

PSYCHOLOGICAL CHARACTERISTICS OF THREE GROUPS OF
CAUGHNAWAGA IROQUOIS INDIANS

by

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CHAPTER 1
INTRODUCTION

Background of the Study

This study arises out of certain investigations of North American Indian Cultures, which have stressed the relation between personality changes and different stages of acculturation.

Hallowell (7) made use of the Rorschach test to analyze "Acculturation Processes and Personality Changes" among the Canadian Ojibwa. He compared two groups, one inland and one outland, and found evidence that distinct personality changes were taking place among the more acculturated outland group.

Caudill (3), working with the Rorschach and Thematic Apperception tests, studied the highly acculturated Ojibwa Indians of the Lac du Flambeau Reservation in Northern Wisconsin to determine if there was "...a basic continuity of personality for two groups of Ojibwa that differ greatly in their outward manifestations of acculturation to western ways." His data led him to conclude that despite the effects of western influence on Ojibwa culture "There is a strong persistence of Ojibwa personality over a long span of time." He attributed this persistence of aboriginal personality pattern to the fact that while acculturation has resulted in the breakdown of the old social structure, no positive,

well-functioning social patterns have taken its place.

Gillin (6) has described the typical pattern of unbalanced acculturation as involving the domination of a small society, with a relatively simple culture, by a strong society with a complex culture; and the resultant inability of the culture patterns of the simpler one to compete. Inasmuch as the process of acculturation is an historical one, we can identify different stages, in which the acquired drives and social attitudes of the dominant society (in particular the definition of religious, socio-economic and political goals) have been incorporated in lesser or greater degree into the subordinate society. The detection of corresponding personality changes seems to depend on whether or not a sufficient degree of acculturation has been reached.

The present study is concerned with personality changes and level of acculturation among the Caughnawaga Iroquois. It is based on the earlier work of Voget among the Crow (15) and the Caughnawagans (16). Both of these societies give strong anthropological evidence that the acculturation process has reached the stage of incorporating some of the values of the dominant culture.

The Caughnawaga Iroquois Reservation

The Indian Reservation at Caughnawaga is not an isolated, restricted community. It is located on the south shore of the St. Lawrence River, directly across the Mercier Bridge from the west end of the Island of

Montreal and only six miles from the city, itself. While the reservation began as a Catholic Mission settlement of Iroquois in 1667, the permanent settlement was established in 1719. Actual intermarriage with whites began earlier than 1667, through the acquisition of white captives. There has been a gradual infiltration of the reservation by French-Canadian tenants, and although English is the predominant language, and the language of school instruction, recent intermarriage has been primarily with French Canadians.

Under the terms of the Canadian Indian Act (2) reservation Indians have no legal citizenship status, do not have the privilege of voting in Federal or Provincial elections, but do have the privilege of electing their own Council. Nominally, the reservation is administered by a Mayor and his elected Council, but in fact administration is in the hands of the Indian Agent, a Federal appointee, who is a French-Canadian. Indians on the reservation are exempt from taxation and consequently do not receive Old Age Security Pensions or Family Allowance Payments.

Since their first contacts with the whites, Caughnawagans have been trappers, farmers, lumberjacks, bargemen and finally steel erection workers. Today, occupations range from small farming (tobacco, corn, etc.) to structural steel work. A number of the male workers who are employed as skilled riveters are characterized

by a high degree of mobility. They and their families are migratory, moving from construction job to construction job and returning to Caughnawaga during off-seasons. As a result, there are families on the reservation who, from time to time, spend months in large, cosmopolitan cities.

Members of the community attend motion pictures, have radios and television sets. Many of them shop, or are employed in adjacent Montreal. While one of the uncontrolled variables of this study is the amount of actual contact individuals on the reservation have with non-Indians, most of them would appear to have a great deal of such contact.

While for the most part studies of cultural change seem to assume that the societies being studied are homogeneous, or that they react as wholes to contact situations, Voget's investigations (15), (16) have revealed situations of comparative heterogeneity, or more precisely, of relatively homogeneous sub-groups within a heterogeneous society. Thus, he has made a tentative classification of contemporary Caughnawaga society into three socio-cultural groups, at different levels of acculturation.

Caughnawaga Socio-Cultural Groups

The first sub-group Voget has termed Native-Modified to signify an orientation which seeks to perpetuate native values, but allows for the adjustments that have been made to incorporate certain features of

the dominant culture. The second category comprises the Euro-American Modified, the membership of which accepts the basic values of Euro-American Culture, but retains a positive identification with the subordinate society.

Euro-American Marginal is the third category, which constitutes a semi-isolated segment of the society, which is attempting to identify itself socially and culturally with the dominant society.

The Native-Modified group is made up of a number of Christian apostates, who support no church; and a group of Longhouse people who follow a modification of aboriginal belief, affiliated with the head church of "Handsome Lake" at the Tonawanda Seneca Reservation, New York. The Longhouse people adhere to the Constitution of the Five (Six) Nations Confederacy and do not function under the political organization established by the Canadian Indian Act (2). They do not take part in local elections but submit to the authority of Six Life Chiefs, elected by elder Clan Mothers. Membership in the Longhouse is restricted to Clan members. The apostate group functions under the Indian Act, but in conjunction with the Longhouse group, seeks destruction of the Indian Act as an administrative instrument, and desires the reestablishment of an autonomy, based on the aboriginal political model. The Native-Modified people stress their Indian descent, and are determined to maintain their distinction. They emphasize that their "Indianness" raises them above national governments, and allows them to pass readily from one country to another.

The Euro-American Modified group operates within the political organization of the Canadian Indian Act, but seeks changes in the act which would permit members of the reservation to reap some of the benefits of Canadian resources. They state that they would like to have running water, pensions, etc., but not the accompanying taxation. Some of this group are Protestant and the balance are Catholic. They exploit the tourist trade, imitate and secularize many sacred Indian rituals for this purpose and derive a relative measure of prestige from publicity. Euro-American Modified people comprise the main body of Caughnawaga society.

The Euro-American Marginal group is predominantly Catholic in religion. This is a group which appears to want citizenship rights, while remaining on the reservation. Among them would number individuals who left the reservation and have returned, after failing to achieve complete equality of participation in the dominant society, presumably because of mixed ancestry. They express resentment of the Longhouse people, who in their opinion want to impede progress. While this group is composed of semi-isolates, they join the Euro-American Modified people in an attempt to ostracize the Native-Modified individuals within the reservation community.

While Voget's tentative classification of Caughnawaga Socio-Cultural groups was based on certain objective criteria of religious, political and social

affiliations, his lengthy detailed interviews with a small number of Native-Modified (least acculturated) individuals revealed consistent, predictable overt attitudes in these and other areas. He suggested that a more systematic personality investigation would reveal corresponding overt attitudes, differentiating the three defined groups. This study proposes to carry out such an investigation, and in addition, through the use of a projective test to determine if the three groups differ in other measurable personality characteristics which are not readily revealed by a direct-question interview technique.

