

PAIN TOLERANCE IN AMERICAN
INDIANS AND NON-INDIANS

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PREFACE

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TABLE OF CONTENTS

Chapter	Page
I. THE PROBLEM	1
II. REVIEW OF THE LITERATURE.	5
Documentations of Tribal Pain Tolerance. . .	5
Specific Studies Investigating Indian Pain Tolerance	8
General Variables.	10
Personality Factors Associated With Pain Tolerance	14
Summary and Hypotheses	17
III. METHOD.	20
Subjects	20
Materials.	23
Procedure.	27
Dependent Variables.	29
Experimental Design.	31
IV. RESULTS	34
Pain Tolerance	34
Endurance Time	37
Personality Factors For Males.	40
Personality Factors For Females.	43
V. DISCUSSION.	48
REFERENCES	53
APPENDIX A	57
IPTT Test.	58
APPENDIX B	67
Form I Questionnaire	68
Form CQ Questionnaire	70

Chapter	Page
APPENDIX C	71
Table XX	72
Table XXI.	72
Table XXII	73
Table XXIII.	73
Table XXIV	74
Table XXV.	74
Table XXVI	75
Table XXVII.	75
Table XXVIII	76
Table XXIX	76
Table XXX.	77
Table XXXI	77
Table XXXII.	78
Table XXXIII	78
Table XXXIV.	79

LIST OF TABLES

Table	Page
I. Indian Sample.	21
II. Descriptive Sample Data.	22
III. Test-Re-Test Reliability IPTT.	24
IV. Facet Design for the FIRO-F.	25
V. Summary ANOVA for SIPT	35
VI. Summary ANOVA for OIPT	35
VII. Summary ANOVA for SPPT	36
VIII. Summary ANOVA for TIPT	36
IX. Summary ANOVA for SIET	38
X. Summary ANOVA for OIET	38
XI. Summary ANOVA for SPET	39
XII. Summary ANOVA for TIET	39
XIII. Weighted ANOVA for Male Expressed Significance	41
XIV. Weighted ANOVA for Male Regression	42
XV. Summary ANOVA for Female Wanted Significance .	43
XVI. Summary ANOVA for Female Wanted Competence . .	44
XVII. Summary ANOVA for Female Wanted Loveability. .	44
XVIII. Summary ANOVA for Female Expressed Loveability.	45
XIX. Summary ANOVA for Female Projection.	46
XX. Weighted ANOVA for Male Wanted Significance. .	72
XXI. Weighted ANOVA for Male Expressed Competence .	72

Table	Page
XXII. Weighted ANOVA for Male Expressed Loveability.	73
XXIII. Weighted ANOVA for Male Wanted Loveability . .	73
XXIV. Weighted ANOVA for Male Depression	74
XXV. Weighted ANOVA for Male Isolation.	74
XXVI. Weighted ANOVA for Male Projection	75
XXVII. Weighted ANOVA for Male Turning-Against- The-Self	75
XXVIII. Weighted ANOVA for Male Wanted Competence. . .	76
XXIX. Weighted ANOVA for Female Expressed Significance	76
XXX. Weighted ANOVA for Female Expressed Competence	77
XXXI. Weighted ANOVA for Female Isolation.	77
XXXII. Weighted ANOVA for Female Regression	78
XXXIII. Weighted ANOVA for Female Turning-Against- The-Self	78
XXXIV. Weighted ANOVA for Female Depression	79

CHAPTER I

THE PROBLEM

Sigmund Freud in his writing and development of psychoanalysis was aware of the role of pain in human behavior. Several of his dynamic concepts are based on an avoidance of painful experiences. The pleasure principle, for example, is a mechanism of the id aimed at avoiding pain and finding pleasure (Hall, 1954). Defense mechanisms such as repression, projection, reaction formation, fixation and regression are defined as coping strategies utilized by the ego in defending itself from painful experiences. In Freud's view individual differences exist in preferred coping strategies. Some individuals unconsciously use one strategy more than another depending on their particular historical and developmental circumstances.

Recent theorizing considers pain to be a complex problem for psychology and physiology. Murray (1969) maintains that the sensory, cognitive and affective aspects of pain contribute to the complexity in understanding the subject. The sensory aspects include receptor sensitivity and sites, type of fibers carrying impulses and tracts transmitting pain from peripheral to central areas of the nervous system. Cognitive aspects of pain include knowledge

of control over the pain producing stimulus, cognitive set and attitudes. The affective aspects of pain involve individual differences in how the pain experience is perceived, personality types, ethnic differences, etc.

Pain tolerance may be considered one aspect of the total pain experience. Gelfand (1964) indicates that there has been confusion in differentiating pain tolerance from pain threshold. At present the relationship between these two variables is unclear, however, Clark and Bindra (1956) defined pain tolerance as the maximum intensity of the noxious stimulation to which the subject is willing to expose himself.

The subject of pain tolerance is complex in that it is possible to approach the area from sensory, cognitive and affective directions. The sensory approach seems more appropriate from a physiological emphasis while the cognitive and affective approaches seem more relevant to clinical psychology.

Individual differences in pain tolerance, for example, seem important clinically for several reasons. The first of these is an understanding of the strategies utilized by individuals in coping with real or imagined painful experiences. A second reason is the realization that responses to pain may be related to the ethnic and cultural groups to which an individual belongs. A knowledge of these differences may provide the clinical psychologist with a better understanding of minority behavior and consequently

give him the basis for more effective decision making in the treatment of various ethnic group members.

There is at present a need for more information in pain tolerance across the areas of sex and ethnicity. Wolf and Langley (1968) indicate that this had been a neglected area in medicine, physiology, psychology and anthropology. One of the most interesting ethnic groups in this regard is the American Indian, whom myth and literature describe as highly pain tolerant.

Historically many Indian tribes have been able to tolerate intense pain. Documented accounts of pain tolerance can be found in the cultural institutions of religion, endurance training, battle experience, punishment of social offenders and ritual mourning of the dead. These documentations suggest a possible basis for hypothesizing higher pain tolerance levels for descendants of these tribes.

If the factor in question exists in Indians of the present century, does it exist as a cultural institution or as a familial parent-child transmission from generation to generation? Theoretically, the method of institutional transmission would be questionable since the history of the Indian includes detribalization, acculturation and loss of many aspects of their material and structural culture. Indian religions no longer emphasize self-torture, ritual mourning no longer requires self-mutilation and social offenders are presently tried by the laws of the dominant culture.

The psychological basis for parental transmission of pain tolerance appears more likely although it is not easily interpreted in Freudian terms. A neo-Freudian approach such as transactional analysis has less difficulty in explaining cultural transmission of pain tolerance. The Indian child through verbal and non-verbal means is stroked by the parents and tribal members for his behavior in enduring pain. Transactions with the parents, age groups, relatives and other tribal members set up a means whereby the boy or girl may obtain strokes. As a consequence of these transactions and the good feelings obtained from the social approval of parents and relatives the youngster makes a decision regarding himself and his behavior. Consequently, transactional analysis interprets the cutting off of fingers in ritual mourning and self-torture for religious or endurance purposes as decisions made by the individual concerning his own behavior. These decisions having been influenced by early transactions with parents, age groups, relatives and other tribal members.

It would appear that there are psychological and cultural theories that provide possible explanations as to why the factor may exist in present century Indians. If the Indian is capable of enduring pain at high tolerance levels, then there should be significant differences when comparisons are made with a non-Indian control group. Similarly, there should be differences in coping strategies and feelings across ethnic and sex levels for high and low pain perceivers.

CHAPTER II

REVIEW OF THE LITERATURE

The review of the literature considered four areas of Indian pain tolerance. These areas were documentation of tribal pain tolerance, specific studies investigating Indian pain tolerance, general variables and personality factors associated with pain tolerance.

Documentations of Tribal Pain Tolerance

North American Indian tradition is rife with examples of culturally apparent pain tolerance. The Sun Dance ceremony practiced by the Sioux, Arapaho, Kiowa and Cheyenne appears to be an example of self-inflicted pain for religious purposes. Among the Oglala bands of the Teton Sioux:

Four variations on the type of self-torture were used. Skewers placed through the skin of the back were attached with thongs to bison skulls which the dancer dragged behind him as he danced. Another form bound the dancer with four thongs to four posts with the dancer in the center. The third form used wooden skewers through the skin of the breast and the dancer was attached with thongs to the Sacred Pole. The final form was similar to the third, except that the dancer was attached to the crotch of the Sacred Pole with loose thongs so that he could actually be raised from the ground. (Spencer, 1965).

The dancers then pull against the thongs trying to free themselves. Those that are successful are held in esteem by the

other members of the tribe. The scar is a symbol of distinction which permits the warrior to enter any other Sun Dance simply by drawing his own blood before entering the dancing.

The Cheyenne Sun Dance was similar to the Sioux in that similar variations in self-torture were practiced. In Cheyenne culture a young man was expected to perform certain self-tortures in order to acquire a vision of the good-luck spirits who would safeguard him on the warpath and bring luck in hunting (Service, 1958).

Several examples of other inflicted pain seem evident in endurance training of tribal members. Black Elk, an Oglala Sioux, recalls in his childhood training that his

advisor would put dry sunflower seeds on our wrists. These were lit at the top, and . . . let . . . burn clear down to the skin. They hurt and made sores, but if we knocked them off or cried Ow!, we would be called women. (Neihardt, 1961).

Debo indicates that Choctaw children seem to tolerate pain in their endurance training. She writes:

Even the little boys took delight in proving their hardihood by self-inflicted pain, and when a youth was recognized as a warrior he was required to submit to a severe beating without flinching or showing any sign of suffering. (Debo, 1934).

Similarly, the Creeks taught their children to endure with patience cold, heat, hunger and to dispise all fatigue, to live without fire or any other food except a little parched Indian Corn for several days (Corkran, 1962).

