standard. Again, the ordering is more similar when both negative and positive Q blocks are used than when either is used singly. This again highlights the utility of using both kinds of Q blocks.

Table 2: Agreement of Assignment of Subjects to Types of Q Blocks and Correlations of Q Sorts with Original Factor Arrays (Estimated Factor Loadings) N = 98

| | | <i>Agreements when assignment is on basis of:</i> | |
|-----------------------------|-------|---|--------------------------------|
| | | <i>Highest score or correlation</i> | <i>Considering mixed types</i> |
| All 24 Q blocks | Freq. | 76 | 88 |
| | % | 77.55 | 89.80 |
| 13 positive Q blocks | Freq. | 71 | 78 |
| | % | 72.45 | 79.59 |
| 11 negative Q blocks | Freq. | 51 | 57 |
| | % | 52.04 | 58.16 |

Table 3: Agreement of Assignment of Subjects to Types of Q Blocks and Factor Loadings of Independent Factor Analysis. N = 98

| | | <i>Agreements when assignment is on basis of:</i> | |
|-----------------------------|-------|---|--------------------------------|
| | | <i>Highest score or factor loading</i> | <i>Considering mixed types</i> |
| All 24 Q blocks | Freq. | 71 | 79 |
| | % | 72.45 | 80.61 |
| 13 positive Q blocks | Freq. | 67 | 73 |
| | % | 68.37 | 82.02 |
| 11 negative Q blocks | Freq. | 60 | 64 |
| | % | 61.22 | 71.91 |

We also tested the Q-block method in the context of fallout shelter beliefs. We mailed questionnaires to all 149 persons who had participated in the civil defense study. Usable questionnaires were received from 53 people (36 per cent). When assignments were made on the basis of both highest loading and Q-block score, 81 per cent were

assigned to the same type. When mixed types were considered, agreement reached 91 per cent. The remarkable thing about this high agreement was that about a year elapsed between the time the original Q sorts were obtained and the Q blocks were mailed.

Table 4: Correlations Between Loadings of Independent Factor Analysis and Q Block Factor Scores (N = 98)

A. For all 24 Q Blocks

| | | Factor loadings for each type | | | |
|-------------------------------------|---|-------------------------------|------|------|------|
| | | 1 | 2 | 3 | 4 |
| Q-block factor scores for each type | 1 | .75 | -.64 | -.17 | .15 |
| | 2 | -.38 | .79 | -.42 | -.11 |
| | 3 | -.17 | -.13 | .78 | -.48 |
| | 4 | -.30 | -.26 | -.13 | .79 |

B. For all 13 Positive Q Blocks

| | | Factor loadings for each type | | | |
|-------------------------------------|---|-------------------------------|------|------|------|
| | | 1 | 2 | 3 | 4 |
| Q-block factor scores for each type | 1 | .77 | -.68 | -.11 | .09 |
| | 2 | -.35 | .74 | -.52 | .00 |
| | 3 | -.18 | .04 | .64 | -.49 |
| | 4 | -.27 | -.28 | -.08 | .72 |

C. For all 11 Negative Q Blocks

| | | Factor loadings for each type | | | |
|-------------------------------------|---|-------------------------------|------|------|------|
| | | 1 | 2 | 3 | 4 |
| Q-block factor scores for each type | 1 | .41 | -.40 | -.21 | .20 |
| | 2 | -.25 | .65 | -.18 | -.25 |
| | 3 | -.09 | -.36 | .77 | -.34 |
| | 4 | -.22 | -.16 | -.15 | .67 |

Suggested Applications

The evidence presented supports the utility of the Q-block method in assigning people to Q typologies. How might it be used?

In his work in the diffusion process in Latin America, the late Paul Deutschmann developed the concept of "channel orientation." He suggests that the "concepts of different channels of communication are only restatements of personality typologies which have been developed in the past." Although he had not yet indexed channel orientation along Q-technique lines, concepts like this can readily be indexed by Q blocks as outlined in this paper.

