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A CROSS-CULTURAL STUDY OF
PERSONAL SPACE IN THE FAMILY

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE
UNIVERSITY OF HAWAI'I IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN EDUCATIONAL PSYCHOLOGY
MAY 1972

By
Theo Cade

Dissertation Committee:
Daniel Fullmer, Chairman
Huber Ellingsworth
George Fujita
John Michel
Ian Reid
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ABSTRACT

Two experiments were carried out to obtain baseline data of family figure placements for a feasibility test and subsequent development of an instrument to measure territoriality (personal space) in family relationships.

Initially an adaptation of Kuethe's (1962a) figure placement technique was used in a group placement condition including six nuclear family relationships, husband-wife (H-W), father-son (F-S), father-daughter (F-D), mother-son (M-S), mother-daughter (M-D), and brother-sister (B-S).

Samples drawn from Hawaiian Orientals (N=48) and Hawaiian Caucasians (N=24) were compared using analysis of variance with two between (sex and subculture) and one within (family relationship) factor. Data pertaining to patterns were analysed with chi-square analyses.

For the interfigure distance results in the first study, family relationship and subculture were signified at the .001 and .05 levels respectively, while sex and all interaction effects were not significant. Within the family relationship distances, the peer relationships of husband-wife and brother-sister were not significantly different, while the same held for mother-son versus mother-daughter distances and the father-son and father-daughter distances. The parent and child peer distances were less than the mother-child distances which were less than the father-child distances. The difference between the parent and child distances were similar in magnitude to the mother-child versus father-child difference.

Four distinct pattern effects were found for the total group,
overall horizontal and vertical pattern ($\chi^2=.001$), parents highest ($\chi^2=.001$) father furthest left ($\chi^2=.001$) and daughter furthest right ($\chi^2=.01$) with the same pattern trends holding up within the subculture groups.

A second study was made to provide data on pair as well as group placement, the use of circle symbols rather than silhouettes, and samples from different cultures, American ($N=21$), Filipino ($N=18$) and Japanese ($N=26$) Ss were presented with the placement task and results were analysed as in the first study, using analysis of variance with two between and one within factor for the interfigure distance for both group and pair conditions; the group data were analysed for pattern effects with chi-square analyses also as in the first study.

There were no significant effects found in the pair condition analysis of variance for interfigure distances, while family relationship was significant in the group condition beyond the .001 level. A breakdown of the family relationship variance replicated the results of the first study with the husband-wife equal to the brother-sister, together less than mother-son and mother-daughter equal to each other and less than father-son and father-daughter. The father-daughter distance here was substantially greater than the father-son difference. Again as in the first study, the parent and child peer versus the mother-child difference was equal to the mother-child versus father-child difference.

The pattern analyses for the total group of overall horizontal and vertical patterns, parents highest, father left-most, and daughter right-most all were significant beyond the .01 level, and the same trends were found within the three culture groups.
The interfigure distance and pattern results in a family group context warrant the conclusion that the development of a clinical instrument of territorial family relationships is plausible and provide a baseline for the construction of such an instrument.
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I. INTRODUCTION

"She was very close to her brother... His mother is cold and distant... She was attached to her father."

Statements such as these might be exchanged between two counselors discussing relationships they have observed in a family counseling session. A primary element in these descriptive statements is interpersonal distance.

The present study was begun after the successful use of data from an individual in personal counseling about the territorial relationships in his family or origin.

The idea then occurred to develop a clinical scale measuring territorial relationships within the family. Some preliminary theory-based editions of this scale were conceptualized with a scoring system to measure the degree of contact or alienation between each family member.

The purpose of the present study is to establish baseline data to test the theoretical assumption that relations of the nuclear family group can be measured by the figure placement technique.

Is there any hard data to support the hypothesis that interpersonal relationship and interpersonal distance are significantly related?

Yes, in a recent contribution to a series of studies on interpersonal distance, Engebretson (1969) found relationship to be the most potent predictor variable in his study which also included sex, conversational content, and culture.
The results of the present study demonstrated that interaction between friends was significantly different from the distances which characterized the relationships with fathers and professors. These results were consistent across three cultural groups. Relationship was found to be a robust determinant of interactional distance, and of the four variables tested, relationship was the most powerful (P was well beyond the .01 level of significance). [pp. 55-56].

Since relationship has been shown to be related to interpersonal distance, the next logical step in this series of studies is to focus on interpersonal distance variability in basic human relationships such as those of the nuclear family. And here we have the purpose of the present study, to compare interpersonal distances in father-mother-son-daughter relationships.

To give a brief historical background to this study, we can look to Hediger and Hall.

Hediger (1950, 1955, 1961) established social distance as an important area of study in the behavior of organisms. "Hediger as early as 1934 described the variety of flight distances among different species had has presented detailed assessments of individual and social spaces in captive animals." (Little, 1965). Hall (1959) established that territorial behavior is a primary message system in the communication structure we call culture. "Man has developed his territoriality to an almost unbelievable extent yet we treat space somewhat as sex. It is there but we don't talk about it. And if we do, we certainly don't get technical about it."

The importance of the family and the interpersonal relationships therein need not be argued for in a psychological study since these relationships are the cornerstone of psychological theory. It is from early learning in the context of the family group that
Interpersonal behavior is generalized to the greater society beyond. The family unit as a learning model is a universal cultural social unit. "The family, in some form, is found in every known successful culture or society which man has created." (Mead & Heyman, 1965).

Given that territorial behavior is a primary message system of culture, that relationship has been shown to be a more potent predictor of interaction distance than sex, conversational content, or culture, and the existence of nuclear family relationships in all historically successful cultures, it is argued that extension of our understanding of territorial relationships within the nuclear family will represent a significant contribution to psychological knowledge.

**Territoriality**

In *The Hidden Dimension*, Hall (1966) explored territoriality as a core communication system of culture. He coins the term "proxemics" to refer to interpersonal distance defining a relationship as intimate, personal, social or public.

The term Microecology was used by Sommer (1959) to refer to the study of personal space one carries about as mobile bodily territory.

The concepts of "personal space" can be distinguished from that of "territory" in several ways. The most important difference is that personal space is carried around while territory is relatively stationary. The animal or man will usually mark the boundaries of his territory so that they are visible to others but the boundaries of personal space are invisible. Personal space has the body as its center while territory does not. Often the center of territory is the home of the animal or man. Animals will usually fight to maintain dominion over their
territory but will withdraw if others intrude into their personal
space. [p. 248] (Italics added).

As Sommer distinguishes the two terms here, the present study will
be more directly concerned with personal space than with territoriality.

Reviewing relevant knowledge from studies of animal behavior,
Little (1965) reviewed Hediger's (1950, 1955, 1961) concepts of flight,
social, and individual distance defined as the respective distances at
which animals will flee from predators (flight), withdraw to maintain
minimum distance between selves and members of the same species
(individual).

Lyman and Scott (1967) distinguished four types of human terri-
tory: public, home, interactional, and body. They characterize each
of these territories. The freedom of access to public territories
provides for interpersonal observability which restricts behavior.
Contrastingly, the privacy of home territory provides for controls
necessary to freedom of behavior and intimacy. Interactional terri-
tories provide for mobile controls to personal access through such
nonverbal cues as posture, bodily orientation, and limited voice
projection. The body territory consists of the physical body and its
immediate surrounding area and is considered the most intimate
territory. Acts of touching and even viewing the body approach
sacredness in many cultures.

Kueth (1962, 1962a, 1964) pioneered the research in human
territoriality. His theoretical arguments and methodological strategies
have been used as the predominant mode for the study of human terri-
torial behavior (Weinstein, 1965, 1967; Fisher, 1967; Little, 1966;
Kuethe (1962) used two methods of measuring social perception with two figure placement tasks, pair replacement and free placement. In pair replacement, a series of subjects (Ss) observed and then replaced figure pairs with instructions to maintain the same interval they had observed. Each figure pair was initially separated at a thirty inch interval prior to the first subject's observation and replacement. Subsequent subjects were exposed to the placement of the previous subject so that any tendency to replace figures closer or further than observed would have a cumulative effect, thus moving the figures substantially closer or farther apart over a number of subjects' trials.

The pair replacement task was given with human and non-human stimulus figures, the human figures being a man and a woman, and the non-human figures being rectangles. The human figures were placed successively closer while the separation of the rectangles was maintained.

The results of the pair replacement task show that differential perception of the interstimulus intervals occurred, that placement of human figures does measure social perception in that over subject trials the human figures were replaced successively closer together while the rectangles were not. . . . once the male and female figures become very close together, the configuration is stable. Successive judgements do not bring the rectangles together. Although there was individual variation, the separation of the rectangles after 30 successive judgements is of the same magnitude as the original 30-inch separation.

The schema that man and woman "belong together" induces errors of reconstruction. This is not a simple set to group like objects, the identical rectangles do not move together.

As a check on the possibility that the technique introduced a bias, one group of 12 subjects replaced the man-woman display and the rectangles display after viewing them with a separation
of 30 inches. In another group of 12 subjects each subject replaced the two sets after viewing them with a 15-inch separation. The order in which the sets were reconstructed was different for six of the subjects in each group. The tendency to replace the man and woman figures closer together than the two rectangles was significant in both groups, \( P = 0.01 \) by the Wilcoxin matched-pairs signed-ranks test. (Kuethe, 1962b, pp. 36-37).

In Kuethe's pair replacement results, we have evidence that relative measures of placements of human figures are more than mere artifacts of non-human stimulus characteristics of the stimulus objects. Human stimulus figures are placed more closely together; rectangles are not.

In the free placement task used in the present study, Kuethe (1962) again combined human and non-human stimulus objects into sets and Ss were instructed to place the figure sets on a felt field in any manner they wished. Although some of the placements by the 100 male undergraduates were considered "scattered," most of their placements were ordered allowing comparison of placement of related sets. Comparing woman-child and man-child sets, 68 Ss placed the child closer to the woman while only 18 placed the child closer to the man. Man-woman-child and man-woman-dog set placements were also suggestive of closer woman-child than man-child relationships. The child was isolated from the woman in only eight placements of a child-man-woman order with 40 man-child-woman and 44 man-woman-child ordered placements; in contrast, a dog figure was isolated with the man in 56 dog-man-woman ordered placements.

These studies by Kuethe, showing that "man-woman" and "woman-child" relationship schemas, as measured by the free placement task, tend to be relatively close, were followed by studies comparing
similar familial relationship schemas of normal versus abnormal Ss.

Weinstein (1965, 1967) found that while normal boys placed son figures closer to mother figures, emotionally disturbed boys placed son figures relatively closer to father figures. This was due to greater mother-son interfigure distances and not decreased father-son interfigure distances. Overall, disturbed Ss placed all figures further apart. Weinstein concludes her research with a suggested equation between physical and emotional distance.

If we can equate physical distance placed between human figures with emotional distance (rejection, withdrawal, distrust, and their opposites) as is often done colloquially ("We are close friends"); "She was very distant with me"; "Keep him at arm's length") and clinically, in interpreting doll play, drawings, and other projective devices, emotionally disturbed children construe humans, and particularly adult females, more negative—perhaps as more punitive or less supportive and less trustworthy. [p. 461].

Fisher (1967) found the interfigure distances of acting out aggressive children to be greater than that of normals. Mothers of Ss with greater interfigure distances obtained higher irritability and assultiveness scores on the Buss-Durkee hostility scale. Earlier, Little (1966) had reported normal Ss placed child and parent dolls closer together under conditions of praise than under conditions of reproach. It is notable that the placement of dolls rather than figures represents a new measurement technique and that consistent results were obtained.

Using another new measurement technique consisting of magnets representing mother, father and self, Gottheil, Paredes and Exline (1968) had emotionally disturbed women who had been recently admitted to a psychiatric hospital, place these "figures" in a field. The
following excerpt from their abstract most succinctly states their findings:

Distance between self and mother magnets was correlated with increased schizophrenia (Sc) \( r=.45, P=.01, \text{one tailed test} \) and decreased ego strength (Es) \( r=-.55, P=.01, \text{one tailed test} \) scores on the MMPI, was greater than that of controls \( (N=40) \) and tended to decrease following six weeks of treatment. Distance from father was not significantly correlated with Sc or Es, was not different from that of controls, but was found to increase after therapy \( [p. 416] \). (Note: \( r \) and \( P \) levels added from text).

In order to enhance the percept of a family group, Higgins, Peterson, & Dolby (1969) in comparing familial schemata of poor socially adjusted (PSA) versus good socially adjusted (GSA) boys, presented four figures together; a male adult, a female adult, a male child, and a female child. Consistent with previous studies, the PSA group placed son relatively closer to father figures while the GSA group placed son relatively closer to mother figures. A pattern analysis, similar to Kuethe's (1962a) showed a greater number of intervening figures placed between son and mother figures for the PSA group while showing a greater number of intervening figures placed between the son and father figures for the GSA group.

**Orientation and configuration.** There have been several studies of the meaning ascribed to the orientation and configuration of figure placements.

Laterally oriented as opposed to forward-facing figures were perceived with apparent motion (Wapner & Werner, 1957; Werner & Wapner, 1959, 1952). Fischer (1966) instructed \( Ss \) to place a laterally oriented figure between and equidistant from two laterally oriented figures already placed facing each other. \( Ss \) consistently missed placing the third figure equidistant from the other two figures by placing the
third figure more distant from the figure it faced. This illustrates that if more than two figures are to be used in a figure placement design, forward-facing figures should be used for various interfigure distances to be comparable.

