THE MISSING PERSON IN MEASUREMENT TECHNIQUES OF INTERPERSONAL DISTANCE

by

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ABSTRACT

This thesis represents an attempt to clarify a pressing theoretical and research issue in the general field of interpersonal relationships. It is a well known fact that the physical distance maintained between interacting people is determined by cultural and psychological factors, for example, there is an inverse relationship between distance and affective behaviour. In order to understand this behaviour or social process, appropriate measurement techniques must be developed. The present study consisted of two separate experiments in which the two major types of measurement technique (i.e., a "projective" or simulated social encounter (PIM) and a "direct" or real-life interaction situation (DPIM)) are compared.

In Experiment I, it was initially argued that these two techniques may actually record or measure different states of "distance" behaviour. Specifically, the DPIM techniques were described as best representing "behavioural-" or "action-distances", whereas the PIM techniques were seen as best representing "psychological-" or "attitudinal-distances." It was hypothesized that in relatively unemotional contexts attitudinal-distances

and behavioural-distances would be comparable. In emotional settings, however, there would be discrepancies between the two. It was hypothesized that, in this latter contingency, the PIM technique would not be as an effective device for measuring or recording the discrepancy as would the DPIM technique.

An examination of the "attitudinal" distances and the "behavioural" distances for both types of measurement technique (i.e., the projective and the direct, respectively), however, revealed that greater distances were maintained toward a "stigmatized" person (X_s) than toward a "normal" person (X_n), regardless of which measurement technique was used. The assumption, therefore, that the two measurement techniques record different states of behaviour could not be supported.

In Experiment II, it was hypothesized that the DPIM techniques are, in general, a more effective method of recording interpersonal distances than are the PIM techniques. Specifically, two experimental groups were required to react either to a direct social interaction situation or to a projective interaction situation. During these interaction situations, the subjects (Ss) were required to interact with another person during four

interactions. Three of these interactions were non-face-to-face encounters (known as personal sphere, McBride, 1968a, 1968b) while the other was a face-to-face encounter (known as personal field, McBride, 1968a, 1968b). It was hypothesized that the PIM situation, which employed toy-doll stimuli, would not differentiate personal field from personal sphere. The DPIM technique employed actual people and it was hypothesized that, as such, it would differentiate the difference between personal field and personal sphere.

Results reveal that the distances during face-to-face interaction (personal field) did not differ significantly from the distances during the non- face-to-face interactions (personal sphere), during either measurement technique. A possible explanation of these results, which takes into account the complexities of human behaviour, was suggested. In addition, the results were taken to support the conclusion that the PIM and the DPIM technique are actually comparable, in certain situations.

One of the most important findings of the second experiment is that, although some previous research has reported reasonably high reliability

coefficients for both types of measurement technique as was the assumption in the present research, routine split-half reliability coefficients for data from Experiment II were actually very low. Due to this fact, the relative efficacy of both measurement techniques in terms of reliably recording or measuring interpersonal distance has been questioned. In this respect, serious question has been raised regarding the entire body of research employing either or both techniques, especially the research which has not yet reported reliability coefficients for the specific research situation.

To my wife, Ruth, for her constant

love and encouragement, .

and to our lovely "new arrival",

Lorelei Kathleen Oriana

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CHAPTER I

INTRODUCTION

The concept of "interpersonal distance" (that is, the most comfortable distance maintained between individuals during interaction; Sommer, 1959, 1962; Hall, 1963a) can readily be, and has been, associated with other concepts, such as territoriality (Howard, 1920; Darling, 1937; Hediger, 1950, 1955; Ardrey, 1966), social schemata (Kuethe, 1962a, 1962b, 1964b; Kuethe & Stricker, 1963), and personal space (Stern, 1935; Lewin, 1935; Katz, 1937; Sommer, 1959, 1969). The reason for this association is that these concepts do not necessarily represent antithetical forms of social behaviour or relationships between men or beasts. This point has been aptly emphasized by Bailey and Hartnett (in preparation), who state that, "whether one is speaking of personal space, human territoriality, or other motivated distance phenomena in humans, the problem is one of interpersonal distance . . . (p. 32)."

