SYMPTON FORMATION AND PATTERNS OF PSYCHOPATHOLOGY IN A RAPIDLY CHANGING ALASKAN ESKIMO SOCIETY

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In recent years increased attention has been given to studying the effects of rapid social and cultural change on mental health and illness. Many of these studies have suggested that rapid change is an important causal factor encouraging higher rates of mental disorder (13, 14, 15), although a few, such as the Massachusetts immigration study by Goldhamer and Marshall (11), have reached somewhat contradictory conclusions. In an attempt to gather further information on this complex question, one of the authors (NAC) began in 1958 a long-term study of the northeast Alaskan coastal village of Barter Island—a very isolated Eskimo community that has recently undergone extremely rapid changes as a result of extensive contact and employment with Whites at a nearby DEW Line radar warning installation.

In order to implement the psychiatric phase of the study (1960), it was necessary to find a survey instrument that would give a broad picture of the over-all health conditions of the village residents and at the same time give fairly detailed information on symptoms of Eskimo psychopathology. After discussing the problem with epidemiologists, survey researchers, and anthropologists familiar with cross-cultural health research, the Cornell Medical Index Health Questionnaire (CMI) was chosen as the main instrument to use in the study. The various conceptual and methodological problems involved in the cross-cultural use of a health questionnaire standardized in the United States, and a discussion of the effects of rapid change on community integration among the north Alaskan Eskimo are contained in separate articles (7, 8). This paper will discuss some of the findings of the psychiatric screening test and then compare these findings with those of other studies using the Cornell Medical Index.

DESCRIPTION OF THE QUESTIONNAIRE

The CMI is a battery of questions designed to elicit responses concerning the respondent's past and present physical condition and family health history, as well as indicate feelings of the individual's own perception of his state of mind and health. The questionnaire has been used in this country on various normal, psychiatric outpatient, hospital, and military groups (2, 3, 4, 5, 10, 12, 18). There have also been a few studies

using the CMI as a measure of physical and mental health in relation to cultural change in eastern United States (6), among the South African Zulus (17), and in Peru (16).

The original CMI has 195 questions, divided into 18 sections; 12 sections (A-L) of bodily orientation and 6 sections (M-R) concerning "moods and feelings." Each question must be answered "yes" or "no." For the purposes of the Barter Island Eskimo study, 38 questions were omitted before the test was administered. Most of these questions were inappropriate because the Eskimos would not have understood their meaning ("Have you ever had jaundice?"); had not had the experience or opportunity to reply logically to the question ("Has a doctor told you your blood pressure is too low?"); or, due to cultural differences, the questions would not be interpreted by the Eskimos in the way they were intended by the authors of the CMI. As an example of the latter problem, one question which was not omitted from the questionnaire but which had to be discarded later was: "Do you have to be careful what you say even with your friends?" (slightly revised from the original). This question was answered positively by almost all the Eskimos in the sample, not on the basis of suspicion, but with the thought of not hurting a friend's feelings!

The questions omitted were primarily taken from the physical section of the Index, particularly from the section on miscellaneous diseases from which 10 out of 18 questions were removed. Only two questions were excluded from the moods and feelings section. In most instances, it was felt that those questions which were omitted would have been responded to negatively by almost all of the subjects, due to lack of experience with the information requested. Thus, the scores are most likely not significantly lower due to the elimination of these questions.

The questionnaire was administered in the native language to 91 per cent of all the Barter Island Eskimos over the age of seventeen by three specially trained Eskimo interviewers under the direct supervision of the field investigator. A much more detailed statement of methods used in administering the questionnaire is contained in a separate article (8).

SEX DIFFERENCES IN TOTAL CMI SCORE

Most studies using the CMI questionnaire with both sexes have reported higher scores for women than for men (2, 3, 4). This is also the case with the Eskimos tested in this study. Table I gives a comparison of total CMI scores for men and women from three sample groups as well as the Barter Island Eskimos. The column on the left gives the cumulative number of positive responses in groups of ten, while the body of the table gives the percentage of each sample, male or female, attaining that high or a higher score.