Studies of the configuration of relative position of placed figures show figures placed higher were perceived to have more power (Ziller & Long, 1967) and figures placed to the left were considered "good" or "important". (Henderson, Long & Ziller, 1965).

Cross-cultural and cross-subcultural studies. Another focus of territoriality research has been the comparison of territorial message systems of various cultures. Hall (1959) pioneered this area in The Silent Language with anecdotal observations such as the following conversational situation he experienced in talking with a high ranking diplomat from a foreign country.

We started out facing each other and as he talked, I became dimly aware that he was standing a little too close and that I was beginning to back up. Fortunately I was able to suppress my first impulse and remain stationary because there was nothing to communicate aggression in his behavior except the conversational distance. His voice was eager, his manner intent, the set of his body communicated only interest and eagerness to talk. It also came to me in a flash that someone who had been so successful in the old school of diplomacy could not possibly let himself communicate something offensive to the other person except outside of his highly-trained awareness. [p. 161].

In The Hidden Dimension, Hall (1966) concludes that culture cannot be shed.

In the briefest possible sense, the message of this book is that no matter how hard man tries it is impossible for him to divest himself of his own culture, for it has penetrated to the roots of his nervous system and determines how he perceives the world. [p. 188].

In a comprehensive review of literature on territoriality, Brein
(1970) gives the following overview of anecdotal evidence on cross-cultural variations in personal distance.

Arabs, Latin Americans, some Indonesian and African groups, for example have been described anecdotally as characteristically interacting much more closely than Americans do (Argyle & Dean, 1965; Hall, 1959, 1963, 1966; Hall & Whyte, 1960). And Vietnamese, on the other hand, have been observed to stand relatively farther from each other compared to Americans (Sanborn, 1968, p. 24).

Lyman & Scott (1967) have argued that crosscultural research on territoriality is valuable not only for understanding of other cultures but for the contrast value in observing one's own culture. Little (1968) established that placement of objects representing humans—in this case the objects were dolls—can be used to measure differences in cultures noted for closer and more distant interaction distances. In his study, placements from closest to farthest were Greeks, Americans, Italians, Swedes, and finally Scots.

Following Little's study, which was confined to the comparison of placements made by subject groups from Western cultures, Engebretson (1969) compared placements made by Hawaii Caucasians to placements made by Hawaii Japanese and Native Japanese. Although he found greater interfigure distances in the Native Japanese placements than in the Hawaii Japanese or Caucasian, he found no significant difference between the Hawaii Japanese and Caucasian placements. He concludes that the Hawaii Japanese became acculturated to the Caucasian norm.

Engebretson included a relationship variable in his study, comparing a family relationship "student-father", and two non-family relationships, "student-friend" and student-professor". Native Japanese and Hawaii Japanese had the same increasing order of distance
between dyads, student-friend, student-father and student-professor, while Caucasians had the order student-friend, student-professor, student-father.

Griffith (1969) replicated the part of Engebretson's study comparing placements by Hawaii Japanese and Caucasians, limiting the Caucasian Ss to those having lived in Hawaii less than six months, and again found no differences in interfigure distances except one. The "student-father" figures were placed a significantly greater distance apart by the Hawaii Japanese by an by the Caucasians. In a study of family relationships, Petteys (1969) found no differences between the placements of Hawaii Japanese and Hawaii Chinese.

In a study comparing placements of American Caucasians and American Orientals, Brien (1970) found no differences in the placements of Ss from the two groups. He did find that objects rated affectively positive on the semantic differential were placed significantly closer to "self" objects, but objects varying in potency on semantic differential ratings did not vary systematically in distance placed from "self" objects. This finding is reminiscent of Little's (1966) results showing dolls being placed closer together under conditions of praise than under conditions of reproof and Fischer's (1967) finding that acting out aggressive children, whose placements had greater interfigure distance than normal, had mothers who were rated independently as hostile.

**Family Dynamics**

The patterns and processes in family relationships make up a dynamic system, an interdependent social entity supporting survival
and reproductive functions of the human animal.

In an analogy to individual biological self regulatory processes, Jackson (1957, 1959) uses the term, homeostasis, for the process by which pressures within the family are regulated between family members to insure survival of the family as a unit. A classic example of this process often occurs in family therapy when, through therapist intervention, pressure is taken off an "identified patient" only to find that other family members experience increased pressure. This pressure on other family members may lead them to jeopardize the growth of the identified patient, since his acting out has served as the "behavioral sink" for the family in the past. As families have come to be seen as units or dynamic systems, new approaches to working with families, such as Family Group Consultation (Fullmer and Bernard, 1968) have emerged in which the integrity of the family is not violated.

In attempting any work with a family, it is essential that the integrity of the family be maintained at all times, whether they are being seen as an individual family, or whether they are being seen in the company of other families in family group consultation. [p. 41].

Wynne (1961) describes a family fragmentation process in which splits and alignments of various subgroups within a family can occur working counter to family integrity. And Ackerman (1961) discusses family crises in terms of family segments forming.

A conflict of identities, values, and strivings brings a rift, a split in the family group which mobilizes one segment against another. Such splits within the family may be horizontal, vertical, or diagonal. [p. 54].

If stress goes on unresolved over a period of time, this may lead to total fragmentation of the family unit to the point that all members
in the family are alienated and isolated from one another. One may visualize the strength of a family unit to be similar to that of a dam which can hold tons of water but which will break into many pieces if overstressed and segmented.

Perhaps data taken from a clinical scale based upon interpersonal distance ratings could be used to detect the formation of family segments in time to reverse this fragmentation process.

Much counseling theory is based upon relationships within the family. For example, in role theory, people are seen to take various roles in their interpersonal relationships which may be functional or dysfunctional to the system within which they live. An example of a dysfunctional family role can be seen when a husband plays a child role and his wife responds in a parental role jeopardizing the adult-adult relationship in the marriage. Fullmer and Bernard express the problem this way:

Difficulties frequently arise because one of the spouses does not want to or is unwilling to give up the role of son or daughter and become a peer and marriage partner. [1968, p. 25].

In a week's workshop at the University of Hawaii's Counseling and Testing Center, January 1970, Carl Whitaker suggested a way to counteract the formation of parent-child relationships between spouses. His recommendation was that if a spouse regresses to a child role, then the other spouse can at least maintain a peer relationship by also assuming a child role and thereby counteract the reward value of the dependent child role taken by the first spouse who is usually seeking a "parent".

In Freudian theory, parent-child relationships are heavily
emphasized. A stage of sexual competition of son with father and
daughter with mother is considered natural for a time. But then,
according to the theory, growth beyond this stage is characterized
by decreasing competition and increasing identification with the same
sex parent. However, a child's course of psychological growth may
be fixated at some particular stage. This may be brought about by a
parent's unwillingness to allow the child growth towards increasing
self-sufficiency and independence. The "symbiotic" alignments of
mother-son or father-daughter may occur by an opposite sex parent
seducing a child by doing things for that child which inhibits the
child's learning to do things for him or herself. Viewing the family
as a psycho-cybernetic system, it can be seen then that a moderate
degree of competition between father and son for mother's attention
and mother and daughter for father's affection can be functional in
that it becomes the same sex parent's self-interest to help the child
gain independence from the opposite sex parent.

A sign of functional father-son and mother-daughter relationships
is the provision of competent role models by same sex parents, and
one of the most important roles that a parent models for his child is
the role of spouse, providing the child opportunities to observe how
one behaves appropriately as a mate.

So it can be seen that the spouse relationship is the core
relationship of the nuclear family unit which acts as a base for
socialization of the child into his own cultural system.

A child may intuitively sense that his security is vitally linked
with the strength of his parents' relationship with each other. For
example, Satir (1967) argues that if a child is threatened by a breakup of his home, he may become an identified patient acting out bizarre behaviors in order to unite his alienated parents in a condition of emotional divorce in which parents are communicationally alienated yet remain physically together "for the good of the children".

The "cement baby" phenomenon, in which a couple has a child in hopes that this will mend their failing relationship often turns out to be a tragic paradox in that the already failing relationship may degenerate still further with the introduction of the increased pressures of parenthood. Such a situation would be ripe for the pathological parent-child relationships described above. For example, a parent feeling inadequate in the spouse-peer relationship may develop a symbiotic relationship with his child in his seeking love and affection or a parent in a child role may develop a sibling rivalry relationship with his offspring.

Another tragic paradox can occur in early marriages when young persons get married in order to gain the freedom and independence implicit in marriage only to become more economically and socially dependent upon their parents. Economically, the conflicting needs of earning an income versus needs for more training to earn such an income, vie for the time and money resources available to the young householders tying them back to either or both of their parents as supplemental or total sources of financial support. Socially, premarital peer group relationship definitions are changed by the fact of marriage tending to decrease the amount of extra-familial social contact.
Another important dynamic to consider in the parent-child relationship is allocation of power. Fullmer & Bernard (1968) discuss power in the parent-child relationship:

Often, it is the reluctance to use any power because of its attendant responsibility and accountability that leads parents to get into difficulty with their youngsters. The parent may be afraid to block the youngster's acting-out behavior because he fears his own ignorance regarding the way his actions will affect the youngster. One of the common misuses of power which is a great concern to parents is the use of power to punish instead of using power to set limits, [p. 5].

A particular kind of power, called legitimate power, appears relevant to the understanding of power in the parent-child relationship.

French (1956) defines legitimate power as, "B's belief that A. has the right to prescribe his behavior". Therefore, legitimate power involves B's permission to A to prescribe his behavior. Assuming a simple reinforcement model, it seems reasonable that to the degree that B benefits from A's behavioral prescriptions, A's legitimate power over B should increase, and conversely to the degree that B's existence deteriorates from A's prescriptions, A's legitimate power over B should decrease. Continuing with this line of reasoning, it would seem that over the long run a parent who sets wise limits with his child will build a legitimate power base, while a parent who uses his legitimate power to punish would destroy this base. By definition, uncontrollable acting-out children come from a family situation bankrupt of legitimate power. A measure of perceived power in relationships could perhaps be taken from the vertical placement of figures in a family group. In this case it would be hypothesized that children who grant their parents the "legitimate" power base
would so indicate by placing parent figures higher than child figures.

In the family conceptualized as a spatial phenomena, with horizontal, vertical and diagonal elements, the peer relationships correspond to horizontal elements, spouses and siblings, vertical elements to parent-child relationships and diagonal elements to one parent-child family segment with another parent-child segment. We have looked at the parent peer relationship, the parent-child relationship, and symbiotic splits we have labelled diagonal. Sibling relationships would be considered horizontal in the present scheme just as were parents as peers.

In the sibling peer group, the phenomenon of sibling rivalry is characterized by competitiveness, especially for parental attention and affection. In such a situation, the opportunity for a familial split occurs if the unwise parent, as often occurs, runs to the aid of one of the combatants in an escalating sibling conflict, usually to the smaller. By aligning with one of the siblings in a quarrel parents enhance the payoff value of such competitiveness and add to escalation rather than resolution of the power struggle.

A process which seems to occur frequently is that in aligning with the weaker of two siblings a parent reverses the usual power situation between them in that the weaker has temporarily become stronger in alliance with the adult. By reversing the power situation in this way, the weaker child is reinforced for aligning against the stronger child who in turn builds resentments in a "bank" of injuries to be paid back in the absence of the interfering parent. And the cycle continues in that the injured weaker sibling builds his own
"bank" of injuries to be retaliated for when the parent ally is again available. A scale measuring perceptions of various sibling's nearness to parents might help detect such an escalating sibling rivalry and parent alliance. Having detected such a process in the family through subsequent validating observations of the family, a counselor could intervene and label the process for the parent, showing the parent that refraining from such alliances would act in the direction of lessening sibling rivalry.

A powerful positive aspect of the sibling peer relationship is the environment for training of competence in intimacy with peers which it provides. As a child grows in an environment where there is another child or other children, he (she) has the opportunity of experiencing peer relationships while developing his own personality, whereas an isolated child is primarily exposed to only the vertical parent-child relationship. Evidence of the potency of the sibling peer relationship in shaping individual growth is provided by Toman (1969) who has published his second edition of Family Constellation, which develops a rather credible theory of personality and social behavior based on an individual's sibling position and sex. Intimacy of sibling peers could be measured simply by mutually close placements of figures by respective siblings.

Summary - Family Dynamics. Interpersonal distance patterns, and pathological splits and alignments within the family unit were discussed with reference to how such relationships might be measured by a figure placement device.

In the horizontal parent peer relationship, the adult-adult
pattern was contrasted to the vertical situation in which one parent takes a child role and the other plays the role of parent to that spouse.

Various functional and pathological situations and processes in family relationships were territorially conceptualized. Included were such processes as diagonal "symbiotic" parent-child alignments and parents inappropriately playing a peer role, and sibling rivalry development.

**Summary**

Hediger's observations of the regularity of animal interdistancing behavior, Hall's theory of territoriality as one of the primary message systems of culture, and Engebretson's evidence that relationship is a more potent predictor of interactional distance than sex, conversational content and culture, and an argument for the importance of knowledge about nuclear family relationships were presented as evidence for the value of establishing baseline data on territorial relationships in the nuclear family.

Kuethe's free placement task in the study of human territorial relationships was established as the basic model for the present study. The free placement task was shown to be a reasonable means to compare distances across various relationships. Kuethe's pair replacement task results were given as evidence of the existence of social schemata on the tendency to group human figures.