A. Personal Space

Whereas territory refers to geographical dimensions (i.e., a definite physical area marked out by optical, acoustical or olfactory means; Hediger, 1961), personal space is, as its name implies, the "personal" space immediately surrounding the organism (Sommer, 1959),

sometimes also referred to as proxemetic space or area around the individual (Hall, 1963a). McBride (1968a, 1968b) has actually recognized two forms of personal space: one around an organism's face, and the other around its whole body. "The personal sphere is an area extending all around an animal while the personal field appears to be an area around the face, extending further in front than to the sides (1968b, p. 7)."

Whereas territory is staked out, as, for example, by the nesting instinct or due to natural aggression (Hediger, 1950; Lorenz, 1966; McBride, 1964, 1968a, 1968b, 1970b), or in the course of claiming a "home" area or turf (Jewell, 1966; McBride, 1968a, 1970b, 1972b; Stea, 1970; Thrasher, 1927; Whyte, 1943), personal space schemata seem to be acquired or learned (Estes & Rush, 1971; Fischer, 1968; Meisels & Guardo, 1969), and may even include the development of deviant schemata (Weinstein, 1965, 1967). Hence, there are two forms of distance behaviour or relationships within man's or animal repertoire. One involves the socially learned relationships known as personal space, which may in fact vary from one learning situation to another, as occurs from culture to culture (Hall, 1959, 1961, 1963a, 1963b, 1964b, 1969; Little, 1968).

The other is known as territory, and has an "instinctual biological basis" for animals, regarded as a territorial drive or dominance (Ardrey, 1966; Lorenz, 1966). It may be, and usually is, defended by animals and even man (McBride, 1962, 1964, 1968b, 1970a; McBride & Foenander, 1962; Thrasher, 1927; Whyte, 1943).

The difference between the two concepts, personal space and territoriality, is that personal space has neither topographical reference points, such as scent (Hediger, 1961) or "markings" (Sommer & Becker, 1969), as does territoriality, nor is it as readily defended. It is on this first point that some have shown confusion between the two concepts. Sommer and Becker (1969), for example, assumed that territory existed around students in a cafeteria setting when those students had "marked" their territory, with books, clothing, or food, and especially when no one else intruded beyond these markers. A later study by Becker and Mayo (1971), however, has demonstrated that the second criterion of territoriality (that is, its defence) was not borne out in a similar experimental situation. Specifically, students did not defend their assumed territory when intruded upon.

The major difference between one's territory and one's personal space, therefore, is that intrusions into the former are more readily defended, whereas intrusions into the latter usually result in compensatory actions. Violations of, or intrusions into, an individual's personal space can lead to "flight" from that situation (McBride, 1968a, 1968b, 1970a; Felipe & Sommer, 1966), to less extreme forms of compensatory reactions, such as leaning or turning away from the intruder (Hall, 1969; Garfinkel, 1964; Goffman, 1963, 1971; McBride, 1970b; McBride, King & James, 1965; McDowell, 1972; Sommer, 1959), or to extending an arm or elbow to shield oneself from the intruder (Patterson & Sechrest, 1970; Patterson, Mullens & Romano, 1971).

As mentioned by Bailey and Hartnett (in preparation), "...of the many functions and definitions of territory described in the literature, the notion of defense stands uppermost, and is probably the concept's most defining characteristic (p. 9)." There are instances, nonetheless, where intrusions into another person's personal space will result in attack behaviour against the intruder (McBride, 1968a; Wynne-Edwards, 1962). However, and in general, personal space "...is considered to be a moveable territory which, when violated, may elicit defensive responses by the victim (McDowell, 1972, p. 210)."

Increased population density or crowding, a prolonged form of invasion of personal space, results in a similar reaction. Although short durations of crowding (McBride, 1968b), such as public travel, do not usually result in normal attack or defensive behaviour, aggressive forms of behaviour do, however, increase, and strain and tension result in direct proportion to the length of time the crowded conditions are maintained or prolonged (McBride, 1968a, 1968b). Furthermore, according to McBride (1968b, 1970a), the effects associated with crowded conditions (e.g., Calhoun, 1961, 1962a, 1962b) become more meaningful as being stressful only if one assumes the existence of an individual "personal" space surrounding each organism and, correspondingly, that this area is in constant violation during high density conditions.