Table I. *Percentage of Subjects Giving the Specified Number of "Yes" Responses on Total CMI Questionnaire*

	New York random (3)		N.Y. Hospital neurotic (3)		Psychiatric outpatient (2)		Barter Island Eskimo	
Cumulative No. of yes responses	M	F	M	F	M	F	M	F
10 or more	67	79	89	90	96	95	71	100
20 or more	37	51	68	83	82	89	29	91
30 or more	10	30	52	65	69	79	13	86
40 or more	5	16	34	49	58	59	3	50
50 or more	2	9	26	34	36	52	0	41
60 or more	1	5	16	21	27	45	0	23
70 or more	0	2	8	12	13	30	0	20
Number in sample	282	328	183	343	45	56	31	22

From the table it can be seen that 30 or more positive responses were given by 10 per cent of a random group of New York men, by 52 per cent of a group of New York hospital patients who had been diagnosed as neurotic, and by 69 per cent of a sample of men from a psychiatric outpatient clinic. Of the men in the sample of Barter Island Eskimos, 13 per cent gave 30 or more yes answers to the questionnaire. Comparison of all the different score values indicates that the Barter Island men are most similar to the New York random group of men. However, comparison of the cumulative percentages for the different women's groups shows that the Barter Island women appear to fall between the New York hospital patients who had been diagnosed as neurotic and the psychiatric outpatient females.

Further examination of the table shows that there is a greater difference in all score categories between the Barter Island men and women than between the men and women in the other samples. While it is possible that the emphasis Eskimo men place on self-reliance and ability to cope with their environment may cause them to minimize their feelings of physical complaint, consequently lowering their score on the CMI, a much more likely explanation is found in the differential psychological stress placed on the community residents by the very rapid introduction of Western technological and cultural life with the consequent loss of traditional Eskimo procedures for gaining status and recognition. The previous anthropological analysis of the community made it quite clear that this problem is becoming steadily more acute for the women than for the men. While the male Eskimo has numerous opportunities to gain recognition and prestige working in the White man's world, the traditional ways for women to gain prestige, i.e., skin-sewing, meat butchering, making traditional clothing, etc., have to a large extent been lost with little to take their place.

In addition, the women have had less contact with Western culture than have Eskimo men. Since the community is rapidly becoming Westernized, the women consequently have less understanding of the role they

are expected to play in this changed situation. Given this fact, the considerably higher scores of the women over the men may reflect real differences in individual adjustment to a rapidly changing cultural environment.*

OTHER INDICES FROM THE CMI AND THEIR CORRELATIONS

In addition to the total score, other indices of psychic disturbance are suggested by the authors of the CMI. These are the score on the six sections (M-R) making up the moods and feelings part of the questionnaire, the score in the two sections, I and J, concerned with fatigue and frequency of illness, and the extent of scattering of positive answers among the different sections of the questionnaire, which is measured by the number of sections with at least one positive answer. In the tables that follow, *Total CMI response* refers to the number of positive answers in the whole questionnaire; *A-L response* refers to the number of positive responses in the first 12 sections which are concerned with physical symptoms; *M-R response* refers to the number of positive responses in the last 6 sections which deal with moods and feelings; *I-J response* refers to the positive responses in sections I and J which are concerned with fatigability and frequency of illness. *A-L sections* refers to the number of sections within the A-L part of the questionnaire to which the subject gives at least one positive answer; *M-R sections* refers to the number of sections within the M-R part of the questionnaire in which the subject gives at least one positive answer; and *All sections* refers to the number of sections out of the total 18 in the questionnaire in which the subject gives at least one yes answer. It is evident that these indices are not independent. The Total CMI Response is made up of the A-L score plus the M-R score; and the I-J score is included in the A-L score and the total CMI score. Also, All Sections responded to is the sum of the sections A-L and sections M-R.