The specific aim of the present study is to ascertain if there are detectable differences in interfigure distances and placement patterns characteristic of specific nuclear family roles, namely father, mother, son and daughter.
Relevant research subsequent to Kuethe's from which specifics for the current study were drawn were reviewed.

Studies across cultures and ethnic subcultures provide evidence that figure placement measures of relationships are significantly different across these groups.

Family dynamics, patterns, and pathologies, were discussed in terms of the interplay between family members in parent peer, parent-child, and sibling peer relationships and these processes and patterns were condeptualized according to distance and configurational cues.

Conclusions

Relationship is a potent predictor of interaction distance (Engebretson, 1969) and configurational arrangement (Kuethe, 1962a) in figure placement.

Kuethe's figure placement technique is an appropriate method for the study of territorial relationships in the family; specifically, his free placement task is appropriate for comparisons across family relationships.

Presenting Ss with all figures at once randomly ordered in an envelope allows for measurement of various family subgroup relationships as perceived by the person placing the figures. Relationships allowed for are: parent peer (husband-wife), parent-child (father-son, father-daughter, mother-son, and mother-daughter), and sibling peer (brother-sister).

Orientation of figures placed should be forward facing, rather than laterally facing, particularly in free placement task with more than two figures to control for apparent motion influence on the
perception of interfigure distances.

In comparison and interpretation of placement patterns, both vertical and horizontal dimensions should be considered. Relatively higher figures may be interpreted to be evidence of perceived power in a relationship and figures further left as perceived with having greater importance.

There is evidence that measures of pathology are correlated to family figure placements. For example, subject populations described as emotionally disturbed, acting-out aggressive and poor socially adjusted, compared with placements of normal controls, put self figures further from mother and relatively closer to father figures.

Integrating figure placement data with theories of family relationships and pathology development may provide the basis of a clinical instrument for use in the diagnosis of pathological relationship patterns in the family. The first step in the development of such a family relationship clinical instrument is the establishment of baseline data which consolidates distance and pattern cues which can be predicted from nuclear family role relationships.

If data can be obtained across subculture and culture groups, the date should provide evidence for plausible statements about family relationships in general, and potentially shed light on specific family patterns unique to specific cultures.
II. EXPERIMENT I

This experiment is an investigation of the predominant interfigure distance and patterns of placement which will occur across family relationships when Ss are presented with a free placement task with the four family figures--father, mother, son, and daughter.

The figures used here are forward facing, one-quarter scale replicas of Kuether's (1962a) figure as illustrated by Higgins (1969).

Differences in interfigure distances are measured across parent peer, parent-child and sibling peer relationships.

Configuration or relative position of the family figures are compared for the four figures. Overall patterns and horizontal and vertical placements are compared.

Differences in family figure placement across ethnic subcultures is tested by comparison of a Hawaii Caucasian and two Hawaii Oriental groups, Hawaii Japanese and Hawaii Chinese.

Hypotheses of Family Relationship Interfigure Distances

1. Parent peer (HW for husband-wife) and child peer (BS for brother-sister) interfigure distances will be equal and less than mother-son (MS) and mother-daughter (MD) interfigure distances which will be equal and less than father-son (FS) and father-daughter (FD) distances which will be equal.

\[ \text{HW=BS<MS=MD<FS=FD} \]
2. Hawaii Caucasian (HCau) interfigure distances will be greater than Hawaii Oriental (HO) interfigure distances across family relationships.¹

<table>
<thead>
<tr>
<th>HO Relation</th>
<th>HCau Relation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Husband-Wife</td>
<td>&lt;</td>
</tr>
<tr>
<td>Father-Son</td>
<td>&lt;</td>
</tr>
<tr>
<td>Father-Daughter</td>
<td>&lt;</td>
</tr>
<tr>
<td>Mother-Son</td>
<td>&lt;</td>
</tr>
<tr>
<td>Mother-Daughter</td>
<td>&lt;</td>
</tr>
<tr>
<td>Brother-Sister</td>
<td>&lt;</td>
</tr>
</tbody>
</table>

Hypotheses of Family Group Patterns

1. Family figures will be placed in a rectangular pattern, rather than in horizontal only, vertical only, circular, or unordered patterns.

¹In some previous studies the HJ and HChi groups have been combined to form a unitary subculture, HO, while in other studies the HJ and HChi groups have been treated as separate subcultural groups (Brein 1970, Engebretson 1969, Pettys 1969 and Griffith 1969). If a non-significant difference is found between the HJ and HChi groups, then the data from the HJ and HChi groups will be pooled into an HO group for purposes of carrying out hypothesis 2. If a significant difference between HJ and HChi is found, then each group will be considered separately in hypothesis 2.
2. A parent figure will be placed in the highest position more frequently than will a child figure.

3. Father figures will be placed in the left most position more often than any other figure.

4. Daughter figures will be placed in the furthest right position more often than any other figures.

5. Hawaii Caucasians and Hawaii Orientals will place family figures in similar relative positions:
   a. parent figures higher than child figures,
   b. father figures in the furthest left position,
   c. daughter figures in the furthest right position.

**Method**

The purpose here is to obtain baseline data of family figure placements most indicative of normality in the family group, to obtain distance and configurational measures of normal Ss placements of family figures indicating the territorial relationship of each family member to each other family member in the context in which all the family relationships exist.

**Subjects.** The subjects (Ss) were randomly selected from Introductory Educational Psychology and Speech Communication classes at the University of Hawaii where the student body is comprised of members of Hawaii Caucasian (HCAu), Hawaii Chinese (HChi), and Hawaii Japanese (HJ) subcultures. There were 24 Ss in each group evenly divided for sex, yielding a total N. of 72.

From the previous research, a question exists as to whether the two Hawaii Oriental (HO) groups can be considered a unitary subculture.
Hypotheses 2 and 3 deal with this question. It was decided that if there were no significant differences found between the HJ and HChi subcultures for the six family relationships, that henceforth they would be grouped together into an HO grouping. If there were significant differences, the two groups were to be treated separately. Since this test was done subsequent to the comparison of the samples in the Descriptive Data Means Differences Test, Table 1, comparison between HCan, HChi and HJ groups were made as well as between HCan and HO groups.

Descriptive characteristics of the three sample groups were explored on three variables, age, years in school, and grade point average. Also, these data were taken on the HO group. The means were computed and t tests for significant differences between means were made and are given in Table 1.

Materials. Materials used by each S included four family figures, a rectangular field, an envelope, celophane tape, and a personal data form.

The four forward facing figures (see appendix A) were photographically reproduced to one-quarter scale from an illustration in Higgins et al (1969), a male adult, a female adult, a male child, and a female child. Consistent accurate identification of these figures in pilot studies is reported. The figures illustrated in the article were reproduced so that the scale on the illustration which was to be set at ten centimeters for a full size reproduction of the figures, was set at two and a half centimeters for a one-quarter reproduction.

The scaled silhouettes were cut out, blackened, and a small
### TABLE I

Summary of t Tests on Descriptive Data for Experiment I

<table>
<thead>
<tr>
<th>Groups Compared</th>
<th>Age: X (Years)</th>
<th>t (Significance)</th>
<th>Years in School: X (Years)</th>
<th>t (Significance)</th>
<th>Grade Point Average: X (GPA)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawaii Caucasian with Hawaii Chinese</td>
<td>24.17</td>
<td>2.51</td>
<td>.05</td>
<td>17.54</td>
<td>1.16</td>
<td>NS</td>
</tr>
<tr>
<td>Hawaii Caucasian with Hawaii Japanese</td>
<td>24.17</td>
<td>0.23</td>
<td>NS</td>
<td>17.54</td>
<td>1.11</td>
<td>NS</td>
</tr>
<tr>
<td>Hawaii Chinese with Hawaii Japanese</td>
<td>20.75</td>
<td>2.34</td>
<td>.05</td>
<td>14.79</td>
<td>0.32</td>
<td>NS</td>
</tr>
<tr>
<td>Hawaii Caucasian with Hawaii Oriental</td>
<td>24.17</td>
<td>1.45</td>
<td>NS</td>
<td>17.54</td>
<td>1.61</td>
<td>NS</td>
</tr>
<tr>
<td>Hawaii Oriental</td>
<td>22.25</td>
<td></td>
<td></td>
<td>14.85</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
pinhole made in the center of the head of each figure as a reference point for distance measurements. Pilot studies showed Ss were not aware of the pinholes until they were pointed out by the experimenter. For economical and consistent mass reproduction, the figures were placed on a white background sheet and multiple copies were made on an office copy machine. One each of these four photocopied figures, cut in rectangular frames (adult=1.5 x 3 inches, child=1 x 2.5 inches), were placed in random order in a 3.5 x 6.5 inch plain white envelope.

Higgins et al. used a 42 x 72 inch felt rectangle for a placement field and measured interfigure distances in eighths of an inch. Maintaining one-quarter scale, a 10.5 x 18 inch piece of plain white paper was used as a field for each and interfigure distance was measured in thirty-seconds of an inch.

The celophane tape was contained in a dispenser with a toothed cutting edge.

Demographic, ethnic background, and family relationship information was called for in the personal data form (see appendix B).

Procedure. Ss were initially asked to participate in a task for dissertation research. They were told that they would remain anonymous to the experimenter and the consumers of the research. They were also told that the specific purpose of the study would not be discussed until after administration of the task to avoid biasing their responses. No S declined to participate.

All Ss in Experiment I were run in a group setting. Fisher (1967) found that distance correlated significantly between group and individual administrations of the figure placement task (r=.43,
P=.02, n=30); the question does exist if an r of .43 is sufficient to say that the two tasks are essentially the same.

Since the purpose here is to delineate predominant normal patterns, normal Ss were used and their dominant response tendency only was called for by having only one response per subject. Maximum variation of response patterns across Ss was allowed for by use of the free placement task. To provide a measure of each family relationship in the context of each other family relationship, figures were presented together and Ss were instructed to place them all at once.

Ss were initially given the envelope containing the four randomly ordered figures, the 10.5 x 18 inch paper placement field, and the dispenser of cellophane tape.

The Ss were then given the following oral instructions:
1. Place the white paper so that the longest edge is up and down.
2. In the envelope you have been given, there are four figures; place them on the paper in any manner you wish.
3. When you have placed all four figures, tape them in the exact position you have placed them.

After all Ss had completed placing and taping the four figures, the personal data form (PDF) was given to each S with the oral instruction, "Please fill out this questionnaire completely." All materials were then collected and identification numbers were placed on figure placement sheets and corresponding PDFs.

After collection and identification of the materials, the purpose of the study was discussed with Ss.

**Scoring.** S responses were scored for interfigure distance and for placement patterns.

Interfigure distances were measured in 32nds of an inch, to
maintain scale to Kuethe's figures, for the six distances between the
four figures from the center point of the head of each figure.

Placement patterns were scored by making frequency counts of
horizontal and vertical, horizontal only, vertical only, circular
(i.e. heads or feet of all placements oriented towards the center of
the configuration as opposed to the previous cases where center lines
of the figures were parallel and perpendicular to the horizontal plane
of the placement field), and unordered patterns. Frequences of high-
low and left-right relative positions of each figure was also made.
A rating of even was made when no figure was clearly higher or lower
or furthest left or furthest right. For example, if several figures
were on the right margin of a pattern, no figure was scored as
furthest right, and if a child figure had feet higher than plane of
parents' feet but not higher than parents' head, neither was scored
higher.

Design and analysis. Interfigure distance data was statistically
analyzed by means of an analysis of variance (Figure 1) with two
between Ss variables, subculture and sex, and one within Ss variable,
relationship (Winer 1962).

Family relationship interfigure distance comparisons across HChi
and HJ subcultures and subsequently across HO and HCau subcultures
were carried out by means of 2 x 6 (subculture x family relationship)
analyses of variance.

For hypotheses concerning patterns of figure placement, chi-
square analyses were made comparing obtained frequencies of patterns
with frequencies being equally distributed across all of the categories.
FIGURE I
Analysis of Variance Design for Experiment I

A. Relationship
1. Husband-Wife
2. Father-Son
3. Father-Daughter
4. Mother-Son
5. Mother-Daughter
6. Brother-Sister

B. Subculture
1. Hawaii Caucasian
2. Hawaii Chinese
3. Hawaii Japanese

C. Sex
1. Male
2. Female
Family Relationship Interfigure Distance Results

Hypothesis 1. Parent peer and child peer interfigure distances will be equal and less than mother-son and mother-daughter interfigure distances, which will be equal and less than father-son and father-daughter distances, which will be equal.

The analysis of variance results in Table 2 show that family relationship interfigure distances vary significantly beyond the .001 level (F=5.39, df=5 and 330). By inspection of Table 3 under total means, it can be seen that the parent and child peer distances (116.61 and 110.60 respectively) are less than the mother-son and mother-daughter distances (125.29 and 130.07) which are less than the father-son and father daughter distances (144.92 and 148.74). These parent peer, mother-child, and father-child differences are in the predicted order of magnitude and are significant at the .001 level as can be seen by the between cells F of 13.11 with 2 and 330 degrees of freedom in table 2. The variance within cells, that is the variance between husband-wife and brother-sister, between mother-son and mother-daughter, and between father-son and father-daughter is not significant (F=0.29, df=3 and 330). Following the above results the null hypothesis for hypothesis 1 was rejected, that is the data support the hypothesis that the parent and child peer distances are equal and less than the mother-child distances which are equal and less than the father-child distances which are equal to each other.