CHAPTER 2

METHOD

Object of the Study

Voget has defined three sub-groups at Caughnawaga, representing different levels of acculturation. He differentiated these groups anthropologically on the basis of their religion, political goals and degree of participation in, or isolation from the Caughnawaga society.

The present study was designed to test three general hypotheses:

1. That the three socio-cultural groups can be differentiated by their attitudes, as measured by responses to a sentence completion test;
2. That responses to a selection of Thematic Apperception Test Cards will disclose specific personality traits that distinguish one group from another;
3. That the three defined sub-groups can be differentiated by their acceptance or rejection of Euro-American Cultural norms, as revealed by a content analysis of Thematic Apperception Test protocols.

Testing Material

(a) Sentence Completion Test:

As a check on the attitudes of respondents, a verbally administered sentence completion test (see Appendix 1) was devised to investigate attitudes toward religion (both specific and general), government (local and federal),

Indians (family, friends), Non-Indians (English, French), citizenship, the future (work, money) and self (as Indian). Fifty items were developed (two matched-halves of 25) and the test administered to ten Caughnawaga school children. Analysis suggested that 12 items required modification in wording. When these changes had been made, the 50 sentences were included in the testing procedure.

The responses to the sentence-completion items were each scored +, 0, or -; to indicate if the expressed attitude were favorable, neutral, or unfavorable and then totalled algebraically for each attitude area probed. In this way, one + and one - would total 0, etc.

A chi-square, 3 X 3 table was used for the statistical analysis of each attitude. The three group rows were designated: 1. Native-Modified; 2. Euro-American Modified; and 3. Euro-American Marginal. The columns were designated as expressed attitude: 1. Favorable (+); 2. Neutral (0); and 3. Unfavorable (-). The object of the analysis was to determine whether or not Voget's classification into groups was a valid one, and the null hypothesis was set up that there was no statistical difference between the three groups.

(b) The Thematic Apperception Test

The Thematic Apperception Test (which will hereinafter be referred to as TAT) was chosen as the primary tool in collecting data with respect to the personality characteristics of the three defined groups.

The TAT has been used in other investigations of the acculturation process, and appeared to be of value in revealing distinguishing characteristics of groups, as well as of individuals.

Henry (9) applied the TAT technique to a comparison of general psychological characteristics of Hopi and Navaho Society, and developed a method and terminology for analysis of form and content of TAT stories, using the following terms. Descriptive comments consist of routine remarks about the manifest physical aspects of a picture. Interpretive comments go beyond pure description and project content into the picture. Two special kinds of Interpretive comment are Intrceptive comments which imply individual needs, emotions, motives and desires, and Press comments which imply or state external influences, outer-world pressures, that are directed toward restraint, denial and control. Henry did not attempt to quantify the bulk of his material, but on a qualitative basis found that not only were there recognizable differences between groups, but, in the form and content of TAT records, much similarity within any one group. He concluded that the TAT is not only of marked value in revealing the general characteristics of a society that may be important in the development of individual personalities, but also in revealing psychological features differentiating societies.

Caudill (3) followed the method and terminology developed by Henry (9) in comparing the TAT data collected

at Flambeau with the results Hallowell (8) reported in his analysis of Berens River Rorschach material, and made a quantitative analysis of the content of Ojibwa intra-ceptive and press comments on the basis of average lines of type devoted to this comment in each TAT record. His comparison of Rorschach and TAT material indicated a general agreement in psychological interpretations, made from either test, and he concluded that group generalizations can be made from either, when a good sample of records is available.

French (5), Leoblowitz-Lennard and Reissman (11) and Morgan and Murray (13) suggest that the TAT can serve particularly well to differentiate people with regard to their social attitudes, as well as the way in which they view the situations in which they find themselves, and the way in which they view themselves.

The TAT was thus adopted as the critical test used in this experiment. A set of ten cards, selected from the standard Murray TAT series, was employed. The ten cards used, in order of their presentation to the subject, were: 2, 3BM, 4, 7BM, 12M, 17GF, 18GF, 17BM, 11 and 9BM. These cards were selected with two criteria in mind: 1. They should be diagnostic of specific aspects of personality; 2. They should be pictures which could easily represent the culture and physical environment at Caughnawaga. Murray (14), Bellak (1) and Eron (4) appear to agree as to the usefulness of all these cards in

delineating specific aspects of personality with the exception of card No. 17GF. They are all doubtful about the usefulness of this picture, except where one suspects suicidal tendencies in women. However, this particular card, which represents a woman standing on a bridge, fits well into the physical environment at Caughnawaga, where a bridge must be crossed to reach the reservation from Montreal Island, and where a number of the adult males are engaged in structural steel work. An attempt was made to use the blank card, to see if responses could be elicited, but after five failures this card was discarded. (Presumably personality restrictions at Caughnawaga are too strong to permit free responses).

The TAT protocols were analyzed in two ways. The strength of the following needs and emotions, manifested by the hero or heroine of each story was rated on a 0 to 5 scale: Abasement, Achievement, Aggression, Anxiety and Environmental Press. (Murray -14). (These might be considered special cases of Henry's Intrceptive and Press comments.) As there were 10 cards, the maximum score on each of the variables for each protocol was 50. Groups were compared statistically with reference to these five psychological characteristics.

In addition each TAT story was rated on a 0 to 5 scale on the basis of its approximation to, or deviation from, the Euro-American norms for content of stories (Descriptive and Interpretive comments), emotional tone,

shift of tone, and direction of shift, outlined in Eron's normative study of the TAT (4).

An analysis of variance technique was used to determine if the defined groups differed as to variability for given traits. The null hypothesis was set up that no statistical difference existed between the three group variances. In cases where the null hypothesis could be rejected, that is, where the F ratio was highly significant, t tests were made, using the total variance of S^2 in the denominator of the formula
$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S^2}{N} - \frac{S^2}{N}}}$$
 to test the significance of the difference between each pair of group means.

Reliability Check

In view of the fact that the scoring method, while following Murray, was an adaptation devised by the investigator, another psychologist also rated the strength of Abasement, Achievement, Aggression, Anxiety and Environmental Press, manifested by the hero or heroine of each story on a 0 to 5 scale. The correlation between the two sets of figures was +.82 (Pearson's r). In analyzing the data, the ratings of the author were used.