Just as there are aggressive, as well as physiological, reactions by animals to crowded environments (Archer, 1969; Erickson, 1967; Greenberg, 1969; Hutt & Vaizey, 1966; McBride, 1968a, 1968b; Myers, 1966), so are there similar responses by humans during, and in reaction to, immediately dense conditions (Felipe & Sommer, 1966; Griffitt & Veitch, 1971; Hall, 1965; McBride, King & James, 1965). For extended experiences of crowding, as

occur in urban centres, two forms of social process seem to have been developed (McBride, 1968b, 1970a). On the one hand, man channels his reactive aggression to continued invasion of his "personal" space by others into socially condoned forms of competition (like competitive sports at the junior and professional levels), especially during his early period of socialization. For everyday activity, however, the second process seems to suffice; that is, man has adopted anonymity in relation to the majority of people around him. Therefore, even under unusually crowded urban conditions, a person may still maintain his protective bubble (reference to "soap bubble worlds", Von Uexkull, 1957) around him by maintaining an anonymous relationship with these potential "intruders".

B. Social Schemata

As has been demonstrated by the use of the now popular social schemata measurement technique (Kuethe, 1962a), humans seem to express an affinity for one another, within the experimental setting, either by establishing close proximity between respective cut-out figures (Fisher, 1967; Kuethe & Stricker, 1963) and other types of figures (Guardo & Meisels, 1971a; Tolor, 1968;

Tolor & Donnon, 1969; Tolor & Salafia, 1971), or by placing non-human objects so as not to intervene between human figure groupings (Kuethe, 1962a; Kuethe & Stricker, 1963; Kuethe & Weingartner, 1964). In emphasis of Kuethe's point, Blumenthal and Meltzoff (1967) reported that Ss did, in fact, place people figures significantly closer together than rectangles, thus supporting Kuethe's earliest "social" schemata that "...people belong together... (Blumenthal & Meltzoff, 1967, p. 119)."

Whereas the other concepts (i.e., territoriality and personal space) are primarily concerned with the "distance" relationship between men or animals, that of social schemata has the additional advantage of being able to investigate what type of social organization or schemata a person employs. For example, it has generally been found that male-figures are usually placed next to female-figures (Kuethe & Stricker, 1963) and that children are placed beside a woman (Kuethe, 1964b). Furthermore, it has been demonstrated that abnormal populations, upon examination, do not maintain these "normal" social organizations or groupings; for instance, homosexuals (Kuethe & Weingartner, 1964) and socially disturbed children (Fisher, 1967; Weinstein, 1965) displayed schemata consistent with their

deviance. Fisher specifically found that disturbed boys placed respective cut-out figures farther from the mother figure than did normal boys or girls. Introverts, according to Williams (1963), also placed "themselves" farther from others during interaction than did extroverts.

In addition to the extended investigatory possibilities provided by examining social schemata, studies within this field have been found to confirm earlier research in the field of personal space. Cultural differences (Little, 1968), for example, between Mediterranean and North European peoples confirmed earlier findings (e.g., Hall, 1955, 1959, 1962, 1963b). As Hall (1963a) puts it, "what was close to an American might be distant to an Arab (p. 1003)." Within a given cultural group, nevertheless, interactions can be specified on the basis of the formal nature of the transaction, that is, whether the interaction is of an intimate, a casual-personal, or a social-consultative nature (Hall, 1964b).

As another example, Meisels and Guardo (1969) while examining the development of social schemata in children confirmed, in general, an earlier direct relationship between degree of liking and closer

distances (Little, 1965), which seems, furthermore, to be established by approximately grade three.

C. Interpersonal Distance

As previously mentioned, and as emphasized by Bailey and Hartnett (in preparation), whatever the general conceptualization, whether it be territoriality, personal space, or social schemata, "...the problem is one of interpersonal distance, and this distance is measureable in an operational sense (p. 32)." In relation to the present study, interpersonal distance will be viewed as similar to the definition provided by Sommer (1959, 1962, 1963, 1969), Hall (1963a, 1963b), Willis (1966b) and Little (1965) as the customary distance an individual places between himself and other individuals.