Subsequent to the parent-child peer, mother-child, and father-child between cells test, a test for the linearity of the between cells variance was made. The linear component of the between cells
TABLE 2

Analysis of Variance Source Table for
Overall Interfigure Distance

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between Subjects Variance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Subculture</td>
<td>119,079.76</td>
<td>2</td>
<td>59,539.88</td>
<td>3.53</td>
</tr>
<tr>
<td>B Sex</td>
<td>285.75</td>
<td>1</td>
<td>285.75</td>
<td>0.02</td>
</tr>
<tr>
<td>AB</td>
<td>34,990.50</td>
<td>2</td>
<td>17,495.25</td>
<td>1.04</td>
</tr>
<tr>
<td>Error (Between)</td>
<td>1,113,641.76</td>
<td>66</td>
<td>16,873.36</td>
<td></td>
</tr>
<tr>
<td><strong>Within Subjects Variance</strong></td>
<td>82,737.75</td>
<td>5</td>
<td>16,547.55</td>
<td>5.39</td>
</tr>
<tr>
<td>Family Relationship</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Cells</td>
<td>80,098.98</td>
<td>2</td>
<td>40,499.49</td>
<td>13.11</td>
</tr>
<tr>
<td>Linear</td>
<td>79,480.86</td>
<td>1</td>
<td>79,480.86</td>
<td>25.86</td>
</tr>
<tr>
<td>Residual</td>
<td>618.12</td>
<td>1</td>
<td>618.12</td>
<td>0.20</td>
</tr>
<tr>
<td>Within Cells</td>
<td>2,638.77</td>
<td>3</td>
<td>879.59</td>
<td>0.29</td>
</tr>
<tr>
<td>AT</td>
<td>18,658.50</td>
<td>10</td>
<td>1,865.85</td>
<td>0.61</td>
</tr>
<tr>
<td>BT</td>
<td>24,166.50</td>
<td>5</td>
<td>4,833.30</td>
<td>1.57</td>
</tr>
<tr>
<td>ABT</td>
<td>32,612.20</td>
<td>10</td>
<td>3,261.22</td>
<td>1.06</td>
</tr>
<tr>
<td>Error (Within)</td>
<td>1,014,083.40</td>
<td>330</td>
<td>3,072.98</td>
<td></td>
</tr>
</tbody>
</table>
TABLE 3

Means of Interfigure Distances for Hawaii Caucasian, Hawaii Chinese, Hawaii Japanese and Hawaii Oriental for Male, Female and Combined Groups

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Hawaii Caucasian</th>
<th>Hawaii Chinese</th>
<th>Hawaii Japanese</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Comb.</td>
</tr>
<tr>
<td>Husband-Wife</td>
<td>130.83</td>
<td>169.08</td>
<td>149.96</td>
</tr>
<tr>
<td>Father-Son</td>
<td>186.83</td>
<td>159.33</td>
<td>173.08</td>
</tr>
<tr>
<td>Father-Daughter</td>
<td>170.67</td>
<td>154.00</td>
<td>162.33</td>
</tr>
<tr>
<td>Mother-Son</td>
<td>157.83</td>
<td>122.58</td>
<td>140.21</td>
</tr>
<tr>
<td>Mother-Daughter</td>
<td>157.83</td>
<td>141.50</td>
<td>149.67</td>
</tr>
<tr>
<td>Brother-Sister</td>
<td>155.33</td>
<td>127.25</td>
<td>141.29</td>
</tr>
<tr>
<td>Total</td>
<td>159.89</td>
<td>145.62</td>
<td>152.76</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hawaii Oriental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Husband-Wife</td>
</tr>
<tr>
<td>Father-Son</td>
</tr>
<tr>
<td>Father-Daughter</td>
</tr>
<tr>
<td>Mother-Son</td>
</tr>
<tr>
<td>Mother-Daughter</td>
</tr>
<tr>
<td>Brother-Sister</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Note: The measurement unit is thirty-seconds of an inch.
TABLE 4


<table>
<thead>
<tr>
<th>Relationship</th>
<th>Hawaii Caucasian</th>
<th>Hawaii Chinese</th>
<th>Hawaii Japanese</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Comb.</td>
</tr>
<tr>
<td>Husband-Wife</td>
<td>100.69 109.29 104.61</td>
<td>68.37 48.49 57.97</td>
<td>48.30 37.64 42.36</td>
</tr>
<tr>
<td>Father-Son</td>
<td>109.31 123.92 115.14</td>
<td>48.58 43.98 45.64</td>
<td>31.67 43.83 41.15</td>
</tr>
<tr>
<td>Father-Daughter</td>
<td>86.42 81.54 82.61</td>
<td>58.83 79.06 68.72</td>
<td>50.43 44.35 51.47</td>
</tr>
<tr>
<td>Mother-Son</td>
<td>89.57 55.32 75.00</td>
<td>89.60 62.33 76.14</td>
<td>48.96 64.14 59.31</td>
</tr>
<tr>
<td>Mother-Daughter</td>
<td>54.61 85.96 70.92</td>
<td>32.86 72.59 55.36</td>
<td>38.09 60.27 56.60</td>
</tr>
<tr>
<td>Brother-Sister</td>
<td>148.14 95.87 122.87</td>
<td>75.69 52.53 67.03</td>
<td>65.92 47.49 56.51</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Hawaii Oriental</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Husband-Wife</td>
<td>58.44 43.24 50.86</td>
<td>75.07</td>
</tr>
<tr>
<td>Father-Son</td>
<td>42.38 44.44 43.47</td>
<td>76.33</td>
</tr>
<tr>
<td>Father-Daughter</td>
<td>54.09 62.97 60.06</td>
<td>68.63</td>
</tr>
<tr>
<td>Mother-Son</td>
<td>71.79 64.16 67.54</td>
<td>79.82</td>
</tr>
<tr>
<td>Mother-Daughter</td>
<td>35.48 67.07 55.54</td>
<td>49.24</td>
</tr>
<tr>
<td>Brother-Sister</td>
<td>70.99 48.97 61.78</td>
<td>103.50</td>
</tr>
</tbody>
</table>
variance was found to be significant (F=25.86, df=1 and 330, Table 2).

**Hypothesis 2.** Hawaii Caucasian interfigure distances will be greater than Hawaii Oriental interfigure distances across family relationships.²

For this hypothesis the null hypothesis is rejected, since subculture F test for the subculture in Table 6 is significant beyond the .001 level (df=1 and 420) and the HCAU mean is less than HO mean (152.76 and 117.68 respectively, Table 3) as predicted.

**Family Group Pattern Results**

Hypothesis 1. Family figures will be placed in a rectangular rather than a horizontal only, vertical only, circular, or unordered pattern.

The results support the hypothesis; 41 of the 72 placement patterns were rectangular, 18 were horizontal, 4 vertical, 2 circular, and 7 unordered. A chi-square value of 72.03 with 4 degrees of freedom was obtained (Table 7), which is significant beyond the .001 level. The null hypothesis was rejected.

Hypothesis 2. A parent figure will be placed in the highest position more frequently than will a child figure.

²Since HChi and HJ groups did not differ significantly for the subculture (F=0.28, df=1 and 276, Table 5) nor for the subculture by family relationship interaction (F=0.35, df=5 and 276, Table 2), the HChi and HJ groups were pooled to form a single HO group for comparison to the HCAU group in hypothesis 2.
<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>82,873.56</td>
<td>11</td>
<td>7,533.96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Subculture</td>
<td>937.50</td>
<td>1</td>
<td>937.50</td>
<td>0.28</td>
<td>NS</td>
</tr>
<tr>
<td>B Family Relationship</td>
<td>76,132.55</td>
<td>5</td>
<td>15,226.51</td>
<td>4.60</td>
<td>.001</td>
</tr>
<tr>
<td>AB</td>
<td>5,803.50</td>
<td>5</td>
<td>1,160.70</td>
<td>0.35</td>
<td>NS</td>
</tr>
<tr>
<td>Within (Error)</td>
<td>913,935.36</td>
<td>276</td>
<td>3,311.36</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 6
Analysis of Variance Source Table
for Hawaii Oriental versus Hawaii
Caucasian Interfigure Distance Data
Across Family Relationships

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>194,854.11</td>
<td>11</td>
<td>17,714.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Subculture</td>
<td>118,138.06</td>
<td>1</td>
<td>118,138.06</td>
<td>22.28</td>
<td>.001</td>
</tr>
<tr>
<td>B Family Relationship</td>
<td>63,842.05</td>
<td>5</td>
<td>12,768.41</td>
<td>2.41</td>
<td>.05</td>
</tr>
<tr>
<td>AB</td>
<td>12,874.00</td>
<td>5</td>
<td>2,574.80</td>
<td>0.48</td>
<td>NS</td>
</tr>
<tr>
<td>Within (Error)</td>
<td>2,226,525.00</td>
<td>420</td>
<td>5,301.25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 7

Chi-square Analysis of Overall Placement Patterns:

Experiment 1

<table>
<thead>
<tr>
<th>Horizontal and Vertical</th>
<th>Horizontal</th>
<th>Vertical</th>
<th>Circular</th>
<th>Unordered</th>
<th>Chi-square df=4</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed</td>
<td>41</td>
<td>18</td>
<td>4</td>
<td>2</td>
<td>7</td>
<td>72.03</td>
</tr>
<tr>
<td>Expected</td>
<td>14.4</td>
<td>14.4</td>
<td>14.4</td>
<td>14.4</td>
<td>14.4</td>
<td></td>
</tr>
</tbody>
</table>
The hypothesis as stated is supported with 36 parent figures versus 8 child figures placed highest and 28 even placements in which neither parent nor child figures were placed in an unambiguously higher position. A chi-square of 17.33 with 2 degrees of freedom was obtained which is significant beyond the .001 level (Table 8), therefore the null hypothesis was rejected.

**Hypothesis 3.** Father figures will be placed in the left-most position more often than any other figure.

Table 10 shows the relative frequency of father, mother, son, daughter and more than one figure placed in the left-most position. The father figure was found in the left-most position in 37 out of the 72 total placements and other figures or more than one figure was placed there only 5 to 14 times in the remaining 35 patterns. A chi-square value of 47.44 with 5 degrees of freedom was obtained, which is significant beyond the .001 level (Table 9), therefore the null hypothesis was rejected.

**Hypothesis 4.** Daughter figures will be placed in the furthest right position more often than any other figure.

The data in Table 10 show that daughter figures were placed in the right-most position in 22 out of the total 72 patterns while father, mother, and son figures were placed in the right-most position 6, 10 and 10 times respectively and two or more figures were placed on the right margin of the placement pattern in 24 out of the 72 patterns.

A chi-square value of 18.00 with 4 degrees of freedom, significant .01 level (Table 10), was obtained on the furthest-right placement data. To check on hypothesis 4, that daughter figures would be
### TABLE 8

Chi-square Analysis for Figure Placed in Highest Position: Experiment 1

<table>
<thead>
<tr>
<th></th>
<th>Parent</th>
<th>Child</th>
<th>Even</th>
<th>Chi-square df=2</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed</td>
<td>36</td>
<td>8</td>
<td>28</td>
<td>17.33</td>
<td>.001</td>
</tr>
<tr>
<td>Expected</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 9

Chi-square Analysis for Figure Placed in Left-most Position: Experiment 1

<table>
<thead>
<tr>
<th></th>
<th>Father</th>
<th>Mother</th>
<th>Son</th>
<th>Daughter</th>
<th>Even</th>
<th>Chi-square df=4</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed</td>
<td>37</td>
<td>7</td>
<td>9</td>
<td>5</td>
<td>14</td>
<td>47.44</td>
<td>.001</td>
</tr>
<tr>
<td>Expected</td>
<td>14.4</td>
<td>14.4</td>
<td>14.4</td>
<td>14.4</td>
<td>14.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 10

Chi-square Analysis for Figure Placed in Right-most Position: Experiment 1

<table>
<thead>
<tr>
<th></th>
<th>Father</th>
<th>Mother</th>
<th>Son</th>
<th>Daughter</th>
<th>Even</th>
<th>Chi-square</th>
<th>df=4</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed</td>
<td>6</td>
<td>10</td>
<td>10</td>
<td>22</td>
<td>24</td>
<td>18.00</td>
<td></td>
<td>.01</td>
</tr>
</tbody>
</table>

TABLE 11

Chi-square for Analysis for Figure Placed in Right-Most Position with Evens Ratings Omitted: Experiment 1

<table>
<thead>
<tr>
<th></th>
<th>Father</th>
<th>Mother</th>
<th>Son</th>
<th>Daughter</th>
<th>Chi-square</th>
<th>df=3</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed</td>
<td>6</td>
<td>10</td>
<td>10</td>
<td>22</td>
<td>12.00</td>
<td></td>
<td>.01</td>
</tr>
<tr>
<td>Expected</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
placed in the furthest-right position more often than any other figures, Table 11 was constructed eliminating "even" ratings, since they were more frequently furthest-right than daughter figures (Table 11). With the even ratings eliminated, daughter figures were most frequently found in the right-most position—22 times compared to father—6, mother—10, and son—10. A chi-square of 12.00 was obtained on Table 11 data with 3 degrees of freedom which is significant beyond the .01 level in spite of the removal of the even data.

Since the difference significance held in the subsequent test, the null hypothesis for hypothesis 4 was rejected.

Hypothesis 5. Hawaii Caucasians and Hawaii Orientals will place family figures in similar relative positions:

a. parent figures higher than child figures,

b. father figures in the furthest left position,

c. and daughter figures in the furthest right position.