In the punishment of social offenders the Indian in several tribes has appeared to calmly accept the pain inflicted upon him. Debo (1934) reports a stoical nonchal-

ance among Choctaws receiving severe whippings while Gibson (1971) writes that the Chickasaws used dried snakes' teeth to scratch the backs of offenders and that they apparently accepted the punishment in a stoical manner. Newsom recalls an incident in the early days of the Oklahoma Territory of witnessing Seminole punishment. He writes:

. . . I have seen them punishing their criminals by whipping them when a puddle of blood would accumulate under their feet and their intestines would run through the wounds. Oftimes many stitches were used in sewing up the wounds. It mattered not how severe the punishment was to the Indian, he never was known to cry out because of pain, but would often gobble the war whoop and die in ten minutes. (Newsom, 1923).

Ritual mourning of the dead appears to be an area of Indian life where extreme pain may be inflicted on the self. Wallace and Hoebel indicate that the Comanche males would cut their own flesh in mourning a dead relative. Comanche female relatives of the slain Indians

. . . were expected to evidence their grief by shrill lamentations and self-torture, continuing the demonstrations for weeks, months, and even years. They cut their legs and arms and cut off their finger tips and hair, painted their faces black and piled ashes on their heads. (Wallace, 1952).

Although the Comanches tolerated self-inflicted pain in ritual mourning, they did not use self-torture in the Sun Dance. Apparently, they believed they did not need to disfigure themselves to induce religious visions.

Examples of pain tolerance regarding wounds received in battle have also been documented. Newsom reports an account of Crooked Hand, a Pawnee warrior,

. . . it became evident that the Pawnees had slain hundreds of the Sioux and had put them to flight. Crooked Hand himself had killed many of the Sioux. Several horses were shot from under him. His wounds were many but he laughed at them all. (Newsom, 1923).

This account appears to be a clear dissociation between pain and expected outward emotional manifestations of the pain experience. Psychologically this appears to be a denial or reaction-formation concerning felt pain.

Specific Studies Investigating Indian Pain Tolerance

Meehan, Stoll and Hardy (1954) compared 26 Alaskan Indians from Fort Yukon, 37 Eskimos from the Endicott Mountains and 32 whites from the Ladd Air Force Base. These investigators measured the subjects' responses to radiant heat applied to the backs of their hands. The dependent variable was the just-noticeable-point where the subject perceived his skin being pricked with the radiant heat apparatus. These authors reported a higher pain threshold for Eskimos than Indians and whites. Apparently, the authors overlooked controlling for skin temperature. After a correction had been applied to the data for skin temperature, the authors reversed their decision and reported no differences in pain threshold for the three ethnic groups.

Wolf and Langley (1968) critically questioned the research procedures reported by Meehan, Stoll and Hardy. The first criticism concerned the different procedures utilized in testing each ethnic group. Eskimos were group

tested in a tent at five degrees centigrade. An interpreter was used in conveying research instructions. It is questionable whether or not the Eskimos understood completely these directions. The testing atmosphere reportedly was distracting due to the conversation and noise of the other Eskimos waiting their turn to be tested.

Indians apparently were individually tested through an interpreter. Testing conditions differed from those used with Eskimos in that the Indians were tested in a heated room without the distractions in noise observed in the Eskimo sample.

Procedures in testing the white sample differed from Indians and Eskimos. Whites were tested in small groups of four or five individuals. A heated room was also used as with the Indians but differing from the tent conditions used with the Eskimos. It appears that the white sample may have been mixed in cultural background and consequently invalid as a control group (Wolf, 1968). Wolf and Langley conclude that the issue of ethnic differences in Indian-non-Indian pain tolerance is inconclusive and that no definite conclusions regarding this area can be reached at this time.

Morice (1901) lived among the Dene, an Athabascan tribe, in inland Alaska. He writes that these Indians could tolerate extreme pain calmly and remarkably well for brief periods of time. This report seems to suggest that the uncorrected finding (higher pain tolerance for Eskimos)

by Meehan, Stoll and Hardy (1954) may have been correct and that the lack of stronger support after correction for skin temperature may have been due to an inability to comprehend the research instructions.

General Variables

Age and birth order have been investigated as variables affecting pain tolerance. Silverstein (1963) compared the performance of 30 cub scouts with 100 men on a Pain Apperception Test. No differences resulted and it was concluded that age was not a factor in pain apperception.

Birth order was considered by Gelfand (1963) who investigated the relationship of birth order to pain tolerance and placebo response. There were no significant findings between birth order and either of the two variables.

Gonda (1962 a, 1962 b) studied the relationship between complaints of persistent pain and family class. He found that individuals from working class families complained more to nurses in hospitals than those from white-collar classes. Working classes also sought analgesic relief more frequently than did white-collar patients.

Lambert, Libman and Poser (1960) considered the effects of religious affiliation on pain tolerance. They used a blood pressure cuff into which hard rubber blocks had been sewn. When inflated, various pain responses could be measured in millimeters of mercury. Ss were 40 Jews and 40 Protestants between the ages of 18 and 23 years of age.

Mean pain tolerance scores for Jews were lower, but not significantly lower, than for Protestants.

Mental set appeared to be a significant variable in the Lambert (1960) study. When Ss were subdivided into Jewish and Protestant experimental and control groups, results indicated that Jews try to become more like the majority group when they are told that they are functioning below group expectation. This finding was not true for Protestants.

Lambert, Libman and Poser (1960) in a second study used 160 female undergraduate students, 80 Jews and 80 Protestants. Ss were divided into subgroups of 30, 30 and 20 with the latter serving as a control group. The researchers concluded that Jews tended to increase their pain tolerance when told that Jews take less pain than non-Jews (i.e. the majority group), but are quite satisfied with the status quo when told that Jews can take more pain. On the other hand, when a religious difference is made explicit to Protestants, they strive to increase their pain tolerance, even if they know that supposedly they can take more pain to start with. Apparently, even if there are no basic ethnic differences in terms of pain responses between groups, cultural factors, such as those relating to religious affiliation if made explicit, can impose a differential pain response pattern between Jewish and Protestant groups of the same sex, education and socio-economic status (Lambert, 1960).

Poser (1963) investigated pain tolerance in Jewish and Roman Catholic groups and the effects of a Jewish and a Roman Catholic experimenter. With a Jewish experimenter the Jewish students had a significantly lower mean pain tolerance score than the Roman Catholic students. With a Roman Catholic experimenter there was no significant difference between Jews and Roman Catholics. An analysis of variance indicated ethnic origin of the subject to be a significant factor while the ethnic origin of the experimenter was a significant second factor.

Several researchers have studied racial differences in pain tolerance. Chapman (1944) and Chapman and Jones (1944) found Southern Negroes had a lower pain threshold and were more sensitive to pain than Americans of North European ancestry. These investigators also compared Russian Jews and Italians with Americans of North European ancestry and found pain reactions lower than the North Europeans. They concluded that differences exist in pain sensitivity and pain tolerance due to ethnic factors.

Merskey and Spear (1964) in England compared the pain reactions of 28 white and 11 Afro-Asian male medical students. They found no significant differences between the white and Afro-Asian students in the verbal report of pain, the pain reaction point and the reaction interval. They speculated that there were no significant differences in the pain response between white and colored medical students of the same sex.

Sternbach and Tursky (1965) investigated pain and skin potential responses to electric shock in 60 housewives divided into four ethnic groups of 15 each. The groups tested were Jews, Yankees (old New England families), Irish and Italians. They found consistent differences among groups for pain threshold and pain tolerance. The Yankees had the highest mean scores for pain tolerance, Jews were second highest then Irish with Italians lowest. The authors reported that Yankees tended to have a matter-of-fact attitude toward pain while Italians showed a present-time-orientation in respect to pain and thus focused on the immediacy of the pain. The Jewish housewives were future-oriented and were not dismayed by the experimental pain and thus tended to resemble Yankees and Irish groups. The Irish were undemonstrative to pain.

Zborowski (1952) prior to Sternbach and Tursky described some of the cultural aspects contributing to pain differences in Italian, Irish, Jews and old Americans (Ss not identifying with any foreign groups) male patients. Results were collected through interviews of 103 respondents, including 87 hospital patients in pain and 16 healthy Ss. Sub-samples consisted of 26 Old Americans, 24 Italians, 31 Jews, 11 Irish and 11 others. Results suggested that Old Americans were matter-of-fact, future-oriented and tried to avoid pity. Jews expressed a concern for the implications of pain and were pessimistic. Italians expressed a desire for pain relief. The Irish inhibited expression of suffering.

Zborowski (1952) also suggested that in analyzing individual differences in pain experiences of other cultures that it is useful to distinguish between three types of pain. These types are self-inflicted, other-inflicted and spontaneous pain. Self-inflicted pain is defined as deliberately self-inflicted. It is experienced as a result of injuries performed voluntarily upon oneself, self-mutilation. By other-inflicted pain is meant pain inflicted upon the individual in the process of culturally accepted and expected activities, regardless of whether approved or disapproved such as sports, fights or war. Spontaneous pain usually denotes the pain sensation which results from disease or injury. This term also covers pain of a psychogenic nature.

Personality Factors Associated

With Pain Tolerance

Techniques investigating personality variables associated with pain tolerance have utilized a variety of measures and comparisons. Chapman and Jones (1944) used heat radiation with 200 normal Ss and found that the average male had slightly higher pain perception and pain reaction thresholds than the average female, with the differences not being significant. Kennard (1952) used electrical stimulation and found the pain perception threshold higher in males in both patient and control groups. Hall and Stride (1954) observed higher heat-pain reaction thresholds

in males among psychiatric hospital admissions. Stengel, Oldham and Ehrenberg (1955) used physical pain stimuli such as pricking, pressure and probing. They reported a "small" tendency for men to react more than women.

Petrovich (1959) developed the Pain Apperception Test to measure sex differences in pain reactions. Intensity and duration judgements of 17 pictures of the Pain Apperception Test were obtained from 50 male and 50 female hospital personnel. The results indicated that females generally saw more pain for both intensity and duration than males.