Suppose you were called upon to develop strategies for communicating to the American people concerning some important

issue. Q studies could be developed to get rather rich descriptive data on the predominant belief patterns about the issue. However, due to budget and computer limitations, the subjects used to develop the Q types would not very likely be a national probability sample. At this point you would not know how the types were distributed across the country. Q blocks could economically index the predominant belief patterns about the issue. In a five-minute interview you could obtain responses that would allow you to assign people to a Q typology. Inclusion of the blocks on a national survey would tell you how many of each type would exist, how they distribute regionally, rural-urban, etc., what organizations they belong to, and the like. With other carefully selected questions and indices, you might be able to learn more about what led to these belief patterns.

Table 5 – Correlations Between Estimated Loadings for the Original Factor Structure and Q Block Factor Scores (N = 98)

A. For all 24 Q Blocks

| | | Estimated factor loadings for each type | | | |
|-------------------------------------|---|---|------|------|------|
| | | 1 | 2 | 3 | 4 |
| Q-block factor scores for each type | 1 | .70 | -.50 | -.33 | .20 |
| | 2 | -.57 | .84 | -.17 | -.23 |
| | 3 | .11 | -.56 | .65 | -.12 |
| | 4 | -.03 | -.30 | -.38 | .81 |

B. For all 13 Positive Q Blocks

| | | Estimated factor loadings for each type | | | |
|-------------------------------------|---|---|------|------|------|
| | | 1 | 2 | 3 | 4 |
| Q-block factor scores for each type | 1 | .67 | -.53 | -.30 | .19 |
| | 2 | -.52 | .82 | -.30 | -.13 |
| | 3 | .11 | -.41 | .56 | -.17 |
| | 4 | -.02 | -.34 | -.33 | .76 |

C. For all 11 Negative Q Blocks

| | | Estimated factor loadings for each type | | | |
|-------------------------------------|---|---|------|------|------|
| | | 1 | 2 | 3 | 4 |
| Q-block factor scores for each type | 1 | .44 | -.32 | -.29 | .16 |
| | 2 | -.39 | .64 | .04 | -.32 |
| | 3 | .06 | -.63 | .61 | .00 |
| | 4 | -.03 | -.14 | -.36 | .64 |

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Editor's Note: This publication is based on the original typescript. It has been necessary to adjust the numbering and placement of tables and appendices. The text proper is consistent with the original, except for minor copy-edits.

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Appendix 1: Array of Fallout Shelter and Radiation Statements for the Four Study Types

| Statements | z-scores | | | |
|--|----------|--------|--------|--------|
| | TYPE A | TYPE B | TYPE C | TYPE D |
| 1. The government should lend money to communities so community shelters can be built. | -0.62 | -0.14 | 0.15 | -2.06 |
| 2. I wouldn't mind so much building a family shelter or helping to build a community shelter, if the thing was designed to serve peacetime purposes as well. | -0.98 | 0.07 | -0.54 | -1.35 |
| 3. I am convinced that my family and I should have a fallout shelter—either one of our own or a community shelter we could go to. | -1.31 | 0.64 | 0.61 | -1.64 |
| 4. On this fallout shelter business, I'll do whatever the government thinks is best to do. | -0.85 | 0.10 | -0.62 | -2.28 |
| 5. While blast and heat damage from a nuclear explosion is limited to several miles around the point where it explodes, fallout from it may cover thousands of square miles. | -1.30 | -1.45 | -0.65 | 0.01 |
| 6. We must try harder to prevent war and not give so much attention to shelters. | 0.14 | -2.24 | -1.91 | -0.75 |
| 7. I don't want to have the only shelter around here. I just couldn't face keeping my neighbors out of my shelter in case of attack. | 0.26 | -0.78 | -0.55 | -0.23 |
| 8. It would be better for communities to build large public shelters rather than to have each family build one of its own. | -0.37 | -1.08 | -0.13 | -2.10 |
| 9. After a nuclear attack, if you filter the dust out of the air, the air will be perfectly safe to breathe. | -0.58 | 0.59 | 0.81 | 1.15 |
| 10. There are ways of reducing the harmful effects of fallout. | -0.67 | -0.45 | 0.19 | -0.01 |
| 11. Most fallout rapidly loses its power to harm. | -0.28 | 0.16 | -0.28 | -0.48 |
| 12. I see building a shelter as something like buying insurance. Better to spend a little now even if we never use it, so we'll have it just in case. | -1.87 | 0.54 | 0.68 | -0.93 |