Tables 12, 13, and 14 give the results of the data analyses of figure placement patterns within subculture groups. In all cases Hawaii Caucasian-daughter furthest right, the results were statistically significant with relative frequencies in support of the stated hypotheses, and so null hypotheses are rejected. In the HCau-daughter furthest right situation, the data trend is in the predicted direction, with daughter figures placed furthest right 6 times, mother 4 times, son and father each 2 times and 2 or more figures placed furthest right (i.e. even) 10 times, but the obtained chi-square of 9.33 with 4 degrees of freedom (Table 14) does not reach significance. Therefore the null hypothesis was not rejected.
TABLE 12

Chi-square Analyses of Figure Placed in Highest Position by Hawaii Caucasians and Hawaii Orientals

<table>
<thead>
<tr>
<th>Group</th>
<th>Parent</th>
<th>Child</th>
<th>Chi-Square</th>
<th>df=2</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Highest</td>
<td>Highest</td>
<td>Even</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hawaii Caucasian</td>
<td>Observed</td>
<td>16</td>
<td>1</td>
<td>7</td>
<td>14.25</td>
</tr>
<tr>
<td>N=24</td>
<td>Expected</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Hawaii Oriental</td>
<td>Observed</td>
<td>20</td>
<td>7</td>
<td>21</td>
<td>7.62</td>
</tr>
<tr>
<td>N=48</td>
<td>Expected</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>
TABLE 13

Chi-square Analyses of Figures Placed in the Left-most Position by Hawaii Caucasians and Hawaii Orientals

<table>
<thead>
<tr>
<th>Group</th>
<th>Father</th>
<th>Mother</th>
<th>Son</th>
<th>Daughter</th>
<th>Even</th>
<th>Chi-square</th>
<th>df=4</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawaii Caucasian N=24</td>
<td>Observed 12</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>7</td>
<td>18.92</td>
<td></td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Expected 4.8</td>
<td>4.8</td>
<td>4.8</td>
<td>4.8</td>
<td>4.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hawaii Oriental N=48</td>
<td>Observed 25</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>7</td>
<td>31.17</td>
<td></td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Expected 9.6</td>
<td>9.6</td>
<td>9.6</td>
<td>9.6</td>
<td>9.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 14

Chi-square Analyses of Figures Placed in the Right-most Position by Hawaii Caucasians and Hawaii Orientals

<table>
<thead>
<tr>
<th>Group</th>
<th>Father</th>
<th>Mother</th>
<th>Son</th>
<th>Daughter</th>
<th>Even</th>
<th>Chi-square</th>
<th>df=4</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawaii Caucasian</td>
<td>Observed</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>10</td>
<td></td>
<td>9.33</td>
</tr>
<tr>
<td>N=24</td>
<td>Expected</td>
<td>4.8</td>
<td>4.8</td>
<td>4.8</td>
<td>4.8</td>
<td>4.8</td>
<td></td>
<td>NS</td>
</tr>
<tr>
<td>Hawaii Oriental</td>
<td>Observed</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>16</td>
<td>14</td>
<td></td>
<td>11.17</td>
</tr>
<tr>
<td>N=48</td>
<td>Expected</td>
<td>9.6</td>
<td>9.6</td>
<td>9.6</td>
<td>9.6</td>
<td>9.6</td>
<td></td>
<td>.05</td>
</tr>
</tbody>
</table>
Consideration of results obtained in the first study led to the development of three further questions. First, would it be possible to preen out the pure effects of family relationship aside from effects due only to physical characteristics of the figures used? Second, would pair measurements of each dyadic family relationship yield different results from group placement of the four figures? And third, to measure cultural effects, would it be more appropriate to compare placements of different cultural groups rather than different subcultural groups.

Considering the first question, that is the possibility of preening out pure relationship effects from physical characteristics of the particular stimulus objects used for figures, such as differing size and shape of the four figures, it is possible to present subjects with symbols rather than figures. For example, small circles, all of the same size with letters representing the family members (i.e. F-father, M-mother, S-son, D-daughter) could be used.

The second question of variation in pair versus group conditions may be dealt with by comparing subjects' placements under the two conditions.

Finally, the third question of differences across cultures, rather than only across subcultures, may be handled by drawing sample groups from distinct cultural populations. To answer these three questions, a second study was undertaken which shall be referred to as Experiment II.
III. EXPERIMENT II

A second study was made to modify and extend the data in three ways, to substitute symbols for figures in order to isolate the family relationship effects from other effects of the stimulus characteristics, to include a pair as well as the family group placement condition, and to draw the sample across cultural groups rather than subcultural groups.

To accomplish this task, a new measurement instrument was developed (see Appendix C). The instrument includes half-inch diameter circles on which letter symbols for family members are written, pair and family group placement conditions.

Subject samples were drawn from the culture groups, American, Filipino and Japanese.

Hypotheses in Experiment II were drawn up to parallel those of Experiment I.

**Hypotheses of Family Relationship Interfigure Distances**

1. In pair and group conditions, parent peer and child peer interfigure distances will be equal and less than mother-son and mother-daughter interfigure distances which will be equal and less than father-son and father-daughter distances which will be equal.

   \[ HW = BS < MS = MD < FS = FD \]

2. American family interfigure distances will be greater than interfigure distances of Filipinos which will be greater than interfigure distances of Japanese.
Hypotheses of Family Group Patterns

1. Family figures will be placed in a horizontal and vertical pattern rather than in horizontal only, vertical only, circular, or unordered patterns.

2. A parent figure will be placed in the highest position more frequently than will a child figure.

3. Father figures will be placed most frequently in the left-most position.

4. The daughter figure will be placed in the right-most position more than any other figure.

5. American, Filipino, and Japanese groups will place family figures in the same relative positions as hypothesized for the total group:
   a. parent figures higher than child figures,
   b. father figures in the furthest left position,
   c. and daughter figures in the furthest right position.

Method

The purpose of this investigation is to obtain data beyond that of the first study using symbol circles rather than silhouette figures, to include a pair by pair as well as an all at once placement condition, and to draw samples across different cultures.

Subjects. The subjects (Ss) were taken from three culture groups, American (A), Filipino (F), and Japanese (J).

The A sample (N=21) composed of Caucasian Ss of various ethnic origin groups was drawn from acquaintences of the investigator and students at the University of Hawaii.
The F sample (N=18) was drawn from University of Hawaii East-West Center grantees from the Philippines.

The J sample (N=26) was taken partly from East-West center grantees at the University of Hawaii from Japan and partly from students at Keio High School and University and Waseda University in Tokyo, Japan.

As in Experiment 1, descriptive data of the three groups were taken on the three variables; age, years in school, and grade point average. The results of t tests between descriptive data means are given in Table 15.

Materials. The materials given each American, Filipino and East-West Center Japanese S included a copy of the instrument in Appendix C to which were paper-clipped seven 2-1/4 x 3-1/2 inch envelopes numbered "page 2" through "page 8" consecutively and which contained the randomized symbol circles. The circle symbol randomization contained the six pairs, husband-wife, father-son, father-daughter, mother-son, mother-daughter, son-daughter, and one set including father, mother, son, daughter to include both pair and group data.

The symbol circles used were 1/2 inch diameter gummed circles set in the center of removable square backings 5/8" on a side. On each circle, one of the four letters, F, M, S, or D, had been printed. The symbol code F=father, M=mother, S=son, and D=daughter was included on a facing sheet for each page of the instrument to maximize awareness of what each symbol represented.

Japanese Ss in Japan were given instruments translated into Japanese characters (Appendix D) with symbol circles also having
**TABLE 15**

Summary of *t* Tests on Descriptive Data
for Experiment II

<table>
<thead>
<tr>
<th>Groups Compared</th>
<th>Age X</th>
<th>t</th>
<th>Significance</th>
<th>Years in School X</th>
<th>t</th>
<th>Significance</th>
<th>Grade Point Average X</th>
<th>t</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>American with Filipino</td>
<td>23.95</td>
<td>0.83</td>
<td>NS</td>
<td>13.90</td>
<td>2.24</td>
<td>.05</td>
<td>2.81</td>
<td>0.04</td>
<td>NS</td>
</tr>
<tr>
<td>American with Japanese</td>
<td>23.95</td>
<td>1.59</td>
<td>NS</td>
<td>13.90</td>
<td>0.36</td>
<td>NS</td>
<td>2.81</td>
<td>0.21</td>
<td>NS</td>
</tr>
<tr>
<td>Filipino with Japanese</td>
<td>25.67</td>
<td>4.00</td>
<td>.01</td>
<td>15.89</td>
<td>2.28</td>
<td>.05</td>
<td>2.80</td>
<td>0.22</td>
<td>NS</td>
</tr>
</tbody>
</table>

5
corresponding Japanese characters randomly ordered with the six pairs and the family group conditions in the seven envelopes. All materials used in the Japanese edition were of the exact dimensions as in the English edition. The page numbers on the seven placement sheets and envelopes in the Japanese edition were in arabic numerals upon advice from the translator that all Japanese Ss would be familiar with these.

The placement sheets in the instruments actually used in both the English and Japanese versions of the instrument were 9 x 12 inches; these were cropped to 8-1/2 x 11 inches for inclusion in the appendicies.

Procedure. The procedure in the circle study is basically the same as in the figure study except that instructions were presented in written form in this second study on the front page of the instrument. The personal data form (PDF) was included as the last page of the instrument rather than handed out after figure placement, but care was taken that Ss not see the PDF's until after they had made all placements. Ss were also all run in a group in the second study.

Design and analysis. As in Experiment 1, the interfigure distance data was analysed by a one-within (relationship) and two-between (sex and culture) analysis of variance for both the pair and group conditions (see Figure 1, substituting culture for subculture).

Relative frequencies of hypothesized placement patterns in the group condition (numbers 8-11) were tested as in Experiment 1 via chi-square analyses.

Family Relationship Interfigure Distance Results

Hypothesis 1. In pair and group conditions, parent peer and child peer interfigure distances will be equal and less than mother-son
and mother-daughter interfigure distances which will be equal and less than father-son and father-daughter distances which will be equal.

For the pair condition, the family relationship variance was not significant (F=0.13, df=5 and 295, Table 16). For the between cells test, parent peer greater than mother-child greater than father-child, no F test was necessary, since the overall F of 0.13 could not be raised to significance even if all the family relationship variance were accounted for by the 2 degrees of freedom between cells test. Similarly the linear test was not run, since even if all the family relationship variance were reduced to this 1 degree of freedom test, the results would not be significant. This can be seen by multiplying the 5 degree of freedom overall F of 0.13 by 5 which equals 0.65 which is not a significant F.

The data for the pair condition does not support the experimental hypothesis of parent peer relationship distances equal and less than mother-child being equal and less than equal father-child relationship distances.

For the group condition, family relationship was significant beyond the .001 level (F=6.02, df=5 and 295, Table 19). The parent peer greater than mother-child and greater than father-child ($\bar{x}_1=50.93$, $\bar{x}_2=56.98$, and $\bar{x}_3=62.83$ respectively as calculated from Table 20 data) between cells variance is also significant in the predicted direction (F=8.46, df=2 and 295, Table 19) therefore the null hypothesis for the group condition is rejected.

The linear component of the between cells variance for the group condition was significant beyond the .001 level (F=16.92, df=1 and
### TABLE 16

Analysis of Variance Source Table
for Experiment II Data: Pair Condition

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between Subjects Variance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Culture</td>
<td>2</td>
<td>11897.46</td>
<td>1.54</td>
<td>NS</td>
</tr>
<tr>
<td>B Sex</td>
<td>1</td>
<td>800.18</td>
<td>1.04</td>
<td>NS</td>
</tr>
<tr>
<td>A x B</td>
<td>2</td>
<td>11926.30</td>
<td>1.54</td>
<td>NS</td>
</tr>
<tr>
<td>Error (Between)</td>
<td>59</td>
<td>7727.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Within Subjects Variance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T Relationship</td>
<td>5</td>
<td>234.87</td>
<td>0.13</td>
<td>NS</td>
</tr>
<tr>
<td>A x T</td>
<td>10</td>
<td>2904.11</td>
<td>1.63</td>
<td>NS</td>
</tr>
<tr>
<td>B x T</td>
<td>5</td>
<td>2106.41</td>
<td>1.18</td>
<td>NS</td>
</tr>
<tr>
<td>A x B x T</td>
<td>10</td>
<td>1923.88</td>
<td>1.08</td>
<td>NS</td>
</tr>
<tr>
<td>Error (Within)</td>
<td>295</td>
<td>1785.84</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 17

Pair Placement Condition Means of Interfigure Distances for American, Filipino, and Japanese Male, Female, and Combined Groups