Petrie (1960) in an attempt to state the relationship between personality and pain tolerance defined two specific groups: "Reducers" and "Augmenters". Reducers were defined as those who reduce the intensity of stimulation in day-to-day life. Augmenters were described as those whose incoming perceptions were least diminished by previous perceptions. Petrie (1967) found that Reducers had the greatest tolerance for pain because of their apparent tendency to reduce the intensity of the pain stimulus.

Vando (1970) attempted to identify a variable associated with pain tolerance. He theorized that individuals high on pain tolerance would be characterized by the tendency to reduce all sensory input. These individuals would consequently be stimulus hungry and tend to seek high levels of stimulation. Low pain tolerance people would tend to augment all sensory input and would be relatively over-

stimulated. They would tend to avoid high levels of stimulation and seek out low ones. The analysis of the study indicated that there is a personality dimension, a reducing-augmenting dimension, on which people can be identified by their scores on a paper and pencil test constructed by the investigator. Those people identified as augmenters on the test are low on pain tolerance and generally tend to avoid high stimulus situations and seek out low ones.

Lynn and Eysenck (1961) compared Petrie's Reducers with Eysenck's extraverts and the Augmenters with Eysenck's introverts. According to Eysenck's theory (1957), extraverts should be able to tolerate pain better than introverts. Petrie (1960) appeared to have supported this assumption and their results have been confirmed by Lynn and Eysenck (1961) who found pain tolerance to be negatively correlated with neuroticism.

There appears to be a controversy concerning the Lynn and Eysenck (1961) finding. Martin and Inglis (1965) were unable to obtain significant correlations between pain tolerance and extraversion in narcotic addicts. This discrepancy may be due to differences in samples. Martin and Inglis used female drug addicts while Lynn and Eysenck used normal female university students. A second reason may be due to different methods used in each study to determine pain tolerance. Lynn and Eysenck used the radiant heat method while Martin and Inglis used the cold pressor method.

Davidson and McDougall (1969) using both methods in the

the same study replicated the Lynn-Eysenck (1961) and Martin and Inglis (1965) study. Their results supported Martin and Inglis. Introverted Ss were more variable in their performance than extraverts and samples of selected introverts could be found with low pain tolerance scores.

Summary and Hypotheses

The review of the literature has shown the following:

1. There are documentations of Indian pain tolerance for a variety of tribes.
2. Only one study, Meehan, Stoll and Hardy (1954), has considered Indian pain tolerance. The results of this study have been questioned due to poor research procedures.
3. There is a lack of scientific research concerning Indian pain tolerance. Consequently, a study in this area would represent an exploratory effort.
4. General variables such as religion, instructional mental set and investigator's ethnic background effect individual pain tolerance.
5. Ethnic studies indicate differences in pain tolerance for Negroes, Jews, Italians, Irish, Americans of North European Ancestry, Old New England Americans and Old Americans (Americans not identified with a foreign group). Consequently, selection of a control sample would necessarily consider these differences.
6. Literature concerning sex differences and pain tolerance is conflicting. Early psycho-physiological studies

indicate greater pain tolerance for men. Petrovich's Apperception Test indicates greater pain perception for women.

7. Research concerning personality and pain tolerance has tended to identify two personality types after Petrie (1967), Reducers with high pain tolerance and Augmenters with low pain tolerance. Eysenck's introversion and extraversion variables have been related to pain tolerance. Literature in this area is still in the exploratory stage.

8. Zborowski (1952) has suggested three types of pain as a useful distinction concerning pain in other cultures. These three types of pain are self-inflicted, other-inflicted and spontaneous pain.

The study will investigate the following exploratory null hypotheses:

(a) Indians will not differ from non-Indians in their choices of imagined pain tolerance levels for other-inflicted, self-inflicted, spontaneous and total pain tolerance on a measure of pain tolerance intensity.

(b) Indians will not differ from non-Indians in their choices of imagined endurance time for other-inflicted, self-inflicted, spontaneous and total pain endurance on a measure of pain endurance time.

(c) High and low pain tolerance scoring male Indians and male non-Indians will not differ on psychological tests measuring denial, isolation, projection, regression, turning-against-self, expressed-wanted significance,

expressed-wanted competence and expressed-wanted loveability.

(d) High and low pain tolerance scoring female Indians and female non-Indians will not differ on psychological tests measuring denial, isolation, projection, regression, turning-against-self, expressed-wanted significance, expressed-wanted competence and expressed-wanted loveability.

CHAPTER III

SUBJECTS

The Ss for the present study consisted of 40 Indians and a control group of 40 non-Indian Caucasians. The Indian sample contained 20 male and 20 female undergraduate volunteers recruited at Bacone College. The control group of 20 males and 20 females consisted of undergraduate volunteers enrolled in an Introduction to Psychology class at Oklahoma State University.

Since samples had been drawn from two Oklahoma schools, intelligence data were treated by the extended Median Test for independent samples to test whether the samples had been drawn from the same or different intellectual populations. The null hypothesis was retained suggesting that the samples had possibly been drawn from the same intellectual population. The obtained chi-square value at the .05 level of significance was 4.10. For rejection a chi-square value of 7.82 was required at the .05 level.

The degree of Indian blood and the degree that Ss identified with their Indianness was established by a questionnaire. Only Indians of one-half or more degree Indian blood were included in the sample. Thirty-three of the Indians were full-bloods, four were three-fourths and three were

one-half degree Indian blood. Table I lists the tribes and degree of Indian blood represented in the sample.

TABLE I
INDIAN SAMPLE

Tribe	Degree of Indian Blood			Sex	
	1/2	3/4	4/4	Men	Women
Caddo-Pawnee			1	1	
Cherokee			4	3	1
Cherokee-Creek			3	2	1
Cheyenne		1	1	1	1
Choctaw			2	1	1
Comanche-Kiowa			3	1	2
Creek			7	3	4
Creek-Seminole			3	1	2
Kiowa	2	2	3	4	3
Omaha			1		1
Otoe-Missouri		1		1	
Pawnee	1		2	2	1
Pawnee-Iowa			1		1
Pawnee-Osage			1		1
Seminole			1		1
Total	3	4	33	20	20

An "Indianness" score was established by check list. Those Indians checking 6 out of 14 questions were included in the sample. This questionnaire included such questions as: Do you speak the tribal language? Have you used the services of the Bureau of Indian Affairs? Only those who identified themselves as Indian, Protestant or member of the Native American Church, Oklahoma residents and members of a

tribe that has documented evidence of pain tolerance were included.

The control sample was also identified by questionnaire. Ss were selected who considered themselves as Americans, Oklahoma residents, did not have parents or grandparents from another country or speak another language besides English in the home. Controls were Caucasian, Protestant and predominately American identified rather than associated with a specific or mixed ethnic group.

The combined sample of 80 Ss obtained mean statistics as follows: Age 20.30, IQ 112.84, school year 1.74, family size 5.83 and average family income \$15,430.55. Comparative mean statistics for sub-samples are reported in Table II.

TABLE II
DESCRIPTIVE SAMPLE DATA

SAMPLE	N	AGE	IQ	SCHOOL YEAR	FAMILY SIZE	AVERAGE FAMILY INCOME
Indian Men	20	22.50	113.75	1.65	1.10	9,788.88
Indian Women	20	19.70	109.90	1.70	7.45	7,733.33
Non-Indian Men	20	20.40	117.95	2.25	4.65	27,600.00
Non-Indian Women	20	18.60	109.75	1.35	4.60	16,600.00

Materials

A paper and pencil test, the Imagined Pain Tolerance Test (IPTT), was designed to measure Ss maximum conception of their own pain tolerance and pain endurance time. The test consisted of 15 questions which measured other-inflicted pain (OIPT), self-inflicted pain (SIPT) and spontaneous pain (SPPT) and a total score (TIPT). The five questions for each category were arranged and presented in a random order. Ss marked responses on an intensity scale that ranged from 0 to 100. Responses toward the zero end of the scale represented very little pain tolerance for that item. Responses in the middle of the scale represented moderate tolerance and responses marked toward the upper end of the scale indicated that the subject believed that he could endure large amounts of the item. Endurance time was determined by Ss marking the number of hours, minutes and seconds they would be willing to endure the agreed upon pain level. The test yielded eight possible scores: self-inflicted pain tolerance, other-inflicted pain tolerance, spontaneous pain tolerance, total pain tolerance, self-inflicted pain endurance time, other-inflicted pain endurance time, spontaneous pain endurance time and total pain endurance time.

Test-re-test reliability was established after a three month delay after the first testing. Ten men and women were randomly selected and mailed the IPTT Test. Four men and six women returned protocols. Test-re-test reliability coefficients for self-inflicted (SIPT), other-inflicted (OIPT),

spontaneous (SPPT) and total pain (TIPT) tolerance are presented in Table III.

TABLE III
TEST-RE-TEST RELIABILITY IPTT

PAIN TOLERANCE	MEN	WOMEN
SIPT	.88	.81
OIPT	.93	.91
SPPT	.99	.86
TIPT	.94	.89

The FIRO-F and COPE tests were used to investigate hypotheses concerning personality. The FIRO-F (Schutz, 1967) or Fundamental Interpersonal Relations Orientation-Feelings was developed using the Guttman technique for cumulative scale analysis (Guttman, 1950). The test consists of six Guttman scales of nine items each. These six scales include expressed and wanted aspects of significance, competence and loveability. Table IV presents the facet design for the FIRO-F (Schutz, 1967).