Table II gives the mean values for Barter Island men and women for these various indices.

TABLE II. *Means of Barter Island Men and Women for Total CMI Score and Other Indices from the CMI*

	Men	Women
Total CMI response	17.2	46.5
A-L response, "physical"	13.5	35.2
M-R response, "moods and feeling"	3.7	11.2
I-J response, fatigue and illness	1.0	5.0
A-L sections	6.5	10.2
M-R sections	1.9	3.7
All sections	8.5	13.9

It is evident from the table that in all cases the women score significantly higher than the men. For example the table shows that men gave 13.5 yes responses on the average in the A-L or organ system part of the

questionnaire, while women gave 35.2 yes responses on the average to these questions. This relationship also holds with respect to the number of sections in the questionnaire in which the subjects responded with at least one positive answer. The women on the average had at least one response in almost 14 sections out of the 18 sections of the test, while the men on the average gave at least one positive answer in only 8.5 of the sections. Arnhoff (2) found corresponding means of 13.3 for men and 14.2 for women for his psychiatric outpatient subjects.

Tables III and IV give the correlations between the various indices used in Table II. Table III gives the correlations obtained with the women's scores, while Table IV gives the correlations from the scores of the men.

TABLE III. *Correlation Coefficients Between Total CMI Score and Other CMI Indices for Scores of Barter Island Women*

	Total CMI response	A-L	M-R	I-J	All sections	A-L sections	M-R sections
Total CMI response	.....	.98	.89	.79	.89	.84	.77
A-L response		.....	.78	.79	.81	.81	.70
M-R response			.....	.66	.91	.77	.90
I-J response				.....	.79	.90	.53
All sections					.....	.91	.80
A-L sections						.....	.67
M-R sections							.....

TABLE IV. *Correlation coefficients Between Total CMI Score and Other CMI Indices for Scores of Barter Island Men*

	A-L	M-R	I-J	All sections	A-L sections	M-R sections
Total CMI response	.94	.68	.79	.78	.80	.59
A-L response	.....	.40	.75	.71	.83	.36
M-R response		.....	.53	.60	.35	.79
I-J response			.....	.68	.70	.49
All sections				.....	.82	.65
A-L sections					.....	.35
M-R sections						.....

Several points particularly should be made concerning the correlations. First is the relatively high value of coefficient found for all indices used, especially for the women. All the correlations for the women are significant at at least the 5 per cent level of confidence.

The highest correlations for both men and women is that of the total score with the responses on the physical part of the questionnaire, sections A-L. The correlation is .98 for women and .94 for men. The correlation of the total score with the score in the sections concerning moods and feelings (M-R) is not quite so high, .89 for the women and .68 for the men. This indicates that in our sample high scores on the total CMI are more

likely to be associated with high scores in the physical sections than with high scores in the mental sections especially with respect to men.

Further examination of the correlations (Tables III and IV) shows that there is a higher correlation for the women than for the men between indices concerning moods and feelings and indices concerning physical symptoms. As an example, the correlation between the two main parts of the questionnaire, physical (A-L) and moods and feelings (M-R), is .78 for women, but only .40 for the men. This relationship holds for the other indices also.

It may be that for the women the questionnaire is measuring virtually the same thing throughout all the sections, whether they are labeled physical or mental; although it is also possible that the two function independently; or that the physical condition affects moods and feelings. In the case of the men, there appears to be more separation of answers; moods and feelings do not appear to carry over into the physical sections to the degree that seems to be the case with the women.

In this regard, it is interesting to examine more closely the scores in the I and J (fatigue and frequency of illness) sections. The authors of the questionnaire suggest grouping the positive responses here and further suggest that for the populations they have studied, cutting a score of three or more positive answers indicates some psychic disability.