Sample

This investigation is based on a sample of 105 residents of the Caughnawaga Iroquois Indian Reservation, including 35 from each of three socio-cultural sub-groups. Members of the sub-groups were identified by the following characteristics:

(a) Native Modified: 1. Longhouse religious affiliation or no religious affiliation; 2. Politically, works toward the replacement of the Indian Act by a form of autonomous government, guaranteed under Indian Treaties; 3. Reveals determination to maintain distinct Indianness.

(b) Euro-American Modified: 1. Protestant or Catholic religious affiliation; 2. Politically active in, or supports local government. Seeks change in the Indian Act, not replacement; 3. Socially, interacts with the large, main social group.

(c) Euro-American Marginal: 1. Catholic religious affiliation; 2. Not politically active; 3. May have left the reservation and returned. Is a social isolate.

While these characteristics should have differentiated without difficulty, the accuracy of classification may have been increased by the fact that one, clearly defined, member of a group introduced the investigator to another member, etc., until the required sample of 35 was secured. This process was then repeated with the second, and finally with the third sub-group.

It is difficult to say whether the final samples were representative of the sub-group populations. An attempt was made to cover the total range of economic security in each group, and no more than two persons in any one home served as subjects. Informants were used as an indication of the social affiliations of the subjects who participated in the study, and, to the best of the investigator's knowledge, the three groups were well-matched.

The age range of the Native-Modified group was from 8 to 66 and there were 17 females and 18 males. The age range of the Euro-American Modified group was from 7 to 63, with 20 females and 15 males in the sample. The Euro-American Marginal group ranged from 8 to 65, of whom 17 were females and 18 males. The total number of children under 16 in the whole sample was 15, five drawn from each group.

Testing and Scoring Procedure

Each TAT was administered by the investigator, individually to each subject, and was followed immediately by the first 25 sentences of the sentence completion test. The second 25 sentences were presented to the subject not less than one week later. While an attempt was made to present the second 25 sentences exactly one week later, this was not always possible, and in several cases, the interval between the two halves was two weeks. In no case was it longer than two weeks.

The circumstances of testing were not identical from subject to subject. Most of the subjects were tested in their own homes, and in most cases in the kitchen of the home. Several were tested in the homes of friends or relatives, and others on their front or back lawns. However, in every case, the environment for the subject was familiar, and one in which the investigator judged he or she would feel comparatively relaxed and comfortable.

Because of the fact that in using a projective test, with the avowed purpose of differentiating groups,

the tester may project, the following method of preserving anonymity of the test protocols was devised: All tests were administered by the investigator, and the responses recorded by hand. The responses sheet was then assigned a number, drawn from a list of 105 large numbers. A covering sheet, on which were recorded the name, age, occupation, religious affiliation and any other comments deemed significant was numbered identically. The responses were typed and filed randomly, until such time as all data had been collected. The covering sheets were filed separately. Analysis of Incomplete Sentences Test responses and TAT protocols was begun, only after the complete set of 105 was gathered. When the results were analyzed, the investigator had no way of knowing from which group results the test protocols were drawn.

The independent analysis, made by a clinical psychologist was carried out with no knowledge of the object of the experiment, and in ignorance of the fact that the subjects were drawn from three differentially defined sub-groups.

CHAPTER 3

RESULTS

Incomplete Sentences

In testing the first hypothesis of this study, that is, that the anthropologically defined socio-cultural groups differ correspondingly in attitudes, no attempt was made to measure intensity of attitudes. The objective was, rather, to determine the direction of the attitude in terms of favorable, neutral or unfavorable responses.

(a) Quantitative Results

The chi-square analysis of Incomplete Sentences was an attempt to demonstrate an association between sociological grouping of Caughnawagans and their attitudes as revealed in this test. The results of this analysis are summarized in Table No. 1. It shows that responses to Incomplete Sentences clearly differentiate the three groups on the basis of their attitudes toward specific religions, government, citizenship and other Indians, at or beyond the .001 level of confidence. Expressed attitudes about "Self as Indian" bear out the a priori classification between the .01 and .001 levels of probability, while attitude toward the future discriminates at the .05 level. No significant differentiation on the basis of attitude toward Non-Indians was revealed by the analysis.

While the data of Table No. 1 indicate that responses to the Incomplete Sentences do differentiate among the three defined sub-groups, they give no indication

Table No. 1

Summary of Chi-Square Analysis of Incomplete Sentences
Designed to Reveal Differences in Group Attitudes[#]

Attitude Area	χ^2	P
Longhouse	62.35	.001
Catholics	70.27	<.001
Protestants	37.52	<.001
Government	20.52	<.001
Citizenship	30.84	<.001
Other Indians	22.24	<.001
Non-Indians	2.05	>.05"
Future	9.31	<.05
Self-As-Indian	13.51	<.01

" Not significant

the complete Chi-Square tables will be found in
Appendix 2.

as to whether or not such attitudes, favorable, unfavorable, or neutral are distributed according to the classification of Voget. A qualitative analysis of the responses of the groups in each attitude area is summarized in Table No. 2.

(b) Qualitative Results

It can be seen from an examination of Table No. 2 that the highest proportion of favorable and unfavorable responses is found in the records of the least acculturated, Native-Modified group. They are neutral only with respect to Protestants. Their responses, concerning the Longhouse, Non-Indians, the Future and Self-As-Indian are predominantly favorable, while those about Catholics, Government, Citizenship and Other Indians are predominantly unfavorable.

The Euro-American Modified responses are neutral on the subject of Catholics, Other Indians and the Future; they are anti-Longhouse, anti-government and anti-citizenship, but they are pro-Protestant, pro-Non-Indians and pro-Self-As-Indian.

The responses of the Euro-American Marginal, or most acculturated group are neutral about Government, Citizenship and Non-Indians; favorable toward Catholics, Other Indians and the Future; and unfavorable toward the Longhouse and Protestants.

These expressed attitudes are all in accordance with the behavior of the three defined groups, with one notable exception. The one discrepancy between results

Table No. 2

Qualitative Analysis of Responses of Groups
in Each Attitude Area

Differential Attitude Area	Native- Modified	Euro-American Modified	Euro-American Marginal
Longhouse	+	-	-
Catholics	-	0	+
Protestants	0	+	-
Government	-	-	0
Citizenship	-	-	0
Other Indians	-	0	+
Non-Indians	+	+	0
Future	+	0	+
Self-As-Indian	+	+	+

Legend: + = Favorable
0 = Neutral
- = Unfavorable

obtained on the Incomplete Sentences and group membership was in the area of attitude toward Non-Indians. In interviews it quickly became evident that all three groups and particularly the "most Native" group are opposed to Non-Indians. The analysis, however, revealed attitudes among the Native-Modified and Euro-American Modified as predominantly favorable, while that of the Euro-American Marginal group was neutral. The experimenter feels that here can be observed one of the disadvantages of the participating observer and the effect of the interviewer upon the responses. It is felt that the test might have revealed a different trend had the experimenter not been a member of the Non-Indian society.