TABLE IV
FACET DESIGN FOR THE FIRO-F

	EXPRESSED FEELING	WANTED FEELING
Inclusion (significance)	e ^I Other people are important to me. I think people are significant and I am interested in them.	w ^I I want others to have a high regard for me as a person. I want them to consider me important and interesting.
	reproducibility: .887	reproducibility: .895
Control (competence)	e ^C I see other people as competent and capable. I trust and rely on their abilities.	w ^C I want other people to feel that I'm a competent person and respect my capabilities.
	reproducibility: .885	reproducibility: .907
Affection (loveability)	e ^A I feel people are likeable and loveable. When you know them well they are basically good and warm.	w ^A I want people to feel that I am a likeable and loveable person who is very warm and affectionate.
	reproducibility: .911	reproducibility: .897

The FIRO-F has been intercorrelated with a variety of variables. Schutz (1957) reports that the test is independent of age, sex, marital status, ethnic group, political leanings, religious preference, amount of education, income, father's education, mobility, birth order or size of family. He also indicates that the test is independent of intelligence, attitudes toward childhood relationships and preferred defense mechanisms.

Internal consistency of the FIRO-F, or reproducibility, indicates the degree that the items measure the same thing. The Guttman criteria for reproducibility is that 90 per cent of all responses are predictable from knowledge of scale scores (Schutz, 1967). Reproducibility scores, or the coefficients of internal consistency for the FIRO-F, are presented in Table IV (Schutz, 1967).

The COPE (Coping Operations Preference Enquiry) test was developed to measure the relative preference of a respondent for denial, isolation, projection, regression and turning-against-the-self (Schutz, 1967). A hypothetical situation is presented in which the subject must respond with defense preferences. Presumably the hypothetical situation presents an anxiety situation with which the subject must cope. An example of an anxiety problem and the structure of the test is as follows (Schutz, 1967):

Establishing that there
is a problem

"Yesterday something
happened to Alex which
seemed to make him feel
disturbed . . . "

Statement of usual
actual behavior

" . . . Alex usually
does everything toge-
ther with people and
when others do things
he tends to join
them . . . "

Statement of discre-
pancy of usual behav-
ior from desired (ideal)

" . . . Yesterday a
group of friends came
over and asked him to
go out with them. Alex
seemed not to want to
go but went anyway
. . . "

Expression of dissatisfaction with discrepancy

" . . . He appeared to realize that he might enjoy himself more if he didn't always join people but spent more time by himself . . . "

Presentation of the problem to the respondent

" . . . He still appears to be concerned about this. How would you guess he really feels now?"

Alternatives representing the five defenses are then presented to the respondent who rank orders the defenses from most likely (1) to least likely (5). The score is the sum of ranks on all five defense items measuring the same defense (Schutz, 1967). The COPE has been standardized on 5847 subjects representing teachers, school administrators and parents. Tables representing means and standard deviation of COPE raw scores, decile conversions and intercorrelations among COPE scales are presented in Schutz, 1967.

The Picture Identification Test (Isham, 1957) was used to establish the intelligence of Ss. The test consisted of 12 pictures which Ss identified as accurately as possible. Answers were scored for 0, 1, 2 or 3 points. Testing time was usually 3 to 4 minutes with no specific time limit. Isham (1957) reported retest reliability as 1.0 with 50 Ss and correlation of .9 with a preliminary series of 25 subtests on the Wechsler-Bellevue Intelligence Scale.

Procedure

Indian Ss were group tested on two successive days. Men and women were tested in the same session which lasted

approximately two hours. The first session included 18 individuals while the second session included 22 individuals. Indian Ss were scheduled for testing by counseling services at Bacone College. Ss had already been identified as one-half or more Indian, as Oklahoma residents and Protestants. Ss were tested in a classroom located on the lower level of the school library. The room was quiet with appropriate lighting. Indian Ss were paid \$2.00 after completing the session.

Controls at Oklahoma State were group tested during their regular class meeting period. There were 75 students in the class. Ss were asked to raise their hands if they considered themselves Protestant, Oklahoma residents and did not have parents or grandparents born outside the United States. These students were given test packages marked with a star to identify them as controls. The other students were given unmarked test kits and although they took the test were not later included in the study. Ss were told that they would receive extra credit for taking the tests in the form of a plus mark which could be used to raise a grade in borderline cases. The classroom contained assets conducive to testing such as being quiet and having adequate lighting.

Ss were introduced to the experiment by telling them that they were being tested to determine their reactions to painful situations. Test kits containing a questionnaire, Picture Identification Test, Pain Tolerance Test, FIRO-F

and COPE were passed out to Ss. They were asked to complete the questionnaire and to identify the pictures as accurately as they could.

The directions to the remaining tests were read to the Ss preceding each administration.

- (1) Imagined Pain Tolerance Test: For each of the following 15 painful situations circle the maximum level of pain you feel you would be able to tolerate on the intensity scale. For each of the 15 situations also circle the length of time on the time scale you feel you could endure this maximum pain level.
- (2) FIRO-F directions: This questionnaire is aimed at exploring the typical ways you feel about people. There are, of course, no right or wrong answers; each person has his own ideas. Sometimes people tend to answer questions like these in terms of what they think a person should be like. This is not what is wanted here. We would like to know how you actually feel. Some items may seem similar to others. However, each item is different so please answer each one without regard to the others (Schutz, 1957).
- (3) COPE directions: The following questionnaire is designed to see how you would guess certain kinds of people might feel in various situations. Several situations are described here by a person who has observed an incident. You are to guess which of five alternatives best describes the way the person in the story feels. In the space beside each choice, rank your guesses: Place a 1 beside that alternative you feel most likely, a 2 beside the next most likely, down to 5 for the alternative least likely to apply in the situation. (If you are a female, assume all of the people described are women instead of men.) (Schutz, 1962)

Dependent Variables

The hypotheses considered eight dependent variables for pain tolerance and endurance time while the hypotheses

concerning personality considered 11 variables. The dependent variables for pain tolerance included a self-inflicted pain tolerance score, other-inflicted pain tolerance score and a spontaneous pain tolerance score. Each of these scores, derived from the Imagined Pain Tolerance Test, consisted of the total points for the five items measuring self-inflicted, other-inflicted and spontaneous pain. Ss responded to the items on an intensity scale that ranged from 0 to 100. The higher the score for each type of pain tolerance the more pain the subject was willing to tolerate in each of the three categories. A total pain tolerance score consisted of the sum of the self-inflicted, other-inflicted and spontaneous pain scores. It represented a total imagined pain tolerance score for physical pain.

Dependent variables for endurance time included a self-inflicted pain endurance time score, other-inflicted pain endurance time score and a spontaneous pain endurance time score. Ss indicated hours, minutes and seconds, on appropriate blanks of the Imagined Pain Tolerance Test, that they would tolerate an item. These scores represented the length of time, converted and reported in seconds, that the subject was willing to endure the maximum pain tolerance level for the three categories. A total pain endurance time consisted of the sum of self-inflicted endurance time, other-inflicted endurance time and spontaneous endurance time. The higher this score the greater the subject's total imagined pain endurance time.

The COPE measured five dependent personality variables. These included scores for denial, isolation, projection, regression and turning-against-the-self. Each of the five variables was measured on a scale from 0 to 9. The higher the score the greater the subject's tendency to cope with situations by employing that strategy.

Six dependent personality variables were measured by the FIRO-F: expressed significance, wanted significance, expressed competence, wanted competence, expressed loveability and wanted loveability. Each of these scores were measured on a scale from 0 to 9 and reflected the degree that the individual exhibited wanted or expressed preference for that item.

Experimental Design

The present study utilized a 2 x 2 factorial analysis of variance to examine data concerning imagined pain tolerance and endurance time across the levels of ethnicity (Indian-non-Indian) and sex (male-female). The mean values of the dependent variables for hypotheses one and two were inserted into the matrix and examined for row and column effects and interaction. There were blocks representing male Indian, male non-Indian, female Indian and female non-Indian. Each of the blocks contained an equal number of Ss (20).

Hypotheses concerning coping strategies and feelings were also tested using the 2 x 2 factorial design. The

probability of unequal cell n existed in this situation as a result of experimentation. Ss were first divided into high and low imagined pain tolerance scorers. The mean pain tolerance score for males and females was computed. Those Ss falling above their sex mean were considered high scorers. Those Ss falling below their sex mean were considered low scorers. Consequently, the 2 x 2 table considered the levels of ethnicity and imagined pain tolerance levels. Men and women were tested in separate tables. The male matrix contained blocks representing high and low Indian imagined pain tolerance scorers and high and low non-Indian pain tolerance scorers. The female matrix contained blocks representing the equivalent of the above.

Two possibilities existed in examining hypotheses concerning coping strategies and feelings. Cell n would, due to experimentation, result in unequal numbers and consequently be disproportional from cell to cell or cells would result in numbers that were proportional. If the latter situation existed, the data would be treated with the standard analysis of variance procedure. If the cell n's were disproportional and unequal, a weighted means analysis of variance would be used to examine data. This procedure essentially involved a correction of cell means by weighting the means by sample size. The analysis of variance procedure then involved inserting dependent mean values for coping strategies and feelings into the matrix and testing for effects across the levels of ethnicity (Indian-non-Indian)

and imagined pain tolerance (high-low) plus interaction between levels. All hypotheses were tested at the .05 level of significance.

CHAPTER IV

RESULTS

All hypotheses were examined by a 2 x 2 analysis of variance. Results were analyzed in terms of the dependent variables for pain tolerance, endurance time and personality factors for males and females across levels of sex and ethnicity.

Pain Tolerance

Four dependent variables, self-inflicted pain tolerance (SIPT), other-inflicted pain tolerance (OIPT), spontaneous pain tolerance (SPPT) and total pain tolerance (TIPT) were analyzed in a 2 x 2 factorial analysis of variance for each of the four variables. In each case the first factor was ethnicity, with two levels, Indian and non-Indian. The second factor was sex, with two levels, male and female. Each cell in the treatment matrix contained 20 observations. The summary of each analysis of variance and treatment means is presented in Tables V, VI, VII, VIII.