An examination of the data obtained from this study shows that, while the women have more positive responses in both sections than the men, in relative frequency of response the women respond more in the fatigability section, while the men have more responses in the frequency of illness section. If we can lay aside for the moment the problem of anemia, this lends support to the view that the Eskimo men respond more to actual physical symptoms while the women respond primarily in terms of how they feel.

AGE AS A VARIABLE

Of key importance is the fact that no age differences were found with regard to any indices gathered by the CMI for the Barter Island Eskimos. This stands in contrast to other studies using the CMI where age has been an important variable in the analysis (4, 6, 17). Those studies that have had an age range in their sample population have generally noted increased scores in the physical health sections (A-L) of the questionnaire in association with increased age. Increased scores on the moods and feelings sections have not generally been associated with greater age.

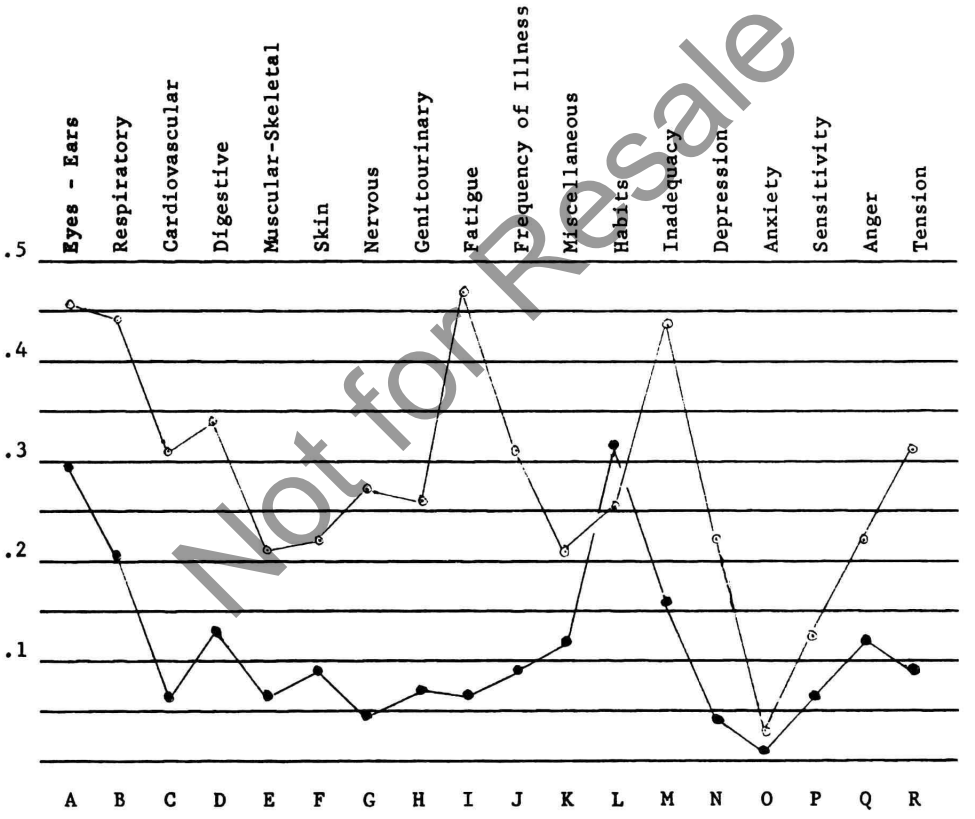
That the Barter Island Eskimos do not show significant differences in responses to the section on physical illness according to age can perhaps best be explained by the fact that this population is a strikingly young

one. The median age of the population of adults tested is 29, and only three respondents listed their age as over fifty. In addition, health facilities for common physical illnesses are fairly good, given the Eskimo's easy access to medical care at the nearby DEW Line installation.

FREQUENCY OF RESPONSE TO DIFFERENT SECTIONS

Figure I gives a comparison of the frequency of response within the different sections of the CMI for men and women. In order to equate the sections as to length, the figure is based on the number of responses per question per individual within each section.