| <i>Statements</i> | <i>z-scores</i> | | | |
|---|-----------------|---------------|---------------|---------------|
| | <i>TYPE A</i> | <i>TYPE B</i> | <i>TYPE C</i> | <i>TYPE D</i> |
| 13. Everyone in this country should have a fallout shelter he can get into if and when we are attacked. | -0.99 | 0.71 | -0.05 | -0.72 |
| 14. It is the federal government's responsibility to protect all citizens by supplying them, rich and poor, with shelters. | 0.64 | 0.08 | -0.38 | -1.43 |
| 15. It seems to me that, if the government wants us to have fallout shelters, it ought to start a program for building shelters. | -0.45 | -0.83 | -0.64 | -1.78 |
| 16. Fallout shelters just won't do the job. All shelters do is make people think they are safe when they really aren't. | 0.85 | -2.44 | -0.01 | 0.54 |
| 17. I don't see what all this fallout shelter fuss is about. I think it's just a lot of nonsense. | 1.80 | -0.40 | 0.83 | 0.55 |
| 18. It seems to me that the Russians are more likely to use germ warfare than they are to attack us with nuclear weapons. | -0.04 | -0.76 | 0.04 | 0.96 |
| 19. I don't think I'll build a shelter because there wouldn't be time to get to it. | 0.61 | -0.71 | -0.95 | 0.32 |
| 20. I think I'd go crazy if there was a terrible nuclear attack and I had to stay in a shelter for two or three weeks. | 0.51 | 0.10 | 0.52 | -0.29 |
| 21. In the eyes of God, things like fallout shelters are immoral. | 1.58 | 2.17 | -0.60 | 2.58 |
| 22. I won't build a shelter because I don't have any place to put one. | 0.40 | -0.00 | -0.04 | 0.23 |
| 23. Every shelter, in order to protect you from fallout radiation, should have an air tight door. | -0.12 | -0.16 | 0.06 | -0.44 |
| 24. The radioactivity after an attack would make the earth, or some areas of it, impossible to live in for years or even centuries. | -0.14 | -1.19 | 0.97 | 1.33 |
| 25. If we are attacked, great storms developed by the nuclear explosions will sweep across our country. | -0.18 | -0.16 | 0.74 | 0.87 |
| 26. If you get exposed to radiation at all, you are likely to die. | 0.72 | -0.06 | 1.83 | 1.20 |

| <i>Statements</i> | <i>z-scores</i> | | | |
|--|-----------------|---------------|---------------|---------------|
| | <i>TYPE A</i> | <i>TYPE B</i> | <i>TYPE C</i> | <i>TYPE D</i> |
| 27. People, food, water and other things become radioactive if they are exposed to fallout radiation and should be avoided by those who have not been exposed. | -0.52 | -1.01 | -0.44 | -0.06 |
| 28. A plastic suit with a filtering mask is good protection against most fallout. | 0.12 | 0.02 | 1.19 | 0.36 |
| 29. To be really safe, a fallout shelter should be built of lead. | 0.50 | 0.06 | 0.14 | 0.22 |
| 30. I think if everybody in the U.S. had a fallout shelter, the Russians would be less likely to start a war against us. | -0.04 | 1.17 | 1.05 | 0.45 |
| 31. I'm interested in finding out more about fallout shelters to see whether we really should build one or not. | -1.05 | -0.16 | -1.13 | -0.79 |
| 32. I think everyone should find out as much as he can about fallout shelters and other civil defense matters so that he can be prepared in case of attack. | -2.30 | -0.46 | -0.87 | -0.59 |
| 33. Any shelter that would provide adequate protection for a family would cost more than \$300. | -0.79 | 0.06 | -1.11 | 0.30 |
| 34. I guess that I would build a family shelter, except that most of our friends would think we were crazy if we did. | 0.65 | 0.84 | 0.45 | 1.33 |
| 35. I worry a lot about whether to build a fallout shelter or not. | 0.07 | 1.08 | 0.87 | 1.51 |
| 36. I think a community shelter would be a good idea, but you can't get people around here interested in building a thing like that. | -0.19 | 0.09 | 0.78 | -0.92 |
| 37. I am interested in reading and talking about civil defense and shelters, but I doubt if I'll ever do anything about it. | 0.28 | -0.42 | -0.19 | -0.19 |
| 38. I wish the people in government would stop talking so much about fallout shelters and <i>do</i> something about them. | -0.45 | -0.54 | 0.63 | -0.93 |
| 39. If I had the money, I'd get a fallout shelter built for my family right away. | -0.72 | 1.35 | 1.12 | 0.86 |