While, as has been pointed out, no systematic attempt was made to analyze the intensity of the responses in a statistical fashion, the responses of the Native-Modified group appear to be more intensely emotional than those of the other two groups. That is, not only do they appear to have more decided attitudes than either of the other two groups, they also appear to be more intense in their expression of the attitudes. Again and again they refer to priests as "False prophets," and complete sentences which refer to government with lengthy diatribes against the "Oppressors in Ottawa." A number of them also become emotional on the subject of Canadian citizenship, stating that they will not

become citizens, while they are still alive.

The general tone of the responses of the Euro-American Modified group is less emotional than that of either extreme group. Many responses are non-committal, for example "I think all priests.....are teacher." "The people I like best.....are nice people." Their responses also tend to be brief and their mode of expression simpler and less dramatic than that of the Native-Modified.

The points of greatest divergence between the extreme groups appear to be those of religion and attitude toward Canadian citizenship. The practicing Catholic expresses himself strongly against the Longhouse paganism, while the Native-Modified people say again and again that the priests are trying to run things on the reservation, and that this is all wrong. The Native-Modified group maintains that any Indian who wants Canadian citizenship is not really an Indian, and the Indian who wants citizenship rights on the reservation feels that he is being held back by the "old-fashioned ones."

Voget (16) has made reference to the fact that one of the differentiating factors between these three groups is a sort of "Self-concept." This term is difficult to define in a meaningful way, but is phenomenologically evident in interviews and in responses to the Incomplete Sentences. It is a feeling of status, expressed

as pride in Indianness. The Native-Modified group frequently express the idea that the Indian is superior, his religion is the only true one, and the misfortunes of the Indian resulted from leaving his aboriginal ways and taking over the values, religion and ways of the white man. At the other extreme, the Marginal, the most acculturated man, stresses the fact that the Indian is just as good as the white man. That is, he is no different, and he wants to be accepted into the white man's world as an equal. He does not appear to feel equal, but he wants equality.

All three groups appear to have adopted the Euro-American values attached to money; and hopes, aspirations, and fears for the future are expressed by all three groups in terms of financial security. The Native-Modified group, however, also expresses the faith again and again that soon the reservation will be for the Indians, and only for the Indians, and that they will regain the rights to which they are entitled, under the terms of the treaties.

TAT Personality Variables

Having supported the hypothesis that the three defined groups of Caughnawaga Indians can be differentiated by religious, political and social attitudes, the TAT protocols were analyzed to determine if the three groups differed significantly

on the five variables of Abasement, Achievement, Aggression, Anxiety and Environmental Press.

Table No. 3 represents a summary of this analysis and indicates that the TAT variable of Abasement does not appear to discriminate the groups. There is greater variability within the three groups than there is between them.

A pattern of results emerges in the analysis of mean differences on Achievement, Anxiety and Environmental Press. In each case, the mean score for the Euro-American Modified (or intermediate) group is the lowest, the Native-Modified is next lowest, and the Euro-American Marginal is the highest. While this pattern of results can be observed for the Achievement variable, the differences between the mean scores are not significant. The differences between the middle group and the two extreme groups are significant for Anxiety, but not significant between the two extreme groups, themselves. The differences for Environmental Press for all three groups are significant.

The differences among the groups on the Aggression Variable are significant between all pairs of groups, but the direction of the difference is not the same as for the three variables mentioned above. That is, the Native-Modified, least acculturated, group has the highest aggression score, the Euro-American Modified the next highest and the Euro-American Marginal, most acculturated, the least aggressive.

Table No. 3

Summary of Analysis of Variance Tables, Testing Significance of Differences between groups on TAT Personality Variables[#]

Variable	\bar{X}_a	\bar{X}_b	\bar{X}_c	F ratio	t ratio
Abasement	21.08	22.08	21.22	3.291"	
Achievement	18.94	18.00	21.37	1.73 "	
Aggression	25.26	17.99	15.90	6.722	$t_{ab}7.12$ $t_{ac}10.60$ $t_{bc}2.27$
Anxiety	28.57	23.00	30.22	4.88	$t_{ab}2.21$ $t_{ac}0.70"$ $t_{bc}2.89$
Environmental Press	15.14	12.71	18.114	14.238	$t_{ab}2.15$ $t_{ac}2.63$ $t_{bc}6.1$

Legend: a - represents Native-Modified, Least Acculturated Group
b - represents Euro-American Modified Group
c - represents Euro-American Marginal, Most Acculturated Group

" Not significant

[#] The complete Analysis of Variance Tables will be found in Appendix 3.

To summarize Table No. 3, it would appear that the three groups at Caughnawaga are not differentiated by the variable of Abasement. The three groups can, however, be differentiated on the basis of their TAT responses by the other four variables in the following way: Those Indians who have come closest to adopting the "white" culture (Euro-American Marginal) show on the TAT the greatest need for Achievement, have the most Anxiety and feel the Press of the hostile outer environment more than do the other two groups. Those Indians (Euro-American Modified) who are identified with the predominant group in the Indian society have least need for Achievement, least Anxiety and are least troubled by Environmental Press. The most Indian (Native-Modified) group is intermediate between the other two in need for Achievement, Anxiety and Environmental Press, but is the most aggressive of the three. The Marginal group is least aggressive and the Euro-American Modified intermediate.

TAT Content Analysis

In order to determine if the three sociologically defined sub-groups could be differentiated by their social attitudes and values, as revealed in the TAT protocols, a second analysis of these records was undertaken, in which actual story content and emotional tone were taken into consideration. A normative study of Eron (4) in which stories most frequently given as response to each card are listed was taken as the base-line for comparison of the groups. That is, in scoring the responses, the question was asked as to how close to the Euro-American Cultural

norms the actual story content was, whether the tone was unhappy, neutral or happy, whether the outcome of the story shifted in emotional tone to happier or sadder, and the direction of the shift.

(a) Quantitative Results

The analysis was undertaken for each of the ten cards, and a summary of results is contained in Table No.4, which indicates that cards 2, 7BM, 17GF, 18GF, 17BM and 9BM did not differentiate among the three groups.

Cards 3BM, 4, 12M differentiated significantly all three groups, whereas card 11 showed a significant differentiation between the Native-Modified and Euro-American Modified groups.

The mean scores on cards 3BM, 4 and 12M all exhibit the same pattern. Those for the Native-Modified group are the lowest, those for the Euro-American Modified group the next lowest, and those of the Euro-American Marginal are the highest. In terms of the basis of the analysis, the responses of the "most Indian" group are farthest from the Euro-American Cultural Norm, the Euro-American Modified closer and the Euro-American Marginal or "least Indian" coinciding most closely with the Euro-American Cultural Norm. On Card 11, however, the most "typically American" score is found in the responses of the middle group, the Euro-American Modified, significantly higher than that of the Native-Modified group.