In accord, categories of "intimacy" through to "stranger" relationships (Hall, 1959, 1963a, 1963b, 1964b, 1969) between interacting individuals may be apparent, and assumed to exist, by the given interaction distance initiated and maintained throughout the interaction. This direct relationship between proximity and affective behaviour has been assumed by many researchers, whether in the form of the actual distances maintained between

interacting individuals (e.g., Allgeier & Byrne, in press; Argyle & Dean, 1965; Byrne, Ervin & Lamberth, 1970; Campbell, Wallace & Kruskal, 1966; Mallenby, 1973, 1974a, 1974b, in press; Mallenby & Mallenby, in press; Meisels & Dosey, 1971; Mehrabian, 1970a; Patterson & Sechrest, 1970; Sommer, 1959; Willis, 1966b), or the type of social schemata or organizations one employs (e.g., Kuethe & Stricker, 1963; Weinstein, 1965, 1967), or the relationship maintained between representative figures (e.g., Dosey & Meisels, 1969; Guardo, 1966; Guardo & Meisels, 1971a; Kleck, 1967; Little, 1965).

Closer distances have usually indicated a positive relationship (e.g., Allgeier & Byrne, in press; Byrne, Ervin & Lamberth, 1970; Kuethe, 1971; Fischer, 1968), whereas greater distances have represented negative relationships or dislike (e.g., Kleck, Buck, Goller, London, Pfeiffer & Vukcevic, 1968; Wolfgang & Wolfgang, 1968, 1971; Wolfgang, in press; Fisher, 1967; Weinstein, 1967).

Mehrabian (1969a, 1969b, 1970a) has, in general, found that as the number of "nonverbal behaviours" (such as interpersonal distance, eye contact, body lean, and body orientation, referred to as "immediacy" cues) increased during interaction, the degree of positive attitude toward the other also increased in intensity.

CHAPTER II

STATEMENT OF THE PROBLEM

A. Measurement Techniques

Unlike the concepts of personal space and territoriality, that of interpersonal distance is rather straight forward, and has been defined as the actual distance maintained between individuals during interaction. Where problems of conceptualization make the former concepts more difficult to examine, interpersonal distance is rather easy to operationalize and examine. The problem, however, is not one of concept, but rather one of methodology. Specifically, the type of measurement technique used to examine this variable has been in debate.

Although Mallenby and Roberts (1973) list approximately 1400 articles related to the topic of spatial behaviour, there has not yet been developed, according to Duke and Nowicki (1972b), an appropriate or adequate technique for measuring "interpersonal distance". The majority of measurement methodologies can be categorized into two main groups: those that are projective in nature, and those that attempt to examine real-life interactions.

1. Projective Measures

Felt or Silhouette

The development of a cut-out (felt or silhouette) technique for measuring social distance during interaction and social schemata patterning (Kuethe, 1962a, 1962b, 1964a, 1964b, 1967) has had wide acceptance in psychology as a non-real life measure.

From its basic introduction, variations and modifications have been proposed and developed (Graubert & Adler, 1972; Guardo, 1966, 1969; Guardo & Meisels, 1971a, 1971b; Meisels & Guardo, 1969; Meisels & Ford, 1969; Little, 1965, 1966, 1968; Little & Ulehla, 1966; Kleck et. al., 1968; Tolor, 1968, 1969a, 1969b, 1970a, 1970b, 1971; Tolor & Donnon, 1969; Tolor & Jalowiec, 1968; Tolor & LeBlanc, 1971; Tolor & Orange, 1969; Tolor & Salafia, 1970; Tolor, Brannigan & Murphy, 1970; Wolfgang, in press; Wolfgang, 1968, 1971), and group administered techniques have been proposed (Kuethe, 1967).

Paper-and-Pencil

Meisels and Guardo (1969) were among the first to modify the cut-out technique, described above, to a paper-and-pencil representation. Their presentation consisted of face-to-face interactions between a pre-printed

figure on a piece of legal sized paper and a cut-out silhouette figure representing the respective subject (S). The situation was described as the "school yard", and the Ss were required to trace around the cut-out silhouette figure (i.e., "themselves") where they would like to stand in relation to the other "person".