TABLE V
SUMMARY ANOVA FOR SIPT

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	4684.860	1	4684.860	.758
Sex	114140.941	1	114140.941	18.477*
S X E	6584.820	1	6584.820	1.065
Error	469482.298	76	6177.399	
TOTAL	594892.920	79	7530.290	

* $p < .05$

TREATMENT MEANS SIPT

Indian Males 301.85; Indian Females 244.45; Non-Indian Males 335.30; Non-Indian Females 241.61

TABLE VI
SUMMARY ANOVA FOR OIPT

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	13703.613	1	13703.613	1.482
Sex	117934.512	1	117934.512	12.740*
S X E	11931.613	1	11931.613	1.291
Error	702316.150	76	9241.002	
TOTAL	845684.888	79	10704.872	

* $p < .05$

TREATMENT MEANS OIPT

Indian Males 267.90; Indian Females 215.60; Non-Indian Males 318.50; Non-Indian Females 217.35

TABLE VII
SUMMARY ANOVA FOR SPPT

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	37454.512	1	37454.512	5.750*
Sex	21353.113	1	21353.113	3.278
S X E	4219.512	1	4219.512	.647
Error	495048.250	76	6513.793	
TOTAL	558075.387	79	7064.245	

* $p < .05$

TREATMENT MEANS SPPT

Indian Males 293.65; Indian Females 275.50; Non-Indian Males 351.45; Non-Indian Females 304.25

TABLE VIII
SUMMARY ANOVA FOR TIPT

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	128817.30	1	128817.301	2.550
Sex	717788.16	1	717788.161	14.210*
S X E	64059.88	1	64059.880	1.268
Error	3838771.46	76	50510.151	
TOTAL	4749436.80	79	60119.453	

* $p < .05$

TREATMENT MEANS TIPT

Indian Males 868.40; Indian Females 735.55; Non-Indian Males 1005.25; Non-Indian Females 759.21

The results of the analyses indicated that the F for sex was significant beyond the .05 level for self-inflicted pain tolerance (SIPT), other-inflicted pain tolerance (OIPT) and total imagined pain tolerance (TIPT). Treatment means for males were statistically greater than female treatment means suggesting that males imagined that they could tolerate a higher level of pain for SIPT, OIPT and TIPT. The analysis of variance for spontaneous pain tolerance (SPPT) indicated a significant F beyond the .05 level for ethnicity. Non-Indians believed that they could tolerate spontaneous pain (SPPT) at higher levels than Indians. Sex and interaction resulted in non-significant F ratios for SPPT while ethnicity and interaction were non-significant for SIPT, OIPT and TIPT which indicates that the null hypothesis of no differences between these treatment means should be retained.

Endurance Time

Four dependent variables, self-inflicted endurance time (SIET), other-inflicted endurance time (OIET), spontaneous endurance time (SPET) and total imagined endurance time (TIET) were analyzed in a 2 x 2 factorial analysis of variance across the levels of ethnicity and sex. The treatment matrix contained two levels of ethnicity, Indian and non-Indian and two levels for sex, male and female. There were 20 observations per cell. The summary of each analysis of variance and treatment means is presented in Tables IX, X, XI and XII.

TABLE IX
SUMMARY ANOVA FOR SIET

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	219479626	1	219479626	.18
Sex	5344635304	1	5344635304	4.42*
S X E	245413174	1	245413174	.20
Error	91847678616	76	1208522087	
TOTAL	97657206720	79	1236167174	

* $p < .05$

TREATMENT MEANS SIET

Indian Males 21021.925; Indian Females 8177.65; Non-Indian
Males 21212.175; Non-Indian Females 1362.000

TABLE X
SUMMARY ANOVA FOR OIET

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	825053620	1	825053620	5.23*
Sex	781618794	1	781618794	4.95*
S X E	73768326	1	73768326	.46
Error	11989250226	76	157753292	
TOTAL	13669690964	79	173034063	

* $p < .05$

TREATMENT MEANS OIET

Indian Males 14344.65; Indian Females 6172.65; Non-Indian
Males 6001.30; Non-Indian Females 1670.35

TABLE XI
SUMMARY ANOVA FOR SPET

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	10806338	1	10806338	.001
Sex	3346654158	1	3346654158	.467
S X E	18862161	1	18862161	.002
Error	543194004605	76	7147289534	
TOTAL	546570326262	79	6918611725	

TREATMENT MEANS SPET

Indian Males 41408.70; Indian Females 53373.275; Non-Indian Males 39702.50; Non-Indian Females 53609.35

TABLE XII
SUMMARY ANOVA FOR TIET

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	2202475473	1	2202475473	.212
Sex	1877568332	1	1877568332	.181
S X E	8061643	1	8061643	.0007
Error	787007695067	76	10355364409	
TOTAL	791095800515	79	10013870893	

TREATMENT MEANS TIET

Indian Males 41408.70; Indian Females 53373.275; Non-Indian Males 41408.70; Non-Indian Females 53609.35

The null hypothesis of no differences between treatment means was rejected for self-inflicted endurance time (SIET) and other-inflicted endurance time (OIET). The F for sex was significant beyond the .05 level for SIET and OIET. Males scored higher on self-inflicted pain (SIET) than females. Treatment means for OIET indicated that male Indians believed they could endure other-inflicted pain better than female Indians believed they could endure other-inflicted pain. White males also believed that they could endure other-inflicted pain better than white females believed they could endure other-inflicted pain. Ethnicity resulted in a significant F ($p < .05$) for other-inflicted endurance time (OIET). This finding supported the hypothesis that Indians would believe they could endure other-inflicted pain for longer periods of time than non-Indians. No significant F ratios resulted for ethnicity, sex or interaction for SPET or TIET. The null hypotheses of no differences between treatment means for column, row and interaction effects for spontaneous endurance time and total imagined endurance time were retained.

Personality Factors For Males

Eleven dependent personality variables were analyzed in a 2 x 2 analysis of variance. These variables were expressed-wanted significance, expressed-wanted competence, expressed-wanted loveability, denial, isolation, projection, regression and turning-against-the-self. In each of the 11

analyses of variance the first factor was ethnicity at two levels, male Indian and male non-Indian. The second factor was pain tolerance with cells for high and low scorers. Cells in the treatment matrix were unequal, consequently, a weighted analysis of variance was computed in each case. There were cells containing 11 low and 9 high Indian pain tolerance scorers and 7 low and 13 high non-Indian pain tolerance scorers. Tables XIII and XIV indicate the analysis of variance and treatment means for expressed significance and regression.

TABLE XIII

WEIGHTED ANOVA FOR MALE EXPRESSED SIGNIFICANCE

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	12.1000	1	12.1000	2.2869
PT Level	34.9455	1	34.9455	6.6048*
PT X E	5.1188	1	5.1188	.9674
Error	190.4733	36	5.2909	
TOTAL	232.4000	39	5.9589	

* $p < .05$

TREATMENT MEANS FOR MALE EXPRESSED SIGNIFICANCE

High Indian 3.889; Low Indian 2.545; High Non-Indian 5.000;
Low Non-Indian 2.857

TABLE XIV
WEIGHTED ANOVA FOR MALE REGRESSION

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	4.2250	1	4.2250	.9043
PT Level	51.3639	1	51.3639	10.9940*
PT X E	3.1823	1	3.1823	.6810
Error	168.2038	36	4.6723	
TOTAL	226.9750	39	5.8199	

* $p < .05$

TREATMENT MEANS FOR MALE REGRESSION

High Indian 2.667; Low Indian 5.727; High Non-Indian 3.231;
Low Non-Indian 4.571

Results of the weighted analysis of variance showed a significant F ratio ($p < .05$) for high-low pain tolerance scorers for expressed significance and regression. Treatment means of high pain tolerance scorers were significantly greater than low scorers for expressed significance. Apparently, high pain tolerance scorers felt that other people were important to them, felt that other people were significant and interesting. Low pain tolerance scorers obtained larger mean values for regression than high scorers. Low pain tolerance scorers seemed to cope with anxiety provoking situations to a greater extent by resorting to regression than did high scorers. No other significant F ratios resulted for the remaining nine personality variables. These non-significant factors are presented in Appendix C.

Personality Factors For Females

The same 11 dependent personality variables tested by a 2 x 2 factorial analysis of variance for men were tested in a like manner for women. The treatment matrix consisted of ethnicity at two levels, female Indian and female non-Indian and pain tolerance at high and low scoring levels. There were ten observations per cell and a standard factorial analysis of variance was conducted in each case. Tables XV, XVI, XVII, XVIII and XIX present the analysis of variance and treatment means for wanted significance, wanted competence, wanted loveability, expressed loveability and projection.

TABLE XV
SUMMARY ANOVA FOR FEMALE WANTED SIGNIFICANCE

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	81.225	1	81.225	32.2449*
PT Level	.225	1	.225	.0893
PT X E	.025	1	.025	.0099
Error	90.500	36	2.514	
TOTAL	171.975	39	4.409	

* $p < .05$

TREATMENT MEANS FEMALE WANTED SIGNIFICANCE

High Indian 4.20; Low Indian 4.40; High Non-Indian 7.10;
Low Non-Indian 7.20

TABLE XVI
SUMMARY ANOVA FOR FEMALE WANTED COMPETENCE

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	25.600	1	25.600	5.9149*
PT Level	.100	1	.100	.0231
PT X E	6.400	1	6.400	1.4787
Error	155.800	36	4.328	
TOTAL	187.900	39	4.818	

* $p < .05$

TREATMENT MEANS FEMALE WANTED COMPETENCE

High Indian 3.70; Low Indian 4.60; High Non-Indian 6.10;
Low Non-Indian 5.40

TABLE XVII
SUMMARY ANOVA FOR FEMALE WANTED LOVEABILITY

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	57.600	1	57.600	17.3076*
PT Level	3.600	1	3.600	1.0817
PT X E	.100	1	.100	.0300
Error	119.800	36	3.2278	
TOTAL	181.100	39	4.6436	

* $p < .05$

TREATMENT MEANS FEMALE WANTED LOVEABILITY

High Indian 4.20; Low Indian 4.70; High Non-Indian 6.50;
Low Non-Indian 7.20

Ethnicity resulted in a significant F ($p < .05$) for wanted significance, wanted competence and wanted loveability. Treatment means for these variables were greater for non-Indian females than for Indians. High and low pain tolerance scoring non-Indian women apparently wanted others to regard them highly and view them as important and interesting. They also wanted others to feel that they were competent, capable, likeable, loveable and as a person who was warm and affectionate. Pain tolerance level and interaction resulted in non-significant F ratios, consequently, the null hypotheses of no differences for pain tolerance level and interaction were retained.