(b) Qualitative Results

A phenomenological analysis of the responses to the cards that did not clearly differentiate the groups

Table No. 4

Summary of Analysis of Variance Tables, Testing Significance of Difference between Groups on TAT Social Attitudes[#]

Card Number	\bar{X}_a	\bar{X}_b	\bar{X}_c	F ratio	t ratio
2	15.20	16.80	17.74	2.426"	
3BM	15.25	15.97	16.49	3.861	t _{ab} 3.13 t _{ac} 5.33 t _{bc} 2.13
4	8.94	13.26	15.37	70.66	t _{ab} 5.10 t _{ac} 6.40 t _{bc} 2.49
7BM	15.23	14.74	15.11	1.21"	
12M	14.40	17.20	19.70	6.17	t _{ab} 2.66 t _{ac} 5.40 t _{bc} 2.36
17GF	16.08	17.08	16.22	5.40"	
18GF	15.94	15.00	18.17	1.69"	
17BM	16.90	16.00	18.90	1.71"	
11	12.27	18.43	15.40	12.65	t _{ab} 3.54 t _{ac} 1.70" t _{bc} 1.50"
9BM	18.06	17.92	18.13	1.86"	

Legend: a - represents Native-Modified, least accult. group
b - represents Euro-American Modified group
c - represents Euro-American Marginal, most accult.

" Not significant

[#] The complete Analysis of Variance Tables will be found in Appendix 4.

reveals that whereas cards 2, 7BM, 18GF and 9BM failed to discriminate because the pattern of responses throughout the three groups was in many ways similar, cards 17GF and 17BM failed to discriminate because of great variability within the groups.

The responses to cards 2, 7BM, 18GF and 9BM in addition to revealing similarities, stressed the themes which, according to Eron (4), most frequently emerge in our society, that is, they were not at all inconsistent with Euro-American Norms. Whereas the responses to cards 17GF and 17BM also revealed themes frequently observed by Eron, the great variability was the result of the original emotional tone, shift or failure to shift the emotional tone toward happier or sadder resolutions.

It was the emotional tone and shift in its direction that were responsible for the differences which discriminated the groups on cards 3BM, 4 and 12M. While there was variability in theme, this was not consistent or systematic, nor would it have served to distinguish the total sample from one drawn from a normal American population. For example, while card 3BM responses were largely in terms of violence and repentance among all groups, they were differentiated by the variable of shift to happier ending. The majority of the "Native-Modified" group stories however, did not change to a happier ending, and when they did shift at all, did so

in the direction of a preponderantly sadder outcome (which Eron indicates is rare.) None of the Euro-American Modified stories shifted to a sadder ending, and some of them became happier. However, more than half of the Euro-American Marginal stories shifted to happier outcomes. This shift may be interpreted in more than one way. It could be considered as the acceptance of the Euro-American cultural norm, or it could be an indication of the anxiety of the group, which makes the unhappy ending to a story untenable.

The pattern of responses for cards 4 and 12M paralleled that described for card No. 3BM, but for card No. 11, while the shift in emotional tone served to differentiate the groups, it was the responses of the "Euro-American Modified" group that revealed the significant shift to happier ending.

This further analysis of the TAT stories leads to the conclusion that while certain of the TAT cards appear to discriminate the three groups on the basis of their different social attitudes, in fact they discriminate on the basis of type and intensity of emotional responses.

The analysis also reveals that in content of story, the TAT records are characteristic, not of any "Indian" or non-American cultural norms, but coincide closely with the norms of Euro-American culture.

CHAPTER 4

DISCUSSION AND CONCLUSIONS

The data of this study reveal that three distinct groups at Caughnawaga can be discriminated on the basis of their attitudes, in a number of sensitive areas, and also by certain personality characteristics. The analysis of TAT Personality Variables leads to a further consideration of some of the results obtained, whereas the TAT Content Analysis raises some questions, regarding the validity of the descriptive terminology Voget (16) has used, and also some questions about the level of acculturation in the Caughnawaga community.

TAT Personality Variables

Linton (12) maintains that in a society with a well-developed class organization, nativistic tendencies will be strongest in those classes or individuals who occupy a favored position, and who feel this position threatened by cultural change. It had been expected, therefore, that the Native-Modified group would score significantly lower on the Abasement variable than either of the other two groups. The Abasement scores for all three groups were high, and while that of the Native-Modified group was the lowest it was not significantly so. It would appear that the TAT variable of Abasement is not a useful one for differentiating psychological characteristics among people whose sociological status

is subordinate to that of a dominant culture.

An extremely high degree of Anxiety is also evidenced by all three groups, higher than for any other variable. The Caughnawagan who is on the margin between his own society and the dominant society, but not actually part of either exhibits the highest anxiety. This supports the hypothesis of Herscovits (10), Gillin (6) and Linton (12) that the "Marginal Man" (he who is not an integrated member of either the dominant or subordinate culture) has a basic feeling of insecurity and anxiety, since he is seldom sure of the right thing to do, and is seldom sure of acceptance by either group.

The "Marginal" man also appears to feel the greatest Environmental Press. This follows logically from the fact that he is not really part of either the subordinate or the dominant society. The most secure individuals, with the best adjustment appear to be the group who form the main body of the society, the Euro-American Modified, who are not moving either against the main stream of the society or ahead of it. The Native-Modified group's consciousness of Environmental Press is compatible with this assumption.

The question arises as to why the Native-Modified group reveals the most aggressive tendencies, and the Euro-American Marginal group the least. Henry (9) in his analysis of the TAT responses of the Hopi asked himself the question, "Why so little aggression?"

His analysis of Hopi society indicated that the society demanded a great deal of control and restraint, and he concluded that the direct expression of aggression is more feared than the cost of withholding the expression. There was a great deal of evidence of a basic insecurity and anxiety in the Hopi TAT records, and in the interviews with members of the society, much indirect, displaced aggression against other people. For example, gossip. The high anxiety and low aggression scores for the Euro-American Marginal group at Caughnawaga would be compatible with Henry's results.

This result does, however, arouse speculation about the highest aggression scores of the Native-Modified group, combined with comparatively high Anxiety scores. It would appear that the Native-Modified individual has been able to find a form of expressed aggression, socially acceptable within his own group. He has been able to turn his aggression into such channels as that of embracing a revivalistic religion. He can be, and is, overtly aggressive against the Federal Government, and channels some of his energies into petitioning the Department of Indian Affairs to reopen investigations into old grievances and financial claims. He can help to maintain his status by expressing himself aggressively against those members of the society who are secularizing the rituals. At the same time, his group is ostracized by instructions

from the Mission Fathers, and there are other anxiety-provoking factors in the movement of the society as a whole in the direction of the dominant society.