Their procedures seemed to be face valid, since their results were found to confirm the well established relationship between degree of liking and closeness of interaction distances. Their paper-and-pencil silhouette presentation also seemed to be as valid as previous cut-out measurement forms and materials (Guardo & Meisels, 1971a, 1971b; Guardo, 1966).

2. Direct Measures

While projective or cut-out measurement techniques are restricted to a laboratory or experimental setting, direct or "real-life" measures may be employed either in naturalistic settings or in laboratory investigations (e.g., Argyle, 1970a, 1970c; Argyle & Dean, 1965; Argyle & Ingham, 1972; Argyle, Alkema & Gilmore, 1972; Adler, 1973a; Becker, in press; Becker & Mayo, 1970, 1971; Bailey, Hartnett & Glover, unpublished; Bailey, Hartnett & Gibson, 1972; Campbell, Kruskal &

Wallace, 1966; Cheyne & Efran, 1972; Efran & Cheyne, 1972, 1973a, 1973b; Freitag, 1970; Goldberg, Kiesler & Collins, 1969; Karabenick & Meisels, 1972; Mallenby, 1973, 1974a, 1974b, in press; Meisels & Canter, 1970; Meisels & Dosey, 1971; Moore & Feller, 1971; Patterson & Sechrest, 1970; Thomas, 1973), as indicated by the wide number of conditions and settings in which direct interaction measurement techniques have been utilized.

Furthermore, as emphasized by Lett, Clark and Altman (1969), in order to develop "...methods and experimental designs which allow for the functioning of active social organisms (p. 38)" within an on-going social process, research must adopt and perfect direct, real-life measures of social interaction, much the same as those in earlier attempts by Hall (1959, 1961, 1962, 1963a, 1963b, 1964a, 1964b, 1965, 1968, 1969, 1970) and others (Sommer, 1959; Willis, 1966b).

B. Direct versus Projective Measures

In spite of the number of non-real life measurement techniques already described in the literature, Duke and Nowicki (1972a, 1972b; Nowicki & Duke, 1972a, 1972b) have offered yet another version. It is supposedly a more

adequate paper-and-pencil measure than any projective technique devised to date, or for that matter a better measurement of interpersonal distance than any other measurement (projective or real-life) to date. They (Duke & Nowicki, 1972b) blithely dismiss both the so called "real-life" measures and the projective techniques commonly stemming from Kuethe's (1962a) technique because, although the existing measures may be face valid, their results are often in direct contradiction to one another.

Rather than question what methodological improvements could be made to existing measures, Duke and Nowicki have felt compelled to introduce yet another paper-and-pencil measurement technique. Whereas they have cited Lett et. al. (1969) in support of their argument to introduce a new technique, they have clearly ignored Lett et. al.'s obvious criticism of projective or paper-and-pencil measures of social interactions. Specifically, "...geometric forms, felt flannel, paper stick-on figures and comparable representations of real people ... in most cases, these 'simulated' people were immobile, portrayed in non-active conditions and were placed in vacuum-like environments or social settings, e.g., on blank pieces of paper. They were trance-like,

disembodied representations of humans (p. 38)." An examination of Duke and Nowicki's (1972b) new Comfortable Interpersonal Distance (CID) measurement, furthermore, reveals that it has been designed and constructed much the same as other "projective" measurement techniques, in spite of Lett et. al.'s criticism. Even a later modification of this initial measurement technique (Duke & Wilson, in press), in which Fisher-Price toy-people were used as the representative social stimuli, does not solve the criticism raised by Lett et. al.

This is not the only error Duke and Nowicki (1972b) have made when they cited Lett et. al.'s study in support of their own interests. For example, the social process, as identified by Altman and Lett (1969), involves both nonverbal behaviours (such as, head, arm and body movements and positioning, facial expressions, eye contact, smiling, etc.) and associated verbal behaviour. In addition, accompanying both these forms of behaviour are subjective feelings, perceptions and cognitions (Lett et. al., 1969). Very, very few of these aspects of the social process can feasibly be recorded, measured or analyzed by use of their (i.e., Duke and Nowicki's) new CID technique, or for that matter by any

form of projective measurement technique.