<table>
<thead>
<tr>
<th>Pair Placement</th>
<th>American Male</th>
<th>American Female</th>
<th>American Comb.</th>
<th>Filipino Male</th>
<th>Filipino Female</th>
<th>Filipino Comb.</th>
<th>Japanese Male</th>
<th>Japanese Female</th>
<th>Japanese Comb.</th>
<th>Total Male</th>
<th>Total Female</th>
<th>Total Comb.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Husband-Wife</td>
<td>47.80</td>
<td>83.82</td>
<td>66.67</td>
<td>34.89</td>
<td>35.11</td>
<td>35.00</td>
<td>74.18</td>
<td>34.00</td>
<td>68.00</td>
<td>59.12</td>
<td>57.25</td>
<td>58.43</td>
</tr>
<tr>
<td>Father-Son</td>
<td>34.70</td>
<td>31.73</td>
<td>33.14</td>
<td>78.00</td>
<td>34.56</td>
<td>56.28</td>
<td>73.86</td>
<td>53.50</td>
<td>70.73</td>
<td>65.22</td>
<td>36.42</td>
<td>54.58</td>
</tr>
<tr>
<td>Father-Daughter</td>
<td>43.90</td>
<td>36.73</td>
<td>40.14</td>
<td>29.00</td>
<td>34.89</td>
<td>31.94</td>
<td>69.68</td>
<td>84.00</td>
<td>71.88</td>
<td>54.46</td>
<td>43.92</td>
<td>50.57</td>
</tr>
<tr>
<td>Mother-Son</td>
<td>28.50</td>
<td>80.00</td>
<td>55.48</td>
<td>36.67</td>
<td>33.44</td>
<td>33.06</td>
<td>65.32</td>
<td>40.50</td>
<td>61.50</td>
<td>49.17</td>
<td>55.96</td>
<td>51.68</td>
</tr>
<tr>
<td>Mother-Daughter</td>
<td>41.10</td>
<td>84.18</td>
<td>63.67</td>
<td>34.11</td>
<td>35.44</td>
<td>34.78</td>
<td>60.54</td>
<td>35.50</td>
<td>56.69</td>
<td>50.00</td>
<td>57.79</td>
<td>52.88</td>
</tr>
<tr>
<td>Brother-Sister</td>
<td>49.40</td>
<td>50.45</td>
<td>49.95</td>
<td>46.33</td>
<td>36.33</td>
<td>41.33</td>
<td>85.54</td>
<td>47.00</td>
<td>79.62</td>
<td>68.12</td>
<td>44.58</td>
<td>59.43</td>
</tr>
<tr>
<td>Total</td>
<td>40.90</td>
<td>61.15</td>
<td>51.51</td>
<td>42.50</td>
<td>34.96</td>
<td>38.73</td>
<td>71.52</td>
<td>49.08</td>
<td>68.07</td>
<td>57.68</td>
<td>49.32</td>
<td>54.60</td>
</tr>
</tbody>
</table>
TABLE 18

Pair Placement Condition Standard Deviations of Interfigure Distance for American, Filipino, and Japanese Male, Female, and Combined Groups

<table>
<thead>
<tr>
<th>Relationship</th>
<th>American</th>
<th>Filipino</th>
<th>Japanese</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Comb.</td>
<td>Male</td>
</tr>
<tr>
<td>Husband-Wife</td>
<td>40.93</td>
<td>79.32</td>
<td>65.12</td>
<td>34.35</td>
</tr>
<tr>
<td>Father-Son</td>
<td>34.61</td>
<td>29.93</td>
<td>31.45</td>
<td>92.11</td>
</tr>
<tr>
<td>Father-Daughter</td>
<td>29.86</td>
<td>47.64</td>
<td>39.37</td>
<td>18.76</td>
</tr>
<tr>
<td>Mother-Son</td>
<td>20.59</td>
<td>99.17</td>
<td>76.18</td>
<td>26.57</td>
</tr>
<tr>
<td>Mother-Daughter</td>
<td>40.93</td>
<td>98.78</td>
<td>78.22</td>
<td>32.25</td>
</tr>
<tr>
<td>Brother-Sister</td>
<td>43.20</td>
<td>59.96</td>
<td>51.35</td>
<td>59.16</td>
</tr>
</tbody>
</table>
TABLE 19

Analysis of Variance Source Table

for Experiment II Data: Group Condition

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between Subjects Variance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Culture</td>
<td>7,428.70</td>
<td>2</td>
<td>3,714.35</td>
<td>0.41</td>
<td>NS</td>
</tr>
<tr>
<td>B Sex</td>
<td>2,397.91</td>
<td>1</td>
<td>2,397.91</td>
<td>0.26</td>
<td>NS</td>
</tr>
<tr>
<td>AB</td>
<td>2,252.38</td>
<td>2</td>
<td>1,126.19</td>
<td>0.12</td>
<td>NS</td>
</tr>
<tr>
<td>Error (Between)</td>
<td>533,997.79</td>
<td>59</td>
<td>9,050.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Within Subjects Variance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T Family Relationship</td>
<td>16,376.65</td>
<td>5</td>
<td>3,274.73</td>
<td>6.02</td>
<td>.001</td>
</tr>
<tr>
<td>Between Cells</td>
<td>9,205.52</td>
<td>2</td>
<td>4,602.76</td>
<td>8.46</td>
<td>.001</td>
</tr>
<tr>
<td>Linear</td>
<td>9,204.65</td>
<td>1</td>
<td>9,204.65</td>
<td>16.92</td>
<td>.001</td>
</tr>
<tr>
<td>Residual</td>
<td>0.87</td>
<td>1</td>
<td>0.87</td>
<td>0.00</td>
<td>NS</td>
</tr>
<tr>
<td>Within Cells</td>
<td>7,168.13</td>
<td>3</td>
<td>2,389.38</td>
<td>4.39</td>
<td>.01</td>
</tr>
<tr>
<td>AT</td>
<td>3,524.10</td>
<td>10</td>
<td>352.41</td>
<td>0.65</td>
<td>NS</td>
</tr>
<tr>
<td>BT</td>
<td>165.10</td>
<td>5</td>
<td>33.02</td>
<td>0.06</td>
<td>NS</td>
</tr>
<tr>
<td>ABT</td>
<td>4,700.60</td>
<td>10</td>
<td>470.06</td>
<td>0.82</td>
<td>NS</td>
</tr>
<tr>
<td>Error (Within)</td>
<td>160,530.15</td>
<td>295</td>
<td>544.17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 20

Group Placement Condition Means of Interfigure Distances for American, Filipino, and Japanese Male, Female, and Combined Groups

<table>
<thead>
<tr>
<th>Relationship</th>
<th>American Male</th>
<th>American Female</th>
<th>American Comb.</th>
<th>Filipino Male</th>
<th>Filipino Female</th>
<th>Filipino Comb.</th>
<th>Japanese Male</th>
<th>Japanese Female</th>
<th>Japanese Comb.</th>
<th>Total Male</th>
<th>Total Female</th>
<th>Total Comb.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Husband-Wife</td>
<td>43.70</td>
<td>48.00</td>
<td>45.95</td>
<td>45.56</td>
<td>44.22</td>
<td>44.89</td>
<td>63.36</td>
<td>43.00</td>
<td>60.23</td>
<td>54.66</td>
<td>45.75</td>
<td>51.37</td>
</tr>
<tr>
<td>Father-Son</td>
<td>60.30</td>
<td>60.36</td>
<td>60.33</td>
<td>49.67</td>
<td>43.67</td>
<td>46.67</td>
<td>59.00</td>
<td>55.25</td>
<td>58.42</td>
<td>57.27</td>
<td>53.25</td>
<td>55.78</td>
</tr>
<tr>
<td>Father-Daughter</td>
<td>76.20</td>
<td>61.54</td>
<td>68.52</td>
<td>67.67</td>
<td>54.89</td>
<td>61.28</td>
<td>76.18</td>
<td>81.00</td>
<td>76.92</td>
<td>74.32</td>
<td>62.29</td>
<td>69.88</td>
</tr>
<tr>
<td>Mother-Son</td>
<td>53.80</td>
<td>57.82</td>
<td>55.90</td>
<td>48.11</td>
<td>51.67</td>
<td>49.89</td>
<td>61.32</td>
<td>40.75</td>
<td>58.15</td>
<td>56.58</td>
<td>52.67</td>
<td>55.14</td>
</tr>
<tr>
<td>Mother-Daughter</td>
<td>62.70</td>
<td>60.09</td>
<td>61.33</td>
<td>40.56</td>
<td>48.67</td>
<td>44.61</td>
<td>70.14</td>
<td>47.25</td>
<td>66.62</td>
<td>61.83</td>
<td>53.67</td>
<td>58.82</td>
</tr>
<tr>
<td>Brother-Sister</td>
<td>58.80</td>
<td>53.54</td>
<td>56.05</td>
<td>37.22</td>
<td>38.44</td>
<td>37.83</td>
<td>57.36</td>
<td>40.50</td>
<td>54.77</td>
<td>53.29</td>
<td>45.71</td>
<td>50.49</td>
</tr>
<tr>
<td>Total</td>
<td>59.25</td>
<td>56.89</td>
<td>58.01</td>
<td>48.13</td>
<td>46.93</td>
<td>47.53</td>
<td>64.56</td>
<td>51.29</td>
<td>62.52</td>
<td>59.66</td>
<td>52.22</td>
<td>56.91</td>
</tr>
<tr>
<td>Relationship</td>
<td>Male</td>
<td>Female</td>
<td>Comb.</td>
<td>Male</td>
<td>Female</td>
<td>Comb.</td>
<td>Male</td>
<td>Female</td>
<td>Comb.</td>
<td>Male</td>
<td>Female</td>
<td>Comb.</td>
</tr>
<tr>
<td>-------------------</td>
<td>------</td>
<td>--------</td>
<td>-------</td>
<td>------</td>
<td>--------</td>
<td>-------</td>
<td>------</td>
<td>--------</td>
<td>-------</td>
<td>------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>Husband-Wife</td>
<td>26.45</td>
<td>56.65</td>
<td>48.87</td>
<td>28.60</td>
<td>32.20</td>
<td>27.56</td>
<td>42.64</td>
<td>10.36</td>
<td>39.96</td>
<td>36.96</td>
<td>42.13</td>
<td>38.86</td>
</tr>
<tr>
<td>Father-Son</td>
<td>25.19</td>
<td>79.54</td>
<td>58.72</td>
<td>24.76</td>
<td>31.61</td>
<td>27.72</td>
<td>25.97</td>
<td>28.04</td>
<td>25.75</td>
<td>25.23</td>
<td>57.11</td>
<td>39.67</td>
</tr>
<tr>
<td>Father-Daughter</td>
<td>36.70</td>
<td>96.02</td>
<td>72.61</td>
<td>29.79</td>
<td>35.25</td>
<td>32.33</td>
<td>36.13</td>
<td>49.79</td>
<td>37.37</td>
<td>34.33</td>
<td>69.62</td>
<td>50.12</td>
</tr>
<tr>
<td>Mother-Son</td>
<td>26.97</td>
<td>94.71</td>
<td>69.40</td>
<td>35.31</td>
<td>41.59</td>
<td>37.47</td>
<td>32.04</td>
<td>6.90</td>
<td>30.42</td>
<td>31.34</td>
<td>67.42</td>
<td>47.45</td>
</tr>
<tr>
<td>Mother-Daughter</td>
<td>42.21</td>
<td>78.12</td>
<td>62.09</td>
<td>23.66</td>
<td>33.51</td>
<td>28.45</td>
<td>29.62</td>
<td>37.75</td>
<td>31.28</td>
<td>33.37</td>
<td>57.15</td>
<td>43.42</td>
</tr>
<tr>
<td>Brother-Sister</td>
<td>39.83</td>
<td>57.85</td>
<td>48.93</td>
<td>29.80</td>
<td>27.36</td>
<td>27.76</td>
<td>38.57</td>
<td>19.28</td>
<td>36.51</td>
<td>37.29</td>
<td>42.65</td>
<td>39.19</td>
</tr>
</tbody>
</table>
Hypothesis 2. American family figure interfigure distances will be greater than interfigure distances of Filipinos which will be greater than interfigure distances of Japanese.

This hypothesis is not supported by the data as can be seen by the non-significant $F$s for culture in the pair condition ($F=1.54$, df=2 and 59, Table 16) and the group condition ($F=0.41$, df=2 and 59, Table 19) and also by the fact that the order of the means is not in the predicted sequence. The sequence of the means is Japanese (J) greater than American (A) greater than Filipino (F) in both the pair and group conditions (J=68.07, A=51.51, and F=38.73 for pair condition, Table 17, and J=62.52, A=47.53 and F=47.53 for the group condition, Table 20). The null hypothesis was not rejected.

Family Group Pattern Results

Hypothesis 1. Family figures will be placed in a horizontal and vertical pattern rather than in horizontal only, vertical only, circular, or unordered patterns.

In 55 of the 65 placements there were horizontal and vertical patterns, while there were 7 horizontal only, 2 vertical only, and one circular placements. A chi square value of 124.48 with three degrees of freedom was obtained (Table 22), which is significant at the .001 level, therefore the null hypothesis was rejected.

Hypothesis 2. A parent figure will be placed in the highest position more frequently than will a child figure.

In 48 of the total 65 placement patterns, parent figures were placed higher than child figures; in seven, child figures were
### TABLE 22

Chi-square Analysis of Overall Placement Patterns: Experiement II

<table>
<thead>
<tr>
<th></th>
<th>Horizontal and Vertical</th>
<th>Horizontal</th>
<th>Vertical</th>
<th>Circular</th>
<th>Chi-square df=3</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Observed</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>55</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
placed highest; and in 10 patterns, child figures were placed even with parent figures. A chi-square of 48.21 with 2 degrees of freedom was obtained (Table 23), which is significant at the .001 level, therefore the null hypothesis was rejected.

**Hypothesis 3.** Father figures will be placed most frequently in the left-most position.

Father figures were placed in the left-most position 22 times as compared to mother figures 13 times, son seven times and daughter six times, with 17 patterns having more than one figure on the left border of the pattern. A chi-square of 14.00 with four degrees of freedom was obtained which is significant at the .01 level therefore the null hypothesis was rejected (Table 24).