| <i>Statements</i> | <i>z-scores</i> | | | |
|---|-----------------|---------------|---------------|---------------|
| | <i>TYPE A</i> | <i>TYPE B</i> | <i>TYPE C</i> | <i>TYPE D</i> |
| 40. What's the use of trying to save my life in a fallout shelter. Our country will be in such a mess after the attack, it just won't be worth living. | 1.03 | -0.32 | 0.69 | 0.24 |
| 41. I have so many problems of my own, I can't spend my time worrying about the Russians and fallout shelters. | 1.12 | 1.05 | 0.70 | 0.58 |
| 42. There seems to be an awful lot of confusion about the need for fallout shelters. The leaders in government don't seem to be able to make up their own minds on whether we ought to build them or not. | -0.52 | -1.30 | -0.70 | -1.49 |
| 43. If I had a shelter in my basement, it would just make me worry all the more about the danger of war. | 0.58 | 0.49 | 0.50 | 0.59 |
| 44. I don't need a fallout shelter. If there is an attack, I'm going to head for the hills or the woods or somewhere away from things. | 0.82 | 0.45 | 0.82 | 0.77 |
| 45. My fate is in the hands of God. There is no use building fallout shelters or anything like that, since what God wills will be done. | 1.25 | 2.11 | -2.94 | 1.58 |
| 46. I don't like to talk about war and would rather not read anything about fallout shelters or things like that. | 0.85 | 1.21 | 0.66 | 0.85 |
| 47. I suppose they need fallout shelters in some parts of the U.S., but we don't really need them around here. | 1.53 | 0.57 | 0.78 | 0.13 |
| 48. On this business of fallout shelters, I think I'll wait and see what other people around here do before I decide whether to build one or not. | 0.47 | 0.43 | 0.63 | 0.06 |
| 49. I wouldn't use a fallout shelter in case of attack. So many of my friends would be dead that it wouldn't be worth living anyway. | 1.04 | -0.30 | 0.65 | 0.46 |
| 50. There is no real protection against radioactive fallout—not even a concrete shelter. The stuff is like a gas that can get at you wherever you are. | 0.89 | -0.12 | 0.19 | 0.12 |

| <i>Statements</i> | <i>z-scores</i> | | | |
|--|-----------------|---------------|---------------|---------------|
| | <i>TYPE A</i> | <i>TYPE B</i> | <i>TYPE C</i> | <i>TYPE D</i> |
| 51. I don't think there is really anything an ordinary citizen like me can do to protect himself in case of a nuclear war. | 1.73 | -1.25 | 0.80 | 0.89 |
| 52. A person dies when his time is up. There's nothing anyone can do about it. | 1.53 | 2.11 | -1.50 | -0.22 |
| 53. I think that if all of us prayed for peace there would be nothing to worry about. | 1.10 | 2.68 | -2.56 | 1.02 |
| 54. If a nuclear attack comes, our area here will probably get a heavy dose of fallout radioactive materials. | 1.61 | -0.76 | -0.76 | -0.26 |
| 55. Even though radiation is invisible, it is simple to detect fallout. | -0.79 | -0.05 | 1.34 | 0.46 |
| 56. Radiation sickness is <i>not</i> contagious. There is no harm in getting close to somebody who has it. | -0.41 | -0.03 | 0.93 | -0.07 |
| 57. We ought to do all we can to prevent war—and at the same time keep ourselves prepared in case it comes. | -2.91 | -1.31 | -2.78 | -0.47 |