Whereas Lett et. al. (1969) emphasize that more concern be given the "whole-man" in or during social interaction situations with others, enabling behaviour associated with the social process to be examined at the experimenter's discretion, Duke and Nowicki (1972a, 1972b) have persisted with their own criteria that a measurement technique be:

(a) easy to administer,

(b) group administered,

(c) free of intellectual-demand limitations (i.e., that it be culturally and intellectually bias free), and

(d) both reliable and valid.

Obviously, there is little similarity between the rationale for these easy to administer experimental procedures and those criteria proposed by Lett et. al. (1969).

There are, nevertheless, some potential advantages to the CID scale over earlier projective measurement techniques. Specifically, since the "people" objects are represented in three dimensions, it is possible to identify a body-boundary (Rawls, Trego & McGaffey, 1969; Frankell & Barrett, 1971; Horowitz, Duff & Stratton,

1964) completely surrounding the individual; that is, personal space may be identified completely around the individual's body. Had this logical extension been made to earlier body-boundary research, the CID scale would have represented a definite improvement over the original two-dimensional methods (e.g., Kuethe, 1962a).

Duke and Nowicki (1972a, 1972b) and their colleagues (Duke & Wilson, in press; Duke & Mullens, 1973) have rather remained content with devising repeated face-to-face encounters to different social stimuli or social situations. Hence, they have not really identified a body-boundary completely surrounding their respective subjects, as one would have logically expected them to do, but rather they have extended multiple face-to-face interactions typical of two-dimensional projective methods (e.g., Meisels & Guardo, 1969; Guardo & Meisels, 1971a) to a three-dimensional representation.

Whereas Duke and Nowicki (1972b) have argued that many techniques for measuring interpersonal distance (especially direct, or real-life, ones) are often methodologically unsound, and, consequently, have dismissed this form of measurement technique, Mallenby (1973, 1974a, 1974b, in press), for instance, has demonstrated the

versatility of DPIM techniques for measuring interpersonal distance. He was not only able to measure initial interaction distances, but also, in accord with Lett et. al.'s (1969) emphasis that measurement techniques be able to record information during on-going social interaction and process, was able to examine the effects of "physical rejection" and intrusion into another's personal space during dyadic situations (Mallenby, 1974b).

Also, some "real-life" encounters between "normal" and mentally retarded Ss proved to be so "emotionally charged" that actual "flight" from the interaction situation by the mentally retarded Ss occurred in some instances (Mallenby, 1974a). This emotional atmosphere could never have been duplicated in a "projective" interaction situation, typical of PIM techniques.

Thus, when Lett et. al. (1969) argue that research is at such a level as to now turn its attention to investigating the "whole-man" during on-going social interaction, rather than examining single and salient variables of behaviour in isolation, as occurs in the "vacuum-like environments" of projective measurement techniques, they were referring to "real-life" encounters, and, correspondingly, to the development and perfection of direct

interaction techniques of measurement.

C. The Problem

This, then, will be the major contention of this thesis. That is, when Duke and Nowicki (1972b) brush real-life measurement attempts aside because they do not fit easy-to-administer experimental criteria, one cannot help but wonder what aspects of the "social process" are sacrificed when one adopts projective forms of social encounter (typical of projective techniques of measurement) in preference to actual direct or "real-life" encounters (typical of direct techniques of measurement). Research has, in fact, advanced beyond this, as Lett et. al. (1969) point out, and demands more of the research situation; that is to say, "...we are sorely in need of research which captures and understands empirically the 'whole-man', not just research which focuses on slices of separately occurring behaviour (p. 40)." Aronson and Carlsmith (1968) also emphasize that experiments be more realistic in order to involve the subject. They ask, why "...do we bother with pallid and contrived imitations of human interaction when there exist rather sophisticated techniques for studying the real thing (p. 4)."