It appears from Figure I that the difference between men and women in responses is fairly regular—the women have a higher response level in



Number of responses per individual per item for the various sections of the CMI questionnaire

Male ●——●

Female o——o

the range of .15 to .25 responses per item per individual than men for 13 of the 18 scales. This relationship changes for the M section on habits in which men have a higher response level than the women. This has been found to be the case also in the American groups studied in this regard, probably due to the questions concerning smoking and drinking which are included in this section.

For the section on fatigue, the women have a response level .40 higher than the men. This is also indicated by the difference in mean number of responses in this area as shown in Table I.

For both men and women, the responses in the section concerning anxiety are extremely low compared with the other sections. However, this can be explained by the fact that in Eskimo society, anxiety is repressed in almost all forms. A discussion of this psychological response among the north Alaskan Eskimo is contained in a previous paper (8).

It is also interesting to note that the responses of the women in the section on sensitivity are again quite low. This is especially striking since almost all the women felt that they needed to be careful what they said to their friends so as not to hurt their feelings. This would indicate that sensitivity to the feelings of others is a major concern, yet the low level of response in the sensitivity section appears to indicate that sensitivity in oneself is not encouraged as a value in this society.

SUMMARY

The Cornell Medical Index Health Questionnaire (CMI) was given to over 90 per cent of the adult population of an isolated north Alaskan Eskimo village. It was found that the Eskimo women had significantly higher scores than the men in total CMI score, in moods and feelings (M-R) score, and in number of sections of the test responded to with at least one positive answer, and several tentative reasons were suggested for this difference. The difference between the Eskimo men and women tested was also found to be considerably greater than between men and women in other sample groups reported in the literature.

Correlations between the various CMI indices were also studied. Higher correlations were found for women than for men especially between indices which appear to be primarily physical and indices which are concerned with feelings. Age was not a significant variable affecting scores for either men or women.

Examination of the frequency of responses within the sections showed that women responded more in all sections of the questionnaire except the section concerned with habits. Men had the highest level of response in the section on eyes and ears, while women responded most in the section on fatigue. The section concerned with anxiety was least responded

to by both men and women although cultural repression of anxiety among the Eskimo certainly biased the responses to this section to a large degree.

In conclusion, it should be noted that the absence of detailed medical data on the Barter Island Eskimo apart from the CMI limits the interpretation of the CMI. It is certainly possible that organic ailments account for much of the higher women's scores on the "physical" and "fatigue" sections. For example, a number of recent studies, published (18) and unpublished, have demonstrated the prevalence of anemia among the Alaskan Eskimo—and particularly among women. However, this pattern also appears to vary considerably from one region or village to another. At Barter Island, the well-known affluence of the community has enabled its members to supplement their traditional diet with large quantities of western foods, thereby reducing the tendency toward anemia, found among other Eskimo groups. Nevertheless, other health factors may have gone unnoticed or unrecognized that strongly affect physical and mental health responses.

Finally, psychiatric screening tests such as the Cornell Medical Index have in themselves important limitations in providing a realistic picture of mental illness in a given population, and any results should always be viewed with these limitations in mind. Nevertheless, the symptomatic patterns which have emerged from the Barter Island Eskimo study do show important similarities with other studies using the CMI except where cultural factors strongly intervene.

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*To test this hypothesis, all adult Eskimos were ranked on a scale of "contact" with Whites and a separate scale of Western "identification." Indices for the first variable included knowledge of English, hospitalization, employment, access to mass media, etc. The identification scale included such items as use of Western vs. native foods, use of Western clothing, participation in traditional hunting activities (primarily men) and skin sewing (women), etc.

When compared with the results of the CMI, those Eskimo men and women who ranked low on Western contact and identification also ranked low on the CMI (few symptoms); those who ranked high on contact and identification also ranked low on the CMI; but those Eskimos who ranked low on contact *and* high on identification showed the highest symptom rate on the CMI—and most of these were women. An extensive discussion of this finding and its implications will be contained in a forthcoming article (9).