Appendix 2: Statements in Each of the Four Q Blocks Arranged According to the Type with Which Each is Associated

| <i>Type A Statements</i> | <i>Type B Statements</i> |
|--|--|
| 1.2 If a nuclear attack comes, our area here will probably get a heavy dose of fallout radioactive materials. | 1.1 The radioactivity after an attack would make the earth, or some areas of it, impossible to live in for years or even centuries. |
| 2.3 I think everyone should find out as much as he can about fallout shelters and other civil defense matters so that he can be prepared in case of attack. | 2.2 I don't think there is really anything an ordinary citizen like me can do to protect himself in case of a nuclear war. |
| 3.3 If I had the money, I'd get a fallout shelter built for my family right away. | 3.2 It seems to me that the Russians are more likely to use germ warfare than they are to attack us with nuclear weapons. |
| 4.4 I see building a shelter as something like buying insurance. Better to spend a little now even if we never use it, so we'll have it just in case. | 4.2 Fallout shelters just won't do the job. All shelters do is make people think they are safe when they really aren't. |

| Type C Statements | Type D Statements |
|---|--|
| 1.4 A person dies when his time is up. There's nothing anyone can do about it. | 1.3 I wish the people in government would stop talking so much about fallout shelters and do something about them. |
| 2.4 I think that if all of us prayed for peace there would be nothing to worry about. | 2.1 It is the federal government's responsibility to protect all citizens by supplying them, rich and poor, with shelters. |
| 3.1 In the eyes of God, things like fallout shelters are immoral. | 3.4 I think a community shelter would be a good idea, but you can't get people around here interested in building a thing like that. |
| 4.1 My fate is in the hands of God. There is no use building fallout shelters or anything like that, since what God wills will be done. | 4.4 It seems to me that, if the government wants to have fallout shelters, it ought to start a program for building shelters. |

Appendix 3: Communication Research Center Questionnaire

On each of the following pages, you will find a group of four statements with some instructions like the example below.

EXAMPLE:

Here are some things which people have said about television. Please read all of the statements over very carefully.

Which *one* of the four statements do you *agree with most*? Please circle the *number 4* which follows this statement.

Now from the *three* statements that are left, which one do you *agree with most*? Please circle the *number 3* which follows this statement.

Which one of the remaining *two* statements do you *agree with most*? Please circle the *number 2* which follows this statement.

Finally, the one remaining statement should be the one you *disagree with most*. Please circle the *number 1* which follows this statement.

| | | | | | |
|------|--|---|---|---|---|
| E.1. | Too many people are too eager to criticize television. I think it is actually quite good. | 4 | 3 | 2 | 1 |
| E.2. | TV is just about the worst thing that ever happened to our family. | 4 | 3 | 2 | 1 |
| E.3. | I'm generally pretty easy-going about television programs. I'll usually watch whatever the rest of the family likes to watch | 4 | 3 | 2 | 1 |
| E.4. | When I'm watching a television program, I prefer not to be disturbed or distracted from it. | 4 | 3 | 2 | 1 |

If you felt that among the above four statements you agreed with *Statement E.1* the most, you would circle the *number 4* following it. Among the three remaining statements, if you agreed most with *Statement E.4* you would circle the *number 3* which follows it. Of the two remaining statements, if you agreed with *Statement E.3* more than *Statement E.2*, you would circle the *number 2* which follows *Statement E.3*. For *Statement E.2*, you would circle the *number 1* following it.