**Hypothesis 4.** The daughter figure will be placed in the right-most position more than any other figure.

Daughter figures were placed in the right-most position 20 times as compared to mother eight times, and son seven times, with 22 placements having more than one figure on the right border of the pattern. A chi-square of the data of 16.62 (Table 25) was obtained, which is significant at the .01 level. A second chi-square test was run on the data excluding the even placement on the right border to check the stated hypothesis that daughter figures were placed on the right more than any other figure (Table 26), and the obtained chi-square, 10.67 with three degrees of freedom was also significant at the .01 level. Therefore the null hypothesis was rejected.
TABLE 23

Chi-square Analysis of Figures Placed in
the Highest Position for Total Group
Experiment II

<table>
<thead>
<tr>
<th></th>
<th>Parent</th>
<th>Child</th>
<th>Even</th>
<th>Chi-square df=2</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed</td>
<td>48</td>
<td>7</td>
<td>10</td>
<td>48.21</td>
<td>.001</td>
</tr>
<tr>
<td>Expected</td>
<td>21.67</td>
<td>21.67</td>
<td>21.67</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 24

Chi-square Analysis for Figures Placed in Left-most Position for Total Group

Experiment II

<table>
<thead>
<tr>
<th></th>
<th>Father</th>
<th>Mother</th>
<th>Son</th>
<th>Daughter</th>
<th>Even</th>
<th>Chi-square</th>
<th>df=4</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed</td>
<td>22</td>
<td>13</td>
<td>7</td>
<td>6</td>
<td>17</td>
<td>14.00</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>Expected</td>
<td>13.00</td>
<td>13.00</td>
<td>13.00</td>
<td>13.00</td>
<td>13.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 25

Chi-square Analysis for Figures Placed in Right-most Position for Total Group

Experiment II

<table>
<thead>
<tr>
<th></th>
<th>Father</th>
<th>Mother</th>
<th>Son</th>
<th>Daughter</th>
<th>Even</th>
<th>Chi-square</th>
<th>df=4</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>20</td>
<td>22</td>
<td>16.62</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>Expected</td>
<td>13.00</td>
<td>13.00</td>
<td>13.00</td>
<td>13.00</td>
<td>13.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 26

Chi-square Analysis for Figures
Placed in the Right-most Position
for Total Group with Even Placements Omitted
Experiment II

<table>
<thead>
<tr>
<th></th>
<th>Father</th>
<th>Mother</th>
<th>Son</th>
<th>Daughter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>Expected</td>
<td>10.75</td>
<td>10.75</td>
<td>10.75</td>
<td>10.75</td>
</tr>
<tr>
<td>Chi-square</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>df=3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significance</td>
<td>10.67</td>
<td></td>
<td></td>
<td>.01</td>
</tr>
</tbody>
</table>
Hypothesis 5. American, Filipino and Japanese groups will place family figures in the same relative positions as hypothesized for the total group:

a. parent figures higher than child figures,
b. father figures in the furthest left position,
c. and daughter figures in the furthest right position.

All three culture groups, American, Filipino and Japanese placed parent figures in the highest position more frequently than child figures (Table 27), therefore for hypothesis 5a the null hypothesis was rejected for all three groups.

For frequency of father figures placed in the left-most position across the three culture groups (Table 28), although the results were in the predicted direction, only the Filipino group reacted with statistical significance (.05 level), therefore the null hypothesis was rejected for that group only.

Similarly, for figures placed in the right-most position across culture groups (Table 29), only one group (the American group) attained statistical significance (.01 level), and therefore the null hypothesis for 5c was rejected for that group only.
TABLE 27

Chi-square Analyses for Figures Placed in Highest Position for American, Filipino, and Japanese Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Parent</th>
<th>Child</th>
<th>Even</th>
<th>Chi-square df=2</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>American</td>
<td>Observed</td>
<td>12</td>
<td>3</td>
<td>6</td>
<td>6.00</td>
</tr>
<tr>
<td></td>
<td>Expected</td>
<td>7.00</td>
<td>7.00</td>
<td>7.00</td>
<td></td>
</tr>
<tr>
<td>Filipino</td>
<td>Observed</td>
<td>16</td>
<td>1</td>
<td>1</td>
<td>25.00</td>
</tr>
<tr>
<td></td>
<td>Expected</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
<td></td>
</tr>
<tr>
<td>Japanese</td>
<td>Observed</td>
<td>20</td>
<td>3</td>
<td>3</td>
<td>22.22</td>
</tr>
<tr>
<td></td>
<td>Expected</td>
<td>8.67</td>
<td>8.67</td>
<td>8.67</td>
<td></td>
</tr>
</tbody>
</table>
TABLE 28

Chi-square Analyses for Figures
Placed in Left-Most Position for
American, Filipino, and Japanese Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Father</th>
<th>Mother</th>
<th>Son</th>
<th>Daughter</th>
<th>Even</th>
<th>Chi-square df=4</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>American</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.90</td>
<td>NS</td>
</tr>
<tr>
<td>Observed</td>
<td>8</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expected</td>
<td>4.20</td>
<td>4.20</td>
<td>4.20</td>
<td>4.20</td>
<td>4.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filipino</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.56</td>
<td>.05</td>
</tr>
<tr>
<td>Observed</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expected</td>
<td>3.60</td>
<td>3.60</td>
<td>3.60</td>
<td>3.60</td>
<td>3.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japanese</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.92</td>
<td>NS</td>
</tr>
<tr>
<td>Observed</td>
<td>8</td>
<td>8</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expected</td>
<td>5.20</td>
<td>5.20</td>
<td>5.20</td>
<td>5.20</td>
<td>5.20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 29

Chi-square Analyses for Figures Placed in the Right-most Position for American, Filipino, and Japanese Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Father</th>
<th>Mother</th>
<th>Son</th>
<th>Daughter</th>
<th>Even</th>
<th>Chi-square</th>
<th>df=4</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>American</td>
<td>Observed 2</td>
<td>1</td>
<td>2</td>
<td>10</td>
<td>6</td>
<td>13.52</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expected 4.20</td>
<td>4.20</td>
<td>4.20</td>
<td>4.20</td>
<td>4.20</td>
<td>4.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filipino</td>
<td>Observed 3</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>2.00</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expected 3.60</td>
<td>3.60</td>
<td>3.60</td>
<td>3.60</td>
<td>3.60</td>
<td>3.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japanese</td>
<td>Observed 3</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>11</td>
<td>8.62</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expected 5.20</td>
<td>5.20</td>
<td>5.20</td>
<td>5.20</td>
<td>5.20</td>
<td>5.20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
IV. DISCUSSION

Experiment I Data

The purpose of the first study was to establish interfigure distances and family group pattern baseline data for nuclear family relationships comparing samples from different subculture groups.

Figure placement measurements of the six family relationships yielded significant differences in interfigure distances, with the general trend of the data being that peer relationships were closer than authority relationships and mother-child closer than father-child relationships.

The cross-subcultural data trend was for the Hawaii Orientals to have closer family relationship placements than Hawaii Caucasians.

In the first Experiment, four family group pattern characteristics were distinctly discernable, an overall horizontal and vertical configuration, parent figures placed highest, father left-most, and daughter right-most.

Within the two subculture groups, the three patterns of parent highest, father furthest right and daughter furthest left all held up in the data trends with all but one (HCau-daughter furthest left) of the resultant chi-square tests reaching statistical significance at or beyond the .05 level.

Experiment II Data

Three questions arose out of consideration of Experiment I data which were addressed in Experiment II.
1. Will pair placement results differ from group placement results?

2. Will the use of non-figure symbols result in significant relationship interfigure distance differences, or will these differences not hold, showing that the differences were an artifact of figure shape differences, rather than an effect of pure relationship differences?

3. Will similar results obtain across culture, rather than subculture groups?

Experiment II results provide data for the consideration of these three questions.

1. Pair placements differ from group placements.

The significant differences found in Experiment I did not hold up in the pair condition of Experiment II, while they did hold up in the Experiment II group condition.

2. On the question of whether the obtained interdistance effects are an artifact of figure shape father than the effect of family relationship, the fact that in one of the two Experiment II placement conditions, group, the significant results of Experiment I are consistently replicated (see Table 23) is evidence that pure relationship effects are being tapped with this measurement device.

Further evidence that the pure relationship effects are being measured would be if the pattern effects found in Experiment I were replicated in Experiment II, and this is what was found in Experiment II. All four pattern effects found in Experiment I held up with the circle symbol device in Experiment II. Overall horizontal and
vertical patterns were predominant, parent figures highest, father figures right-most, and daughter figures left-most.

3. The significant subcultural effect found in Experiment I was not replicated for the cultural effect in Experiment II.

In the Experiment I analysis of variance, the subculture variable was significant at the .05 level and subsequent individual means comparisons showed that for all six family relationships Hawaii Oriental interfigure distances were less than Hawaii Caucasian distances, four of the six differences being statistically significant.

The culture variable was not significant in Experiment II, in either the group or pair analysis of variance for relationship interfigure distances.

Pattern results within the three culture groups of Experiment II were consistent with pattern results within subculture groups in Experiment I. As in the total groups for Experiments I and II, the parent highest, father furthest right and daughter furthest left pattern characteristics all held up in the data trends within each culture group in Experiment II with five of the nine chi-square tests reaching significance at or beyond the .05 level.

No interaction effects for interfigure distance were significant in either Experiment I or Experiment II.

Interpretation of the Data

In Experiment I, which was run only in a group condition, and in the Experiment II group condition, there are significant differences in family relationship interfigure distances, but the pair condition did not yield significant differences.
The difference between pair and group condition results are suggestive that the pair and group settings constitute different social perceptual contexts. The group results give evidence of a priority structure of intimate relationships within the family. Both adult and child peers tend to be more intimate than parent-child non peers. That is, husband-wife and brother-sister relationships tend to be closer than any of the four parent-child combinations, father-son, father-daughter, mother-son or mother-daughter.

Mother-child distances were found to be less than father-child relationships in the group conditions of both studies. These mother-child closer than father-child results replicate the findings in previous studies (Kuethe, 1962; Higgins et al, 1969). Mother-child closer than father-child results would be predictable from a role theory perspective in cultures where the father's role entails working away from home while the mother's role is to stay at home and care for the children. This is the assumed tendency in the families of the subcultures and cultures tested here.

Since the linear component of the between cells variance (i.e. the parent and child peer < mother-child < father-child variance) for Experiment I and Experiment II group condition are significant beyond the .001 level while residual variance in both cases is not significant (Tables 2 and 19), this supports the interpretation that the parent and child peer versus mother-child difference is equal to the mother-child versus father-child difference.

The large father-daughter difference in the group condition of Experiment II suggests the existence of a norm of non-intimacy
between father and daughter in the family group context. If this norm does in fact exist, it may serve to mitigate threat to the mother so that the mother-daughter relationship, which is assumed to be vital to the daughter, does not become over-competitive.

A plausible explanation to the subculture differences of Experiment I in the light of no differences between cultures in Experiment II is that the Experiment I subcultural differences are a reflection of the probable greater proportion of HO Ss who live close to or with their families than HCau Ss, assuming that a larger proportion of the caucasian sample is drawn from students coming to Hawaii to attend school and that a larger proportion of the HO sample is made up of students whose families reside in Hawaii.

The meaning of the pattern results appears to be rather straightforward. The horizontal and vertical patterns predominately used in overall family group patterns allow for indication of peer (husband-wife and brother-sister) and authority (parent-child) relationships.

The parents being placed higher than child figures is interpreted as a measure of authority relationship.

The father left-most characteristic is seen as a high status position in which the typical cultural role across the subcultural, and cultural groups tested, is that of economic and social authority figure within the nuclear family social survival unit as it is now constituted.

The greater proportion of female child figures placed in the right-most, low-status position is further evidence of the male dominant cultural status hierarchy.
The Women's Liberation Movement presently occurring across various national boundaries seems to have as one focus effecting a change in these traditional male-female family role definitions as a means towards securing greater status for women.

For the HO and HCa subculture groups and the American and Filipino culture groups the data trends of parent highest, father left-mose and daughter right-most hold up giving evidence of the parent and male status roles within the cultural family roles.

In the Japanese family group pattern results of Experiment II, the vertical parent-highest effect was found but the two horizontal father-right and daughter-left effects did not reach statistical significance (see Tables 27, 28 and 29). An interpretation of the non-significant horizontal dimension effects for the Japanese group is based upon a consideration of the differing horizontal directionality in the writing of Japanese characters from the top of a page down and from right to left rather than from left to right. The underlying explanation is that in a right-left writing sequence, the right side of a page is focused upon before the left side so that the right-most position may be ascribed with greater importance than the left side. But, it can be seen from inspection of the Japanese translation of the circle instrument in Appendix D that present convention allows for a left-right across as well as right-left down format. The finding here of no significant horizontal male-female

3 This idea was suggested by Dr. Huber Ellingsworth of the University of Hawaii Speech Communication Department
position preferences for the Japanese group is interpreted to be due to the mitigating effects of the two opposing directional conventions (left-right and right-left) rather than as a measure of the actual male-female status roles in the Japanese culture.

Implications

The purpose of this study was to establish baseline data for the development of a clinical instrument for use in the analysis of family relationships in counseling and therapy. In the family group context the interfigure distance and placement pattern results varied significantly across the six family relationships tested. Furthermore, no significant interaction effects were found for the interfigure distance analyses indicating that this technique is a relatively clean measure of relationship effects.