Granted similar results have been reported when both forms of measurement technique (i.e., projective and direct, or real-life) were compared (e.g., Byrne, Ervin & Lamberth, 1970; Little, 1965; Martin, 1972), but conflicting results have also been reported (Mallenby, 1974a; Wicker, 1969, 1971). Sommer and Becker (1969), for example, while examining the effects of violation of one's personal space, found that the greatest discrepancy occurred between field (direct, or real-life situations) and paper-and-pencil presentations (projective encounters). Thus, when Duke and Nowicki (1972b) cite the often conflicting results when real-life measurement situations were employed in favour of introducing a new paper-and-pencil technique, one can equally argue that the transfer from, or the comparison between, a projective and a real-life encounter may be questionable (Wicker, 1969, 1971). In fact, in more "emotionally charged" comparisons than were made by either Little (1965) or Martin (1972), Mallenby (1974a) actually found highly contradictory results between projective and direct measures during comparable social interactions.

D. The Hypotheses

Since both forms of measurement technique (i.e., direct and projective) stem from work on either personal space or interaction distance (Stern, 1935; Lewin, 1935; Sommer, 1959, 1969), it has been assumed that they measure or represent the same thing. That is, both projectively and directly expressed behaviour have been assumed to represent equally a person's attitude or behavioural preference for a given situation. For example, little distance between individuals during interaction has been attributed to positive attitude or intimacy between the individuals (e.g., Byrne, 1961a, 1961b; Byrne & Buehler, 1955; Byrne, Baskett & Hodges, 1971; Mehrabian, 1968a; Kleck, 1970; Argyle & Dean, 1965; Patterson & Sechrest, 1970). A positive attitued toward another person has been associated with a decrease in distance between interacting individuals (Mehrabian, 1968a, 1968b; Mehrabian & Friar, 1969; Sommer, 1959). This relationship between distance and attitude, furthermore, has held true for both projective and direct encounters.

When inconsistent results have occurred between studies employing either of these two measurement techniques, the usual conclusion has been, as exemplified by Duke & Nowicki (1972b), that the measurement methodology is or was faulty. But, there is perhaps an alternative explanation. For example, Spilka (1971) has suggested a possible difference; that is, the projective form of technique may measure "psychological" distance, and the direct technique, correspondingly, measures "behavioural" distance. Except for the fact that these two measurement techniques stem from similar conceptualizations, there is no apparent reason to assume that these two "distances" are in any way comparable, or for that matter represent similar states of behaviour.

There may be, however, a subtle difference between what these techniques actually do measure. More simply, in a projective encounter a person is not required to interact directly with another real person, but is rather requested to express his preference as to where he would like the (cut-out or toy-doll) "figures" to "stand" if they were actually in the described situation. During direct interaction, however, the person is no longer required to express his preference about a given social interaction

situation, but is rather required to react (behaviourally) to the given encounter. Therefore, it should be apparent that in the former situation, an S is merely required to express an attitude or preference (usually his own), whereas in the latter situation, he is required to act.

Projective interaction measurement (PIM) techniques, therefore, are seen to measure or record more of an attitudinal state, whereas direct physical interaction measurement (DPIM) techniques are seen to measure or record behavioural states. Kleinke (1972) and Wicker (1969, 1971) have emphasized a similar point; specifically, the reaction in a non-interactive situation (such as a verbally communicated situation or in the often imaginary "figure-cut-out" interactions) may not be comparable to the reactions in a real-life encounter. As these investigators point out, it becomes basically a question of "attitude" versus "action".

Their argument is being extended at the present, and it is suggested, that a PIM situation best represents "attitudinal" or "psychological" distance whereas that of a DPIM situation best represents a "behavioural" or

"action" distance.

In an experiment (Mallenby, 1974a) where mentally retarded Ss were required to both express an attitude (via a projective interaction) and actually act or react to a real-life situation (via a direct interaction) with a "normal" person, distances for the PIM and the DPIM techniques were found to be highly contradictory. This experiment further exemplifies the present point that attitude (i.e., a projected distance) and action (i.e., a direct interpersonal distance) may not necessarily correspond; hence, the assumption that the distance-behaviour expressed in both a PIM and a DPIM encounter is, indeed, similar or comparable may not be entirely accurate.