TAT Content Analysis

That the Caughnawaga society has moved in the direction of the dominant society becomes evident in the content of TAT stories. So many of the values of Euro-American culture appear in the content of TAT stories which lay stress on the value of education, money, hard work, etc., that it becomes difficult to discern anything non-American or "Indian" in them. This evidence, combined with the knowledge that the Caughnawaga reservation is no isolated, restricted community, but one which has many and varied contacts with Canadian and American society leads to the conclusion that the Caughnawaga community might better be considered a semi-isolated minority group settlement, with minority group characteristics, rather than a different cultural class.

Members classified as Native-Modified are strongly nationalistic; certainly they are not more primitive than members of either of the other two groups, but are rather highly sophisticated in approach and argument. While they perceive themselves as "Indians" and some of them may worship in a revivalistic Longhouse, they are not more Native than others on the reservation, but more Nationalist.

If there are any Caughnawagans in whom remnants of Indian culture are alive, they appear to be the Euro-American Modified group, those persons who are members of the main body of the society. They are differentiated by attitudes and values, which might be termed Modified-Nationalist.

Many of the Euro-American Marginal people are emotionally and culturally assimilated by Canadian Culture, but not by Canadian society. Some have been rejected by Canadian society, while others have rejected it for the comparative security of the reservation. (They are, however, doing little to change the community to which they have returned.) They might be termed Marginal.

Conclusions

This further analysis leads to the conclusion that the first hypothesis, that is "That the three (Caughnawaga) socio-cultural groups can be differentiated by their attitudes, as measured by responses to a sentence completion test" is supported. That there are three such groups is clearly indicated by the data. There is, however, a reinterpretation of the motivational factors that differentiates the sub-groups.

The second hypothesis is "That responses to a selection of Thematic Apperception Test Cards will disclose specific personality traits that distinguish one group from another". The analysis of TAT personality

variables reveals three groups which can be differentiated by level of anxiety, need for achievement, aggressiveness and press of the hostile outer environment. The Nationalist group is characterized particularly by aggressiveness, with a fairly high level of anxiety, need for achievement and press of the environment. The Marginal group members show the greatest need for achievement, have the most anxiety and feel the greatest environmental press, whereas the Modified-Nationalist group feels the least need for achievement, least anxiety and is least troubled by environmental press.

The attempt to differentiate the three subgroups "by their acceptance or rejection of Euro-American Cultural norms, as revealed by a content analysis of Thematic Apperception Test protocols" was unsuccessful, but led to a redefinition of the three groups into Nationalist, Modified-Nationalist and Marginal.

Suggestions for Further Study

1. As a large number of Caughnawagans are now living off the reservation, particularly concentrated in Brooklyn, it would appear profitable to administer to such a group the same tests as were applied to the sample reported in this study. The object of this further testing would be to determine if a fourth group could be distinguished, one which would differ in psychological characteristics from the other three.
2. In view of the fact that there is another large Indian reservation at Oka, Quebec, also close to Montreal, an analysis similar to the one carried out at Caughnawaga should serve as a reliability study for the results pre- in this thesis.
3. Since situations such as the present one at Caughnawaga do not remain static, a follow-up study, after a reasonable lapse of time should reveal the psychological characteristics of those persons who move from one group to another, particularly those who move into the "Nationalist" group.
4. As a further check on the terminology suggested by the author of this study, a test should be devised particularly to probe the "Nationalist" characteristics of individuals at Caughnawaga, and a further study made in which a sample of individuals, chosen at random from the whole reservation population could be classified on the basis of "Nationalist" and "Non-Nationalist", and then their overt behavior analyzed, to see into which socio-cultural group each fitted.

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APPENDIX I

Incomplete Sentences Test

A. Test No. 1

1. I could be perfectly happy if ...
2. I wish I could lose the fear of ...
3. Soon all the Indians ...
4. I think Handsome Lake ...
5. The Protestants ...
6. I believe that most priests ...
7. God tells the Indians ...
8. If people worked for me ...
9. At school ...
10. If I ran the Government ...
11. If I were the Agent ...
12. Elections should be ...
13. People in Montreal ...
14. French people think that Indians ...
15. I don't like people who ...
16. I get angry at Indians who ...
17. I feel that a real friend ...
18. When luck turns against me ...
19. When I was a small child ...
20. My mother and father ...
21. It is hard to ...
22. I think the Treaties ...
23. Taxes should be ...
24. Family Allowances ...
25. On the Reservation ...

Incomplete Sentences Test

B. Test No. 2

1. What I want most out of life is ...
2. It's silly, but I am afraid of ...
3. The Indians are soon ...
4. In the Longhouse ...
5. At the Protestant Church ...
6. All the priests ...
7. The only true religion ...
8. I like working with people who ...
9. The school is ...
10. In Ottawa ...
11. The agent is ...
12. The chiefs are ...
13. The people across the river ...
14. People of Quebec think Indians ...
15. The people I dislike ...
16. I don't like Indians who ...
17. The people I like best are ...
18. When things go wrong ...
19. My early childhood ...
20. My parents ...
21. The hardest thing ...
22. The Wampum Treaties ...
23. When they pass new taxes ...
24. Old Age Pensions ...
25. In Caughnawaga ...

APPENDIX II

Chi-square Tables,
for Analysis of Incomplete Sentences Responses

TABLE NO. 1

Attitude toward Longhouse

(Expected Frequencies in Parentheses)

Group	Frequencies			Total
	+	0	-	
Native-Modified	35	0	0	35
	(11.6)	(4.6)	(18.8)	
Euro-American Modified	0	8	27	35
	(11.6)	(4.6)	(18.8)	
Euro-American Marginal	0	6	29	35
	(11.6)	(4.6)	(18.8)	
Total	35	14	56	105

$$\chi^2 = 63.35$$

$$P = .001$$

TABLE NO. 2

Attitude toward Catholics

(Expected Frequencies in Parentheses)

Group	Frequencies			Total
	+	0	-	
Native-Modified	0	12	23	35
	(8)	(12.4)	(14.6)	
Euro-American Modified	14	14	7	35
	(8)	(12.4)	(14.6)	
Euro-American Marginal	24	11	0	35
	(8)	(12.4)	(14.6)	
Total	38	37	30	105

$$\chi^2 = 70.2741$$

$$P = < .001$$

TABLE NO. 3

Attitude toward Protestants

(Expected Frequencies in Parentheses)