For the development of the clinical instrument, various norm groups such as normals, neurotics and psychotics, or inmates of various institutions such as prisons or mental hospitals as well as atypically self-actualized Ss could be made and compared for family role interfigure distances and patterns. Also there could be included a greater range of family relationships than sampled here including brother-brother and sister-sister relationships. Size of sibling figures could be varied such as having infant, child and young adult size male and female figures. Norm groups of varying family constellation groups, including only child, all boy child, all girl child and very large family groups could also be included. Family units could be tested which are describable as healthy and sick on such criteria as ability and style of stress coping, that is, the healthy or strong
family is hypothesized to be the one which unites in the face of stress or crisis within the family while the relatively weak family is hypothesized split into fragments in crisis contexts.

The clinical instrument might be presented and used as a projective device in which responses of family members to various crisis situations such as a death are compared.

A different study which might be pursued with the instrument is to look at family placements by various groups advocating new life styles who are setting up intentional communities with planned changes in family roles such as husband-wife role reversals or role sharing.

The instrument could be constructed by the use of rubber stamps of family figures with a booklet of diagrammed family settings such as home, outdoors, neighborhood, and work territories delineated. Also a time variable could be included by having placements made in the same setting, such as the home, at various times of day, perhaps seven A.M., noon, seven P.M. and midnight. The midnight placements would give an indication of the sleeping arrangements within the family, a taboo topic assumed to have powerful underlying psychological impact.

A family doll set might be a valuable tool in play therapy, not only as a diagnostic instrument, but as a means of non-verbal and concrete communication about the family between therapist and child.

Since social context was found to effect different relationship distances and patterns, a setting in which the counselor is included might constitute a new social context for family members and a comparison of placements including and excluding the counselor might be of value to the counselor in detecting differences in family
relationships in his absence.

The scale could be used to detect symbiotic alignments between various family members such as the Oedipal mother-son alignment. Here the age of the child would need to be considered, since an infant very close to mother is assumed to be more appropriate than a child or young adult.

Conflicts of perceived and desired intimacies within a family might be detected by cross comparison of placements made by different family members of the same family. For example, one might compare two siblings' placements to detect a rivalry for parental affection as indicated by extreme placements of one child figure near a parent with the other child figure isolated.

The instrument might well be used in the treatment aspects of counseling as well as diagnostically to show family members how their perceptions differ or confirm one another's. The instrument might be a less threatening way to broach family conflicts than direct personal encounter in volatile situations. Further, the concrete pictoral, rather than abstract, presentation of data about the family may improve communication between the various participants to counseling.

As a measure of need satisfaction for intimacy, a client's perceived versus desired placements could be compared. That is, to measure perceived intimacy, the client(s) might be given an instructional set to place figures as he thinks they best represent the way things are, and then be given another set of figures to place the way he would like them to be. The degree of discrepancy
between the two constituting a measure of satisfaction or dissatisfac-
tion.

The use of a clinical instrument based upon the placement of family figures need not be limited to use in family group counseling, but may be of value in individual counseling since data regarding family relationships is often an integral part of individual work. The placements made by a client in individual counseling can potentially provide the counselor with data which would be more quickly and accurately consumable than verbal report, provide a permanent record, and perhaps suggest important questions which the counselor would not otherwise have entertained.

Suggestions for further studies

A longitudinal study of selected family placement patterns could provide evidence regarding theoretical stages in children's development and relationships in the family. For example, a test of the Oedipal and Electra states as presumed in Freudian Theory of an attachment of a child to the opposite sex parent might be reflected by closer (more intimate) placement of mother-son and father-daughter figures. As a test of the Freudian theory that Oedipal and Electra competitions resolve into identification with the same sex parent, successive placements could be made over time of the child's figure hypothesizing relatively closer placements to the same sex parent will ensue.

A limitation of the present study is that no direct measure of the quality of the relationships defined by $s$ was made. In future studies projective and descriptive data of the placement relationship
may be obtained from self-report data by the $S$s. Ideally this self-report data would be taken after the figure placements have been completed to avoid possible confounding effects of interspersing the two procedures.

Another limit of the current study is that each placement was made only one time by each $S$, therefore a study using multiple placements by each $S$ for each relationship would provide a reliability test of the results, although the replication of results in the group condition from Experiment I to Experiment II here does provide a check across $S$s.

Another approach to the study of figure placement data would be to present $S$s with already placed figures asking $S$s to report the meanings they ascribe to the various placement stimuli. A further step here would be to ask $S$s to project into the future interactions they might expect to occur between the people symbolized by the placed figures. This would provide a basis to test the hypothesis that predictable behavior patterns arise out of perceived relationships. That is, to test the notion that relationship determines behavior.

**Discussion Summary**

The data found in Experiments I and II were interpreted as showing that the family group figure placement technique yielded significant interfigure distance and pattern differences. The feasibility of using family group placement data was made as the basis of an instrument for use in family and individual counseling. Suggestions for construction and use of such an instrument were given.
Some limitations of the present study were listed.

Suggestions for further studies, such as a measure to study relationship as the basis of behavior were put forth.
APPENDIX A

FAMILY FIGURES
Figure 2. Family Figures of Experiment 1 in a Simulated Placement.
APPENDIX B

PERSONAL DATA FORM
PERSONAL DATA FORM

Date____________________

Age_____ Sex____ Marital Status: S M W D

Occupation____________________________________

Full years of school completed_____________________

Major in school____________________________________

Cumulative grade point average_____________________

Ethnic background________________________________

Check one:

_____ Born outside United States

_____ 1st generation born in US

_____ 2nd generation born in US

_____ 3rd generation born in US

_____ More than third generation in US

Father's occupation________________________________

Mother's occupation________________________________

When placing the figures, check which figure you identified with (i.e. imagined to be yourself)

Man_____ Woman_____ Girl_____ Boy_____ None_____ 

List ages of your father, mother, brothers and sisters below:

<table>
<thead>
<tr>
<th>Person</th>
<th>Age</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Father</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Mother</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Oldest Child</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Second Oldest Child</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Third Oldest Child</td>
<td>_____</td>
<td>_____</td>
</tr>
</tbody>
</table>

(etc. -- continue on back of page if necessary)
APPENDIX C

CIRCLE INSTRUMENT
Following is a copy of the instrument constructed for use in Experiment II containing simulated symbol placements for illustrative purposes.

The pages of the instrument, when presented to Ss, were stapled together in the upper left corner. The symbol code sheets were placed facing each placement field sheet to guard against Ss forgetting the defined symbol meanings and placing symbols without the appropriate symbol referents. On the stapled together copies of the instrument, the symbol code sheets were placed upside down so that when the sheets were raised they would be in right side up position.

The placement field sheets in the instruments presented to Ss were 9 inch by 12 inch sheets of newsprint, while the placement sheets used here for illustrative purposes conform to the quality (at least 50 percent rag content bond) and size (8.5 inches x 11 inches) standards used throughout.
Read all instructions before proceeding.

In the envelopes you have been given, there are some white circles with letters on them which represent family members as shown here:

F = Father
M = Mother
S = Son
D = Daughter

On each envelope there is a page number. First, open the envelope marked page 2 and place the circles you find there on page 2 in any manner you wish. Then remove the paper backing from each circle and stick it permanently in the exact position you initially placed it.

Do NOT assume that any of the symbols represent you.

Continue through the rest of the envelopes placing the circles in any manner you wish on the indicated page and then sticking them in the exact position you initially placed them.

Place all the circles from one envelope before going on to the next and do not go back once you have completed a page.
<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Father</td>
</tr>
<tr>
<td>M</td>
<td>Mother</td>
</tr>
<tr>
<td>S</td>
<td>Son</td>
</tr>
<tr>
<td>D</td>
<td>Daughter</td>
</tr>
</tbody>
</table>
SYMBOL CODE

F = Father
M = Mother
S = Son
D = Daughter
<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Father</td>
</tr>
<tr>
<td>M</td>
<td>Mother</td>
</tr>
<tr>
<td>S</td>
<td>Son</td>
</tr>
<tr>
<td>D</td>
<td>Daughter</td>
</tr>
</tbody>
</table>
SYMBOL CODE

F = Father
M = Mother
S = Son
D = Daughter
<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Father</td>
</tr>
<tr>
<td>M</td>
<td>Mother</td>
</tr>
<tr>
<td>S</td>
<td>Son</td>
</tr>
<tr>
<td>D</td>
<td>Daughter</td>
</tr>
</tbody>
</table>
### SYMBOL CODE

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Father</td>
</tr>
<tr>
<td>M</td>
<td>Mother</td>
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<tr>
<td>S</td>
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<td>D</td>
<td>Daughter</td>
</tr>
<tr>
<td>SYMBOL</td>
<td>CODE</td>
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<tr>
<td>--------</td>
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</tr>
<tr>
<td>F</td>
<td>Father</td>
</tr>
<tr>
<td>M</td>
<td>Mother</td>
</tr>
<tr>
<td>S</td>
<td>Son</td>
</tr>
<tr>
<td>D</td>
<td>Daughter</td>
</tr>
</tbody>
</table>
Please fill out this questionnaire completely.

Date__________________

Age______ Sex______ Marital Status: S M W D

Occupation________________________________________

Full years of school completed______________________

Major in school____________________________________

Cumulative grade point average______________________

Ethnic background_________________________________

Check one:

_____ Born outside United States -- Length of residence in U.S. Yrs.____ Mos.____

_____ 1st generation born in U.S.

_____ 2nd generation born in U.S. (Put M for Mother and F for Father if of different generation.)

_____ 3rd generation born in U.S.

_____ More than third generation in U.S.

Father's Occupation________________________________

Mother's Occupation________________________________

List the ages of your father, mother, brothers and sisters below:

<table>
<thead>
<tr>
<th>Person</th>
<th>Age</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Father</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Mother</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Oldest child</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Second oldest child</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Third oldest child</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Fourth oldest child</td>
<td>_____</td>
<td>_____</td>
</tr>
</tbody>
</table>

(etc. -- continue on back page if necessary)

*If deceased, age would be now.
APPENDIX D

JAPANESE TRANSLATION OF CIRCLE INSTRUMENT
The Japanese translation of the Experiment II circle instrument containing simulated placements follows. As in the English version, 9 inch by 12 inch newsprint sheets were used for the placement sheets for the actual instrument used in the study, while placement sheets herein conform to the size and quality of the paper used throughout.
始める前に指図を全部読んで下さい。

与えられた封筒の中に、家族の構成員を表わす文字のついた白い円形の符号
が入っています。これらの符号は下記の人々を表わします。

父 = 父親
母 = 母親
息子 = 男の子供
娘 = 女の子供

それぞれの封筒には頁数が書いてあります。まず最初にサイン頁と書いてある
封筒を開けて、その中にある円形の符号をサイン頁目の紙の上にあらためて思われる
通り、どの様にでも置いて下さい。その後、それぞれの円形の符号から裏紙をといで除いて
符号を最初に置いた正確な位置にしっかりとはりつけて下さい。

これらの符号があなたの自身を代表するとは考えないで下さい。
同様にして、残りの封筒の中の円形の符号を指示された頁の上にあらためて置き
様、どの様にでも置き、それらを最初に置いた正確な位置にはりつけるか否か
全部、すまして下さい。

次の封筒に移る前に、今の封筒の中の円形の符号を全部はりつける様にして下さい。
一慶、終わった頁に逆戻りはしない様にして下さい。
符号の意味
符号法

父 → 父親
母 → 母親
息子 → 男の子供
息女 → 女の子供
娘 → 女の子供
父

息子
符号の意味
符号法
父  =  父親
母 =  母親
息子 =  男の子供
息女 =  女の子供
娘 =  娘
符号の意味
符号法
父  = 父親
母  = 母親
息子 = 男の子 供
息女 = 女の子 供
娘  = 女の子
父母
符号の意味
符号法

父  =  父親
母  =  母親
息子  =  男の子供
息女  =  女の子供
娘  =  女の子供
娘
符号の意味
符号法
父
父
母
母
息子
息子
娘
娘
= 父親
= 母親
= 男の子供
= 女の子供
母

娘息
符号の意味

父 = 父親
母 = 母親
息子 = 男の子供
息女 = 女の子供
娘 = 女の子供
父

娘
符号の意味
符号法
父 = 父親
母 = 母親
息子 = 男の子供
息女 = 女の子供
娘 = 女の子供
娘 息
この質問表に全部答えて下さい。

月日 ________________

年令 ______ 性 ______ 結婚身分：独身 結婚 失偶者 異性者

職業 ____________________________

学業年数 ____________________________

学校での専攻 ____________________________

成績（平均） ____________________________

人種

X 印をつけて下さい。

_____ 米国以外の土地で生まれた。

_____ 米国で生まれた一世

_____ 米国で生まれた二世

_____ 米国で生まれた三世

三世以上、米国生まれ

（もし両親によって世代かに異なる場合は、子、または
母を世代の前に書き入れ下さい。例：父方お一丙、母方お三世など）

父親の職業 ____________________________

母親の職業 ____________________________

あなたのお父様、お母様、兄弟、姉妹の年令を下に列記して下さい。

家族員 年令* 性

父親： ________

母親： ________

次男： ________

次女： ________

次三男： ________

次四女： ________

（四人以上の子がいる場合は裏面に続けて下さい。）

* 死也した人の場合は今日現在の年令を書き入れて下さい。
Bibliography


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