TABLE XVIII

SUMMARY ANOVA FOR FEMALE EXPRESSED LOVEABILITY

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	.225	1	.225	.0659
PT Level	30.625	1	30.625	8.9704*
PT X E	2.025	1	2.025	.5931
Error	122.900	36	3.414	
TOTAL	155.775	39	3.994	

* $p < .05$

TREATMENT MEANS FEMALE EXPRESSED LOVEABILITY

High Indian 4.60; Low Indian 2.40; High Non-Indian 4.00;
Low Non-Indian 2.70

Pain tolerance level was significant beyond the .05 level for expressed loveability. Treatment means for high pain tolerance scorers were statistically larger than low scorers. High pain tolerance scorers tended to feel people were likeable and loveable; and when they got to know people well, they found them basically good and warm. Null hypotheses for ethnicity and interaction were retained and did not result in an obtained F at or beyond the .05 level.

TABLE XIX
SUMMARY ANOVA FOR FEMALE PROJECTION

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	5.625	1	5.625	.9076
PT Level	5.625	1	5.625	.9076
PT X E	38.025	1	38.025	6.1360*
Error	223.100	36	6.197	
TOTAL	272.375	39	6.197	

* $p < .05$

TREATMENT MEANS FEMALE PROJECTION

High Indian 4.90; Low Indian 6.10; High Non-Indian 7.60;
Low Non-Indian 4.90

Treatment of personality variable, projection, by a 2 x 2 factorial analysis of variance resulted in a significant F ratio ($p < .05$) for interaction. High pain tolerance scoring Indians relied less on projection while low pain tolerance scoring Indians tended to utilize projection in anxiety situations. Conversely, low pain tolerance scoring non-Indians relied less on projection while high pain tolerance scorers tended to defend against anxiety with projection. Treatments for ethnicity and pain tolerance level on the projection variable resulted in a non-significant F ratio. Therefore, the null hypotheses that mean one equals mean two for population row means and mean one equals mean two for population column means for ethnicity and pain tolerance level were retained.

The remaining six dependent variables: expressed significance, expressed competence, denial, isolation, regression and turning-against-the-self resulted in non-significant F ratios. These non-significant variables are presented in Appendix C.

CHAPTER V

DISCUSSION

Results concerning hypotheses investigating pain tolerance indicated that Indians did not imagine themselves as being able to tolerate larger amounts of pain than non-Indians. Their scores for self-inflicted, other-inflicted, spontaneous and total imagined pain tolerance were non-significant. Controls differentiated significantly at the .05 level from Indians for spontaneous pain. Non-Indians believed that they could tolerate higher levels of pain resulting from spontaneous sources such as disease or injury. Differences between females and males indicated that men believed that they could tolerate higher levels of pain for self-inflicted, other-inflicted and for total pain tolerance ($p < .05$) than women. Men imagined themselves capable of tolerating high levels of pain that was deliberately inflicted upon the self such as self-mutilation, and pain inflicted by others whether culturally approved or not.

Results supported the hypothesis that Indians would consider themselves capable of enduring other-inflicted pain for longer periods of time than controls ($p < .05$). Although Indians imagined they were unable to tolerate high pain levels, they felt, when the pain source was inflicted

through sports, war, fights or by someone else, that they could endure the pain for longer periods than non-Indians. Sex differences indicated that male Indians believed they could endure other-inflicted pain better than female Indians, and non-Indian males believed that they could endure other-inflicted pain better than white females. Males also believed that they could endure self-inflicted pain for a longer period than females for self-inflicted pain ($p < .05$).

The hypothesis that female high and low pain tolerance scoring Indians would differ in their choice of coping strategy from non-Indian females resulted in significance ($p < .05$). There was significant interaction on the projection variable. High pain tolerance scoring Indians relied less on projection while low pain tolerance scoring Indians tended to utilize projection in anxiety situations. High pain tolerance scoring non-Indians tended to defend against anxiety with projection while low scorers relied less on projection.

Female (both Indian and non-Indian) high pain tolerance scorers differed significantly from low scorers for expressed loveability ($p < .05$). High pain tolerance scorers tended to feel people were likeable and loveable; and when they got to know people well, they found them basically good and warm.

Female controls differed significantly from Indians on wanted significance, wanted competence and wanted loveability ($p < .05$). Both high and low pain tolerance scoring

non-Indian women wanted others to regard them highly and view them as important and interesting. They also wanted others to feel that they were competent, capable, likeable, loveable and a person who was warm and affectionate.

Hypotheses investigating male expressed significance and male regression resulted in significance at the .05 level. Male high pain tolerance scorers felt that other people were important to them and felt that other people were significant and interesting. Low pain tolerance scorers seemed to cope with anxiety by using regression as a defense against anxiety provoking situations to a greater extent than did high scorers. Indian males were not differentiated on personality variables from non-Indians.

Two results from the study clearly indicated Indian differences from non-Indians. First, Indians differed in endurance time for other-inflicted pain. This finding seems to go beyond Morice's (1901) observation of the Dene, an Athabascan tribe. Whereas Morice made the observation that the Dene seemed capable of tolerating brief periods of pain, the finding here, which is experimental, suggests that Indians psychologically believed that they could tolerate other-inflicted pain for longer periods of time.

The personality finding reflecting interaction for projection between high and low pain tolerance scoring Indians and non-Indians has no comparison in the literature and consequently is an original finding.

The fact that Indians did not differ significantly from

non-Indians on the four pain tolerance measures does not necessarily contradict the controversial Meehan, Stoll and Hardy (1954) study. This study investigated pain tolerance in Alaskan Indians, Eskimos and whites using a physiological measure, the radiant heat technique. The current study considered maximum pain tolerance from a purely psychological level. Failure to find evidence of high psychological, imagined or believed levels of pain tolerance in Indians does not mean that under an appropriately controlled physiological experiment that actual levels of pain tolerance might exceed non-Indians.

The findings that men imagine their maximum pain tolerance levels to be greater than women for self-inflicted pain tolerance, other-inflicted pain tolerance and total imagined pain tolerance add a psychological dimension to the psycho-physiological findings of greater pain tolerance for males reported by Chapman and Jones (1944), Kennard (1952), Hall and Stride (1954) and Stengel, Oldham and Ehrenberg (1955). These findings seem somewhat contradictory to Petrovich (1959) who found that women saw more pain for intensity and duration on the Pain Apperception Test.

The relationship of personality to pain tolerance has been extended for sex differences and for high and low pain tolerance scorers. The findings already reported are original and go beyond Petrie's (1967) reducers and augmenters and Eysenck's introversion and extroversion variables.

This study has been a major exploratory effort to investigate Indian pain tolerance. The 2 x 2 design has permitted a variety of comparisons and resulted in several significant findings for pain tolerance, endurance time and personality and coping strategies related to pain tolerance.

Future studies investigating Indian pain tolerance should perhaps consider approaching the subject by comparing Indians on an inter-tribal basis. Such data might help those working with Indians in painful or stress situations to better understand Indian reactive behaviors and would facilitate the clinical psychologist in making clinical inferences.

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APPENDIX A

Your Initials _____

Birthdate _____

Age _____

School Level _____

Major _____

IPTT PROTOCOL

General Directions:

For each of the following fifteen painful situations shade in the number of the maximum level of pain you feel you could tolerate on the intensity scale. For each of the fifteen situations also indicate the length of time you feel you could endure this maximum pain level in seconds, minutes or hours.

EXAMPLE: A heavy elevator door has closed on your foot. As the door continues to close you feel more pain. Indicate on the scale the highest pain level you believe you could tolerate and indicate the number of seconds, minutes, hours or any combination of time that you could endure this maximum pain level.

Intensity scale in increasing units

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Lowest Level

Highest Level

Endurance time: Seconds 3 Minutes 1 Hours 0

SIPT	OIPT	SPPT	TIPT

SIET	OIET	SPET	TIET

IPTT TEST

1. You have put your hand in a vise. You operate the vise with a foot peddle. The more you push on the peddle the more pain you feel. Indicate on the scale the highest pain level you believe you could tolerate and indicate the number of seconds, minutes, hours or any combination of time that you could endure this maximum pain level.

Intensity Scale in increasing units

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Lowest Level

Highest Level

Endurance time: Seconds ___ Minutes ___ Hours ___

2. You have been shot by an escaped criminal. There is no anesthetic and the doctor must dig out the bullet. The more he digs the more pain you feel. Indicate on the scale the highest pain level you believe you could tolerate and indicate the number of seconds, minutes, hours or any combination of time that you could endure this maximum pain level.

Intensity Scale in increasing units

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Lowest Level

Highest Level

Endurance time: Seconds ___ Minutes ___ Hours ___

3. You have an appendix condition. Each time you role onto your side the pain increases. Indicate on the scale the highest pain level you believe you could tolerate and indicate the number of seconds, minutes, hours or any combination of time that you could endure this maximum pain level.

Intensity Scale in increasing units



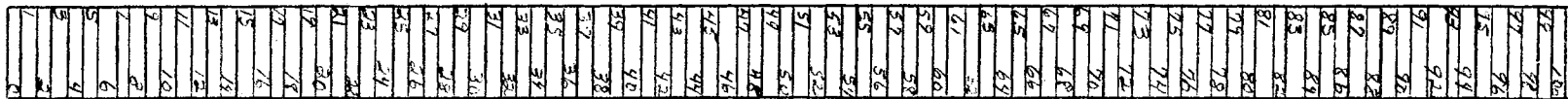
Lowest Level

Highest Level

Endurance time: Seconds ___ Minutes ___ Hours ___

4. You have decided to cut a wart from your hand. The more you cut the greater the pain. Indicate on the scale the highest pain level you believe you could tolerate and indicate the number of seconds, minutes, hours or any combination of time that you could endure this maximum pain level.