The first four pages contain sets of four statements very similar to the example, except that they are about fallout shelters and radiation. The last four pages contain sets of four titles for articles on civil defense matters. For these, we want to know which of the topic titles you would like to learn more about. Please read the instructions which are at the top of each page of four statements or four topic titles.

[page 1]

Here are some things which people have said about fallout shelters and radiation. Please read all of the statements over very carefully.

Which *one* of the four statements do you *agree with most*? Please circle the *number 4* which follows this statement.

New from the *three* statements that are left, which *one* do you *agree with most*? Please circle the *number 3* which follows this statement.

Which one of the remaining two statements do you *agree with most*? Please circle the *number 2* which follows this statement.

Finally, the one remaining statement should be the one you *disagree with most*. Please circle the *number 1* which follows it.

| | | | | | |
|-----|---|---|---|---|---|
| 1.1 | The radioactivity after an attack would make the earth, or some areas of it, impossible to live in for years or even centuries. | 4 | 3 | 2 | 1 |
| 1.2 | If a nuclear attack comes, our area here will probably get a heavy dose of fallout radioactive materials. | 4 | 3 | 2 | 1 |
| 1.3 | I wish the people in government would stop talking so much about fallout shelters and <i>do</i> something about them. | 4 | 3 | 2 | 1 |
| 1.4 | A person dies when his time is up. There's nothing anyone can do about it. | 4 | 3 | 2 | 1 |

[page 2]

Here are some other things which people have said about fallout shelters and radiation. Please read all of the statements over very carefully.

Which *one* of the four statements do you *agree with most*? Please circle the *number 4* which follows this statement.

New from the *three* statements that are left, which *one* do you *agree with most*? Please circle the *number 3* which follows this statement.

Which one of the remaining two statements do you *agree with most*? Please circle the *number 2* which follows this statement.

Finally, the one remaining statement should be the one you *disagree with most*. Please circle the *number 1* which follows it.

| | | | | | |
|-----|---|---|---|---|---|
| 2.1 | It is the federal government's responsibility to protect all citizens by supplying them, rich and poor, with shelters. | 4 | 3 | 2 | 1 |
| 2.2 | I don't think there is really anything an ordinary citizen like me can do to protect himself in case of a nuclear war. | 4 | 3 | 2 | 1 |
| 2.3 | I think everyone should find out as much as he can about fallout shelters and other civil defense matters so that he can be prepared in case of attack. | 4 | 3 | 2 | 1 |
| 2.4 | I think that if all of us prayed for peace there would be nothing to worry about. | 4 | 3 | 2 | 1 |

[page 3]

Here are some other things which people have said about fallout shelters and radiation. Please read all of the statements over very carefully.

Which *one* of the four statements do you *agree with most*? Please circle the *number 4* which follows this statement.

New from the *three* statements that are left, which *one* do you *agree with most*? Please circle the *number 3* which follows this statement.

Which one of the remaining two statements do you *agree with most*? Please circle the *number 2* which follows this statement.

Finally, the one remaining statement should be the one you *disagree with most*. Please circle the *number 1* which follows it.

| | | | | | |
|-----|--|---|---|---|---|
| 3.1 | In the eyes of God, things like fallout shelters are immoral. | 4 | 3 | 2 | 1 |
| 3.2 | It seems to me that the Russians are more likely to use germ warfare than they are to attack us with nuclear weapons. | 4 | 3 | 2 | 1 |
| 3.3 | If I had the money, I'd get a fallout shelter built for my family right away. | 4 | 3 | 2 | 1 |
| 3.4 | I think a community shelter would be a good idea, but you can't get people around here interested in building a thing like that. | 4 | 3 | 2 | 1 |

[page 4]

Here are some other things which people have said about fallout shelters and radiation. Please read all of the statements over very carefully.

Which *one* of the four statements do you *agree with most*? Please circle the *number 4* which follows this statement.

New from the *three* statements that are left, which *one* do you *agree with most*? Please circle the *number 3* which follows this statement.

Which one of the remaining two statements do you *agree with most*? Please circle the *number 2* which follows this statement.