Group	Frequencies			Total
	+	0	-	
Native-Modified	5	18	12	35
	(9.67)	(11)	(14.3)	
Euro-American Modified	21	7	7	35
	(9.67)	(11)	(14.3)	
Euro-American Marginal	3	8	24	35
	(9.67)	(11)	(14.3)	
Total	29	33	43	105

$$\chi^2 = 37.516$$

$$P = <.001$$

TABLE NO. 4

Attitude toward Government

(Expected Frequencies in Parentheses)

Group	Frequencies			Total
	+	0	-	
Native-Modified	0	3	32	35
	(7.3)	(5.3)	(22.4)	
Euro-American Modified	10	5	20	35
	(7.3)	(5.3)	(22.4)	
Euro-American Marginal	12	8	15	35
	(7.3)	(5.3)	(22.4)	
Total	22	16	67	105

$$\chi^2 = 20.524$$

$$P = <.001$$

TABLE NO. 5

Attitude toward Citizenship
(Expected Frequencies in Parentheses)

Group	Frequencies			Total
	+	0	-	
Native-Modified	0	3	32	35
	(5)	(7.57)	(22.3)	
Euro-American Modified	3	8	24	35
	(5)	(7.57)	(22.3)	
Euro-American Marginal	12	12	11	35
	(5)	(7.57)	(22.3)	
Total	15	23	67	105
$\chi^2 = 30.838$ $P = <.001$				

TABLE NO. 6

Attitude toward Other Indians
(Expected Frequencies in Parentheses)

Group	Frequencies			Total
	+	0	-	
Native-Modified	4	5	26	35
	(8)	(9)	(18)	
Euro-American Modified	13	15	7	35
	(8)	(9)	(18)	
Euro-American Marginal	7	7	21	35
	(8)	(9)	(18)	
Total	24	27	54	105
$\chi^2 = 22.237$ $P = <.001$				

TABLE NO. 7

Attitude toward Non-Indians

(Expected Frequencies in Parentheses)

Group	Frequencies			Total
	+	0	-	
Native-Modified	6	10	19	35
	(8.33)	(10)	(16.67)	
Euro-American Modified	9	9	17	35
	(8.33)	(10)	(16.67)	
Euro-American Marginal	10	11	14	35
	(8.33)	(10)	(16.67)	
Total	25	30	50	105
$\chi^2 = 2.052$ <u>Not Significant</u>				

TABLE NO. 8

Attitude toward the Future

(Expected Frequencies in Parentheses)

Group	Frequencies			Total
	+	0	-	
Native-Modified	24	6	5	35
	(18.7)	(7.7)	(8.6)	
Euro-American Modified	14	12	9	35
	(18.7)	(7.7)	(8.6)	
Euro-American Marginal	18	5	12	35
	(18.7)	(7.7)	(8.6)	
Total	56	23	26	105
$\chi^2 = 9.311$ $P = < .05$				

TABLE NO. 9

Attitude toward "Self, as Indian"

(Expected Frequencies in Parentheses)

Group	Frequencies			Total
	+	0	-	
Native-Modified	30	5	0	35
	(23.3)	(7)	(4.66)	
Euro-American Modified	24	7	4	35
	(23.3)	(7)	(4.66)	
Euro-American Marginal	16	9	10	35
	(23.3)	(7)	(4.66)	
Total	70	21	14	105

$$\chi^2 = 13.511$$

$$P = \text{between } .01 \text{ \& } .001$$

TAT PERSONALITY VARIABLES

$\bar{X}_a = 21.08$	$\bar{X}_b = 22.08$	$\bar{X}_c = 21.22$	$\bar{X} = 21.47$
Analysis of Variance			
Source	Sum of Squares	Deg. of Freedom	Variance
Within Groups	2658.65	102	$S^2_w = 26.065$
Between Groups	15.925	2	$S^2_b = 7.962$
Total	2674.575	104	$S^2 = 27.095$
$F = \frac{26.065}{7.962} = 3.291$	$t_{ab} = .803$ Not sig.	$t_{ac} =$ Not Sig.	$t_{bc} =$ Not Sig.

$\bar{X}_a = 18.914$	$\bar{X}_b = 18$	$\bar{X}_c = 21.371$	$\bar{X} = 19.428$
Analysis of Variance			
Source	Sum of Squares	Deg. of Freedom	Variance
Within Groups	6264.91	102	$S^2_w = 61.42$
Between Groups	212.80	2	$S^2_b = 106.40$
Total	6477.71	104	$S^2 = 62.285$
$F = \frac{106.40}{61.42} = 1.73$	$t_{ab} = .04$ Not sig.	$t_{ac} = 1.303$ Not sig.	$t_{bc} = 1.788$ Sig. bet. .1 & .05

Legend: a - Native-Modified Group
b - Euro-American Modified Group
c - Euro-American Marginal Group

A G G R E S S I O N

$\bar{X}_a = 25.26$ $\bar{X}_b = 17.99$ $\bar{X}_c = 15.9$ $\bar{X} = 19.75$

Analysis of Variance

Source	Sum of Squares	Deg. of Freedom	Variance
Within Groups	1269.60	102	$S^2_w = 12.447$
Between Groups	167.339	2	$S^2_b = 83.669$
Total	1436.939	104	$S^2 = 13.817$

$F = \frac{83.669}{12.447} = 6.722$	$t_{ab} = 7.12$	$t_{ac} = 10.6$	$t_{bc} = 2.27$
Sig. at .01	Sig. beyond .001	Sig. beyond .001	Sig. bet. .05 & .02 level

A N X I E T Y

$\bar{X}_a = 28.57$ $\bar{X}_b = 23$ $\bar{X}_c = 30.22$ $\bar{X} = 27.24$

Analysis of Variance

Source	Sum of Squares	Deg. of Freedom	Variance
Within Groups	10493.76	102	$S^2_w = 102.88$
Between Groups	1001.2	2	$S^2_b = 500.5$
Total	11494.96	104	$S^2 = 110.53$

$F = \frac{500.5}{102.88} = 4.88$	$t_{ab} = 2.21$	$t_{ac} = .7$	$t_{bc} = 2.89$
Sig. at .01	Sig. bet. .05 & .02	Not Sig.	Sig. bet. .01 & .001

Legend: a - Native-Modified Group
b - Euro-American Modified Group
c - Euro-American Marginal Group

E N V I R O N M E N T A L P R E S S

$\bar{X}_a = 15.14$ $\bar{X}_b = 12.71$ $\bar{X}_c = 18.114$ $\bar{X} = 15.323$

Analysis of Variance

Source	Sum of Squares	Deg. of Freedom	Variance
Within Groups	1833.917	102	$S^2_w = 17.98$
Between Groups	512.019	2	$S^2_b = 256.005$
Total	2345.94	104	$S^2 = 22.557$

$F = 14.238$	$t_{ab} = 2.15$	$t_{ac} = 2.63$	$t_{bc} = 6.1$
Sig. beyond .001	Sig. bet. .05 & .02	Sig. at .01	Sig. beyond .001

Legend: a - Native-Modified Group
 b - Euro-American Modified Group
 c - Euro-American Marginal Group

APPENDIX IV

ANALYSIS OF VARIANCE TABLES - TAT CONTENT

Card No. 2

$$\bar{X}_a = 15.2 \quad \bar{X}_b = 16.8 \quad \bar{X}_c = 17.74 \quad \bar{X} = 16.58$$

Analysis of Variance

Source	Sum of Squares	Deg. of Freedom	Variance
Within Groups	2431.11	102	$S^2_w = 23.824$
Between Groups	115.676	2	$S^2_b = 57.838$
Total	2546.79	104	$S^2 = 24.488$

$$F = \frac{57.838}{23.824} = 2.426$$

Not.sig.