Intensity Scale in increasing units



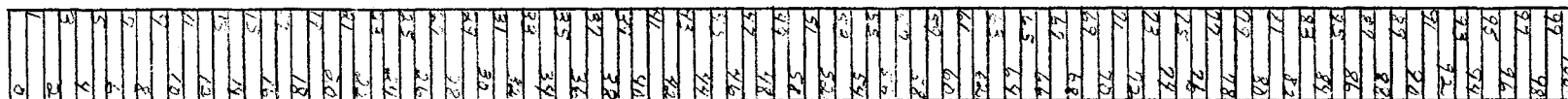
Lowest Level

Highest Level

Endurance time: Seconds ___ Minutes ___ Hours ___

5. You are in medieval times and have been tied to the stretching rack. The tighter the rack is stretched the more pain you feel. Indicate on the scale the highest pain level you believe you could tolerate and indicate the number of seconds, minutes, hours or any combination of time that you could endure this maximum pain level.

Intensity Scale in increasing units



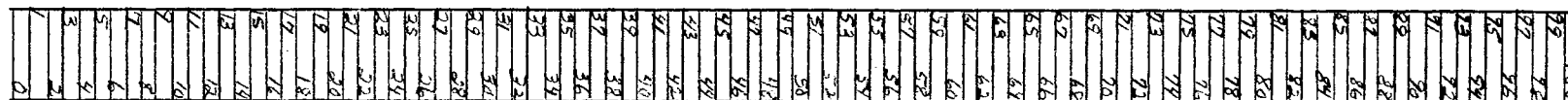
Lowest Level

Highest Level

Endurance time: Seconds ____ Minutes ____ Hours ____

6. You have an abscessed tooth. No dentist is available. With each breath you take the pain increases. Indicate on the scale the highest pain level you believe you could tolerate and indicate the number of seconds, minutes, hours or any combination of time that you could endure this maximum pain level.

Intensity Scale in increasing units



Lowest Level

Highest Level

Endurance time: Seconds ____ Minutes ____ Hours ____

7. To test your own endurance you have placed sunflower seeds on the back of your hand. You light these seeds with a match. The more they burn, the greater the pain. Indicate on the scale the highest pain level you believe you could tolerate and indicate the number of seconds, minutes, hours or any combination of time that you could endure this maximum pain level.

Intensity Scale in increasing units



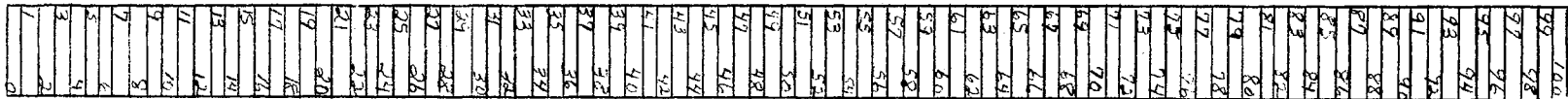
Lowest Level

Highest Level

Endurance time: Seconds ___ Minutes ___ Hours ___

8. You are having a spinal tap at the hospital. There is difficulty getting the long needle into the spinal cord. The more the technician probes, the more pain you feel. Indicate on the scale the highest pain level you believe you could tolerate and indicate the number of seconds, minutes, hours or any combination of time that you could endure this maximum pain level.

Intensity Scale in increasing units



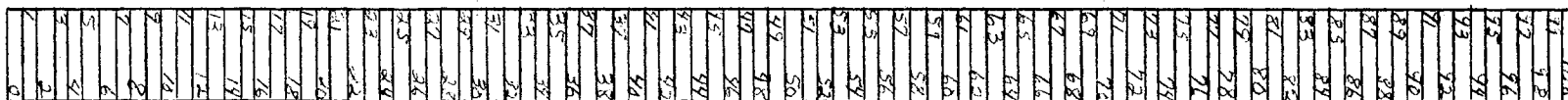
Lowest Level

Highest Level

Endurance time: Seconds ___ Minutes ___ Hours ___

9. You have a pinched nerve and slipped disc in your back. With each step you take the pain increases. Indicate on the scale the highest pain level you believe you could tolerate and indicate the number of seconds, minutes, hours or any combination of time that you could endure this maximum pain level.

Intensity Scale in increasing units



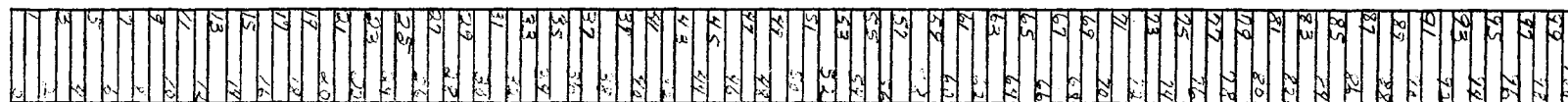
Lowest Level

Highest Level

Endurance time: Seconds ____ Minutes ____ Hours ____

10. You are a Trobrian Islander. You have decided to push a sharp bone through your nose for personal adornment. The more you push the more pain you feel. Indicate on the scale the highest pain level you believe you could tolerate and indicate the number of seconds, minutes, hours or any combination of time that you could endure this maximum pain level.

Intensity Scale in increasing units



Lowest Level

Highest Level

Endurance time: Seconds ____ Minutes ____ Hours ____

11. Bamboo splinters are being forced under your finger nails by your captors. The more they push on the splinters the more pain you feel. Indicate on the scale the highest pain level you believe you could tolerate and indicate the number of seconds, minutes, hours or any combination of time that you could endure this maximum pain level.

Intensity Scale in increasing units

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Lowest Level

Highest Level

Endurance time: Seconds ___ Minutes ___ Hours ___

12. You have a kidney infection that has gone unattended. Each time you lean back in a chair the pain increases. Indicate on the scale the highest pain level you believe you could tolerate and indicate the number of seconds, minutes, hours or any combination of time that you could endure this maximum pain level.

Intensity Scale in increasing units

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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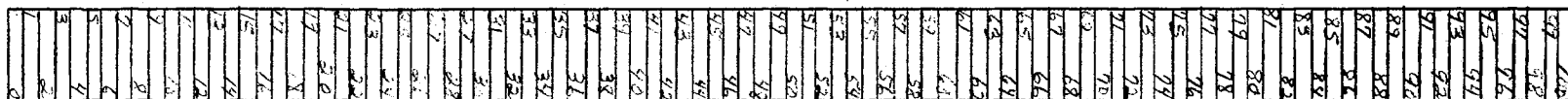
Lowest Level

Highest Level

Endurance time: Seconds ___ Minutes ___ Hours ___

13. In a club initiation you are required to bite your own arm very hard for membership. The harder you bite the more pain you feel. Indicate on the scale the highest pain level you believe you could tolerate and indicate the number of seconds, minutes, hours or any combination of time that you could endure this maximum pain level.

Intensity Scale in increasing units



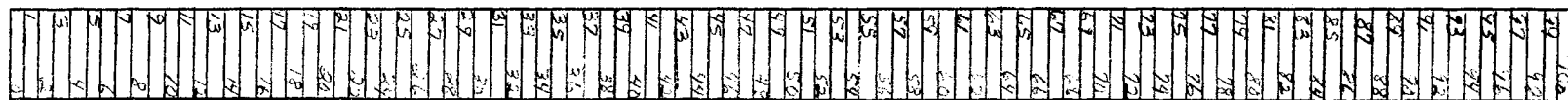
Lowest Level

Highest Level

Endurance time: Seconds ____ Minutes ____ Hours ____

14. A fisherman hooks your arm with a large fishhook. He must cut your flesh to remove it. The more he cuts the more pain you feel. Indicate on the scale the highest pain level you believe you could tolerate and indicate the number of seconds, minutes, hours or any combination of time that you could endure this maximum pain level.

Intensity Scale in increasing units



Lowest Level

Highest Level

Endurance time: Seconds ____ Minutes ____ Hours ____

15. You have an ear infection. Each time you turn your head the pain increases. Indicate on the scale the highest pain level you believe you could tolerate and indicate the number of seconds, minutes, hours or any combination of time that you could endure this maximum pain level.

Intensity Scale in increasing units

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Lowest Level

Highest Level

Endurance time: Seconds ___ Minutes ___ Hours ___

APPENDIX B

FORM I

Directions: Please fill in the following requested information.

Your Initials _____ Check sex: Male ___ Female ___
 Birthdate _____ Age _____
 Year in college _____ Major _____
 Oklahoma resident Yes ___ No ___
 Circle your degree of Indian blood: $\frac{4}{4}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$,
 other _____
 Circle father's degree of Indian blood: $\frac{4}{4}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{4}$,
 $\frac{1}{8}$, other _____
 Circle mother's degree of Indian Blood: $\frac{4}{4}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{4}$,
 $\frac{1}{8}$, other _____
 Father's tribal affiliation _____
 Mother's tribal affiliation _____
 Father's occupation if working _____
 Mother's occupation if working _____
 Estimate yearly family income _____
 Number of individuals (including parents and yourself) in
 your family _____

Check information that applies to your parents:

1. Are either or both parents voting tribal members?
 Yes ___ No ___
2. Do either or both parents speak the tribal language?
 Yes ___ No ___
3. Do either or both parents participate in tribal dances?
 Yes ___ No ___
4. Do either or both parents belong to tribal clubs or
 societies? Yes ___ No ___
5. Do either or both parents maintain some traditional
 tribal customs? Yes ___ No ___
6. Do either or both parents belong to an all Indian church?
 Yes ___ No ___
7. Do either or both parents make traditional tribal crafts?
 Yes ___ No ___
8. Do either or both parents live in now or were raised in
 a predominantly Indian community? Yes ___ No ___
9. Have either or both parents attended an all Indian
 school? Yes ___ No ___
10. Have either or both parents used Bureau of Indian
 Affairs services? Yes ___ No ___

Check information that applies to yourself:

1. Are you a voting tribal member? Yes ___ No ___
2. Do you speak the tribal language? Yes ___ No ___
3. Do you participate in tribal dances, pow-wows, etc?
 Yes ___ No ___
4. Do you belong to any tribal societies or clubs?
 Yes ___ No ___

5. Do you belong to any non-tribal Indian social or athletic clubs? Yes ___ No ___
6. Do you believe that you maintain some traditional tribal customs? Yes ___ No ___
7. Do you feel that you understand other Indians better than non-Indians? Yes ___ No ___
8. Do you belong to an all Indian church? Yes ___ No ___
9. Write your religious preference. _____
10. Do you know how to make costume items or traditional crafts? Yes ___ No ___
11. Do you live in or were you raised in a predominantly Indian community? Yes ___ No ___
12. Have you ever attended an all Indian school?
Yes ___ No ___
13. Have you ever used the services of the Bureau of Indian Affairs? Yes ___ No ___
14. Are you sympathetic with the goals of the American Indian Movement? Yes ___ No ___

FORM CQ

Directions: Please fill in the following information.