Finally, the one remaining statement should be the one you *disagree with most*. Please circle the *number 1* which follows it.

| | | | | | |
|-----|---|---|---|---|---|
| 4.1 | My fate is in the hands of God. There is no use building fallout shelters or anything like that, since what God wills will be done. | 4 | 3 | 2 | 1 |
| 4.2 | Fallout shelters just won't do the job. All shelters do is make people think they are safe when they really aren't. | 4 | 3 | 2 | 1 |
| 4.3 | It seems to me that, if the government wants us to have fallout shelters, it ought to start a program for building shelters. | 4 | 3 | 2 | 1 |
| 3.4 | I see building a shelter as something like buying insurance. Better to spend a little now even if we never use it, so we'll have it <i>just in case</i> . | 4 | 3 | 2 | 1 |

Appendix 4: Scoring Example

| Type Associated with each Item and Item | Selection | | | | Scores | | | |
|--|-----------|---|---|---|--------|---|---|---|
| | 4 | 3 | 2 | 1 | A | B | C | D |
| B 1.1 The radioactivity after an attack would make the earth, or some areas of it, impossible to live in for years or even centuries. | 4 | 3 | 2 | 1 | | 1 | | |
| A 1.2 If a nuclear attack comes, our area here will probably get a heavy dose of fallout radioactive materials. | 4 | 3 | 2 | 1 | 4 | | | |
| D 1.3 I wish the people in government would stop talking so much about fallout shelters and do something about them. | 4 | 3 | 2 | 1 | | | | 3 |
| C 1.4 A person dies when his time is up. There's nothing anyone can do about it. | 4 | 3 | 2 | 1 | | | 2 | |
| D 2.1 It is the federal government's responsibility to protect all citizens by supplying them, rich and poor, with shelters. | 4 | 3 | 2 | 1 | | | | 2 |
| B 2.2 I don't think there is really anything an ordinary citizen like me can do to protect himself in case of a nuclear war. | 4 | 3 | 2 | 1 | | 3 | | |
| A 2.3 I think everyone should find out as much as he can about fallout shelters and other civil defense matters so that he can be prepared in case of attack. | 4 | 3 | 2 | 1 | 4 | | | |
| C 2.4 I think that if all of us prayed for peace there would be nothing to worry about. | 4 | 3 | 2 | 1 | | | 1 | |

| Type Associated with each Item and Item | | Selection | | | | Scores | | | |
|--|--|------------------|---|---|---|---------------|----------|----------|-----------|
| | | 4 | 3 | 2 | 1 | A | B | C | D |
| C | 3.1 In the eyes of God, things like fallout shelters are immoral. | 4 | 3 | 2 | 1 | | | 2 | |
| B | 3.2 It seems to me that the Russians are more likely to use germ warfare than they are to attack us with nuclear weapons. | 4 | 3 | 2 | 1 | | 1 | | |
| A | 3.3 If I had the money, I'd get a fallout shelter built for my family right away. | 4 | 3 | 2 | 1 | 4 | | | |
| D | 3.4 I think a community shelter would be a good idea, but you can't get people around here interested in building a thing like that. | 4 | 3 | 2 | 1 | | | | 3 |
| C | 4.1 My fate is in the hands of God. There is no use building fallout shelters or anything like that, since what God wills will be done. | 4 | 3 | 2 | 1 | | | 1 | |
| B | 4.2 Fallout shelters just won't do the job. All shelters do is make people think they are safe when they really aren't. | 4 | 3 | 2 | 1 | | 2 | | |
| D | 4.3 It seems to me that, if the government wants us to have fallout shelters, it ought to start a program for building shelters. | 4 | 3 | 2 | 1 | | | | 3 |
| A | 4.4 I see building a shelter as something like buying insurance. Better to spend a little now, even if we never use it, we'll have it <i>just in case</i> . | 4 | 3 | 2 | 1 | 4 | | | |
| Total Score (Sum of Columns) | | | | | | 16 | 7 | 6 | 11 |