Card No. 3 B. M.

$$\bar{X}_a = 15.25 \quad \bar{X}_b = 15.97 \quad \bar{X}_c = 16.485 \quad \bar{X} = 16.05$$

Analysis of Variance

Source	Sum of Squares	Deg. of Freedom	Variance
Within Groups	897.285	102	$S^2_w = 8.796$
Between Groups	67.94	2	$S^2_b = 33.97$
Total	965.225	104	$S^2 = 9.28$

$$F = \frac{33.97}{8.796} = 3.861 \quad \text{Sig. at .05 level}$$

$$t_{ab} = 3.13 \text{ Sig. bet. } .01 \text{ \& } .001 \quad t_{ac} = 5.33 \text{ Sig. beyond .001} \quad t_{bc} = 2.23 \text{ Sig. at .05}$$

Card No. 4

$$\bar{X}_a = 8.914 \quad \bar{X}_b = 13.257 \quad \bar{X}_c = 15.371 \quad \bar{X} = 12.704$$

Analysis of Variance

Source	Sum of Squares	Deg.of Freedom	Variance
Within Groups	547.6	102	$S^2_w = 5.368$
Between Groups	758.628	2	$S^2_b = 379.31$
Total	1306.228	104	$S^2 = 12.559$
$F = \frac{379.31}{5.368} = 70.661 \quad \text{Sig. bey. } .001$			
$t_{ab} = 5.1 \text{ Sig. beyond } .001 \quad t_{ac} = 6.40 \text{ Sig. beyond } .001 \quad t_{bc} = 2.49 \text{ Sig. at } .02$			

Card No. 7 B. M.

$$\bar{X}_a = 15.23 \quad \bar{X}_b = 14.74 \quad \bar{X}_c = 15.114 \quad \bar{X} = 15.028$$

Analysis of Variance

Source	Sum of Squares	Deg.of Freedom	Variance
Within Groups	1734.827	102	$S^2_w = 16.001$
Between Groups	38.80	2	$S^2_b = 19.4$
Total	1773.627	104	$S^2 = 17.05$
$F = \frac{19.4}{16.001} = 1.21 \text{ Not sig.}$			

Card No. 12 M.

$$\bar{X}_a = 14.4 \quad \bar{X}_b = 17.2 \quad \bar{X}_c = 19.7 \quad \bar{X} = 17.1$$

Analysis of Variance

Source	Sum of Squares	Deg.of Freedom	Variance
Within Groups	1822.36	102	$s^2_w = 15.9$
Between Groups	196.22	2	$s^2_b = 98.11$
Total	2018.58	104	$s^2 = 19.4$

$$F = \frac{98.11}{15.9} = 6.17 \text{ Sig.beyond .01 level}$$

$$t_{ab} = 2.66 \text{ Sig. at .01} \quad t_{ac} = 5.4 \text{ Sig.beyond .001} \quad t_{bc} = 2.36 \text{ Sig.at .02}$$

Card No. 17 G. F.

$$\bar{X}_a = 16.08 \quad \bar{X}_b = 17.08 \quad \bar{X}_c = 16.22 \quad \bar{X} = 16.4$$

Analysis of Variance

Source	Sum of Squares	Deg.of Freedom	Variance
Within Groups	2128.56	102	$s^2_w = 28.68$
Between Groups	10.52	2	$s^2_b = 5.26$
Total	2139.08	104	$s^2 = 20.56$

$$F = \frac{28.68}{5.26} = 5.4 \text{ Not sig.}$$

Card No. 18 G. F.

$$\bar{X}_a = 15.94 \quad \bar{X}_b = 15.00 \quad \bar{X}_c = 18.17 \quad \bar{X} = 16.37$$

Analysis of Variance

Source	Sum of Squares	Deg. of Freedom	Variance
Within Groups	5946.19	102	$S^2_w = 58.29$
Between Groups	192.8	2	$S^2_b = 96.4$
Total	6138.99	104	$S^2 = 59.02$

$$F = \frac{96.4}{58.29} = 1.69 \text{ Not sig.}$$

Card No. 17 B. M.

$$\bar{X}_a = 16.9 \quad \bar{X}_b = 16.00 \quad \bar{X}_c = 18.9 \quad \bar{X} = 17.26$$

Analysis of Variance

Source	Sum of Squares	Deg. of Freedom	Variance
Within Groups	6043.92	102	$S^2_w = 58.27$
Between Groups	200.28	2	$S^2_b = 100.14$
Total	6244.20	104	$S^2 = 60.04$

$$F = \frac{100.14}{58.27} = 1.71 \text{ Not sig.}$$

Card No. 11

$$\bar{X}_a = 12.27 \quad \bar{X}_b = 18.43 \quad \bar{X}_c = 15.4 \quad \bar{X} = 15.36$$

Analysis of Variance

Source	Sum of Squares	Deg. of Freedom	Variance
Within Groups	1979.33	102	$S^2_w = 19.405$
Between Groups	491.17	2	$S^2_b = 245.585$
Total	2470.50	104	$S^2 = 23.75$

$$F = \frac{245.585}{19.405} = 12.655 \quad \text{Sig. beyond .001}$$

$$t_{ab} = 3.54 \quad \text{Sig. beyond .001} \quad t_{ac} = 1.70 \quad \text{Sig. bet..1 \& .05} \quad t_{bc} = 1.50 \quad \text{Not sig.}$$

Card No. 9 B. M.

$$\bar{X}_a = 18.06 \quad \bar{X}_b = 17.92 \quad \bar{X}_c = 18.13 \quad \bar{X} = 18.03$$

Analysis of Variance

Source	Sum of Squares	Deg. of Freedom	Variance
Within Groups	6064.18	102	$S^2_w = 58.47$
Between Groups	218.21	2	$S^2_b = 109.105$
Total	6282.39	104	$S^2 = 60.407$

$$F = \frac{109.05}{58.47} = 1.867 \quad \text{Not sig.}$$