Your Initials _____ Check sex: Male ___ Female ___
 Birthdate _____ Age _____
 Year in college _____ Major _____
 Oklahoma resident Yes ___ No ___
 Father's occupation if working _____
 Mother's occupation if working _____
 Estimate yearly family income _____
 Number of individuals (including parents and yourself) in
 your family _____

Check information that applies to your parents:

1. Were your parents or grandparents born in another country? Yes ___ No ___
2. If yes, what country? _____
3. Do your parents speak a language other than English in the home? Yes ___ No ___
4. Do your parents observe customs that would be identified with a specific ethnic group? Yes ___ No ___
5. If yes, write the ethnic group. _____
6. Write the religious preference of your parents. _____

Check information that applies to yourself:

1. Do you consider yourself to be predominantly American, predominantly from one ethnic group or from mixed ethnic groups? American ___ One ethnic group ___ Mixed ethnic groups ___
2. If you checked one ethnic or mixed ethnic groups, write this group or groups here _____
3. Do you consider yourself to practice customs (other than American) that reflect a specific ethnic group? Yes ___ No ___
4. Do you speak a language other than English that you learned at home? Yes ___ No ___
5. Write your religious preference _____
6. Do you consider most of your relatives to be predominantly American rather than from a specific ethnic group? Yes ___ No ___
7. If you have relatives that practice customs from the following ethnic groups, check the group and write the relationship of this relative to you.
 Italian _____ Jewish _____
 Irish _____ Negro _____
 Oriental _____ American Indian _____
 Russian _____ Spanish-American _____
 Other (write in group and relationship) _____

APPENDIX C APPENDIX C APPENDIX C

TABLE XX
WEIGHTED ANOVA FOR MALE WANTED SIGNIFICANCE

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	1.225	1	1.225	.206
PT Level	0.184	1	0.184	.031
PT X E	4.848	1	4.848	.821
Error	212.518	36	5.903	
TOTAL	218.775	39	5.610	

TREATMENT MEANS MALE WANTED SIGNIFICANCE

High Indian 4.44; Low Indian 3.64; High Non-Indian 5.18;
Low Non-Indian 4.14

TABLE XXI
WEIGHTED ANOVA FOR MALE EXPRESSED COMPETENCE

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	2.025	1	2.025	.382
PT Level	0.346	1	0.346	.065
PT X E	0.779	1	0.779	.147
Error	190.625	36	5.295	
TOTAL	193.775	39	4.969	

TREATMENT MEANS MALE EXPRESSED COMPETENCE

High Indian 3.11; Low Indian 3.00; High Non-Indian 2.77;
Low Non-Indian 2.29

TABLE XXII
WEIGHTED ANOVA FOR MALE EXPRESSED LOVEABILITY

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	0.400	1	0.400	.095
PT Level	5.989	1	5.989	1.429
PT X E	7.567	1	7.567	1.802
Error	151.144	36	4.198	
TOTAL	165.100	39	4.233	

TREATMENT MEANS MALE EXPRESSED LOVEABILITY

High Indian 2.77; Low Indian 2.73; High Non-Indian 3.15;
Low Non-Indian 1.43

TABLE XXIII
WEIGHTED ANOVA FOR MALE WANTED LOVEABILITY

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	1.600	1	1.600	.359
PT Level	1.168	1	1.168	.262
PT X E	11.191	1	11.191	2.511
Error	160.442	36	4.457	
TOTAL	174.400	39	4.472	

TREATMENT MEANS MALE WANTED LOVEABILITY

High Indian 3.67; Low Indian 4.45; High Non-Indian 5.00;
Low Non-Indian 3.57

TABLE XXIV
WEIGHTED ANOVA FOR MALE DEPRESSION

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	4.225	1	4.225	.369
PT Level	13.946	1	13.946	1.217
PT X E	8.542	1	8.542	.745
Error	412.662	36	11.463	
TOTAL	439.375	39	11.266	

TREATMENT MEANS MALE DEPRESSION

High Indian 5.22; Low Indian 3.09; High Non-Indian 4.69;
Low Non-Indian 4.71

TABLE XXV
WEIGHTED ANOVA FOR MALE ISOLATION

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	0.625	1	0.625	.092
PT Level	0.467	1	0.467	.069
PT X E	18.539	1	18.539	2.722
Error	245.144	36	6.810	
TOTAL	264.775	39	6.789	

TREATMENT MEANS MALE ISOLATION

High Indian 5.77; Low Indian 4.73; High Non-Indian 4.85;
Low Non-Indian 6.57

TABLE XXVI
WEIGHTED ANOVA FOR MALE PROJECTION

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	5.625	1	5.625	.736
PT Level	2.576	1	2.576	.337
PT X E	11.711	1	11.711	1.533
Error	275.063	36	7.641	
TOTAL	294.975	39	7.563	

TREATMENT MEANS MALE PROJECTION

High Indian 5.44; Low Indian 5.73; High Non-Indian 5.46;
Low Non-Indian 3.71

TABLE XXVII
WEIGHTED ANOVA FOR MALE TURNING-AGAINST-THE-SELF

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	5.625	1	5.625	1.187
PT Level	9.602	1	9.602	2.027
PT X E	2.400	1	2.400	.507
Error	170.548	36	4.737	
TOTAL	183.375	39	4.702	

TREATMENT MEANS MALE TURNING-AGAINST-THE-SELF

High Indian 4.44; Low Indian 3.64; High Non-Indian 5.08
Low Non-Indian 4.14

TABLE XXVIII

WEIGHTED ANOVA FOR MALE WANTED COMPETENCE

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	0.900	1	0.900	.189
PT Level	0.683	1	0.683	.144
PT X E	11.724	1	11.724	2.467
Error	171.093	36	4.753	
TOTAL	184.400	39	4.728	

TREATMENT MEANS MALE WANTED COMPETENCE

High Indian 3.89; Low Indian 5.27; High Non-Indian 5.23;
Low Non-Indian 4.43

TABLE XXIX

WEIGHTED ANOVA FOR FEMALE EXPRESSED SIGNIFICANCE

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	13.225	1	13.225	2.382
PT Level	5.625	1	5.625	1.013
PT X E	2.026	1	2.026	.365
Error	199.900	36	5.553	
TOTAL	220.775	39	5.661	

TREATMENT MEANS FEMALE EXPRESSED SIGNIFICANCE

High Indian 3.90; Low Indian 3.60; High Non-Indian 5.50;
Low Non-Indian 4.30

TABLE XXX
WEIGHTED ANOVA FOR FEMALE EXPRESSED COMPETENCE

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	6.400	1	6.400	1.808
PT Level	4.900	1	4.900	1.384
PT X E	0.900	1	0.900	.254
Error	127.400	36	3.539	
TOTAL	139.600	39	3.579	

TREATMENT MEANS FEMALE EXPRESSED COMPETENCE

High Indian 2.90; Low Indian 2.50; High Non-Indian 4.00;
Low Non-Indian 3.00

TABLE XXXI
WEIGHTED ANOVA FOR FEMALE ISOLATION

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	19.600	1	19.600	2.712
PT Level	19.600	1	19.600	2.712
PT X E	2.500	1	2.500	.346
Error	260.200	36	7.228	
TOTAL	301.900	39	7.741	

TREATMENT MEANS FEMALE ISOLATION

High Indian 4.20; Low Indian 6.10; High Non-Indian 3.30;
Low Non-Indian 4.20

TABLE XXXII
WEIGHTED ANOVA FOR FEMALE REGRESSION

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	4.900	1	4.900	.839
PT Level	0.000	1	0.000	.000
PT X E	0.400	1	0.400	.069
Error	210.200	36	5.839	
TOTAL	215.500	39	5.526	

TREATMENT MEANS FEMALE REGRESSION

High Indian 4.50; Low Indian 4.30; High Non-Indian 5.00;
Low Non-Indian 5.20

TABLE XXXIII
WEIGHTED ANOVA FOR FEMALE TURNING-AGAINST-THE-SELF

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	3.600	1	3.600	.630
PT Level	0.100	1	0.100	.017
PT X E	1.600	1	1.600	.280
Error	205.800	36	5.717	
TOTAL	211.100	39	5.413	

TREATMENT MEANS FEMALE TURNING-AGAINST-THE-SELF

High Indian 5.10; Low Indian 4.60; High Non-Indian 5.30;
Low Non-Indian 5.60

TABLE XXXIV
WEIGHTED ANOVA FOR FEMALE DEPRESSION

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Ethnicity	12.100	1	12.100	1.683
PT Level	12.100	1	12.100	1.683
PT X E	4.900	1	4.900	.682
Error	258.800	36	7.189	
TOTAL	287.900	39	7.382	

TREATMENT MEANS FEMALE DEPRESSION

High Indian 4.50; Low Indian 2.70; High Non-Indian 2.70;
Low Non-Indian 2.30

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