The difference between the results employing one or the other of these two techniques, as emphasized by Duke and Nowicki (1972b), has usually been accounted for in terms of faulty research methodology. The present argument is also in line with the existing discrepancies in the literature, but unlike Duke and Nowicki's assumption that poor techniques account for the conflicting results, it is hypothesized here that perhaps the two types of

measurement technique (i.e., projective-PIM and direct-DPIM) actually record different behavioural-distances.

1. Experiment I

In order to examine the issue that projective (PIM) and direct (DPIM) measurement techniques may, in fact, record different distance behaviours (specifically, an "attitudinal" distance and an "action" distance, respectively), the present study has adopted more emotionally charged forms of interaction than were employed in previous comparisons (e.g., Little, 1965; Martin, 1972), so that if there is a discrepancy between an S's attitude-distance about another person and his action- or behaviour-distance toward the same person, it will be revealed in contradictory "distances" during the two types of social interaction (i.e., during the PIM and DPIM, respectively). In keeping with the assumption that a projective-encounter and a direct-encounter are not comparable behavioural states, and that the former represents an expressed "attitude-distance" and the latter an "action-distance", the following hypotheses were proposed:

(1) There will not be a significant difference in interaction "distances" when Ss interact with either a normal person (X_n) or a stigmatized person (X_s) in a projective paper-and-pencil encounter (PIM_1), because the PIM technique is neither sensitive enough, nor is the social situation realistic enough, to record the emotional aspect of the interaction situation.

(2) There will be a significant difference in interaction distances, however, when Ss interact with a normal person (X_n) as compared to a stigmatized person (X_s) in a direct physical encounter ($DPIM_1$), since actual people are reacting to the real-life situation.

In keeping with Fagan and O'Neill (1965) who have assumed that a large degree of social distance indicates little understanding or acceptance of a group or its individual members, while a small amount of social distance implies "fellow feeling", acceptance and sympathy, the third hypothesis was as follows:

(3) The difference between interaction distances toward a normal person (X_n) versus toward a stigmatized person (X_s) will be in the direction that greater distances will be maintained toward the stigmatized person than will be maintained toward the normal person.

Social interactions consisted of the following encounters:

(a) Normal person (S_n) approaches and stands face-to-face with normal person (X_n);

(b) Normal person (S_n) approaches and stands face-to-face with stigmatized person (X_s).

2. Experiment II

Furthermore, in order to demonstrate that a projective form of measurement technique (PIM), such as the new CID scale (Duke & Nowicki, 1972b), may not record personal space or interpersonal distance as effectively as a direct form of measurement technique (DPIM), the following hypotheses were examined. Specifically, in order to demonstrate that the CID type of measurement will not differentiate personal sphere (around the whole body) from personal field (around the face) (reference to McBride, 1968a, 1968b), whereas a direct measurement type will, the following hypotheses were adopted:

(1) There will not be a significant difference in interaction distances among all four interaction situations (described below) during the projective paper-and-pencil (PIM_2) encounters, because it is not

a sensitive enough scale.

(2) There will be a significant difference in interaction distances between the face-to-face interaction (i.e., personal field-interaction #4) and the other three non- face-to-face interactions (i.e., personal sphere-interactions #1 through to #3) during the direct physical ($DPIM_2$) social encounters, because it is a more sensitive measurement scale.

The four interaction situations, which enabled the measurement of interaction distances completely surrounding the individual, as used in previous body-boundary research (e.g., Rawls, Trego & McGaffey, 1968a), consisted of the following:

(a) Where the X approached the S from behind;

(b) Where the X approached the S from his/her left;

(c) Where the X approached the S from his/her right; and

(d) Where the X approached the S face-to-face.

CHAPTER III

METHOD and RESULTS

As an initial note on methodology and procedure, since attitudes have been found to change more often in the direction of a person's behaviour (Cohen, 1960; Fishbein, 1967a, 1967b; Larsen, Swendiman & Stimpson, 1968; McGuire, 1960), a repeated measurement design in which Ss received or responded to both measurement types (i.e., the PIM and the DPIM) was not employed in the present study, thus eliminating potential queries regarding the effect of order of measurement presentation. Furthermore, since strong sex factors, or sex-role behaviours, have been identified as the cause of much of the variation found in interaction distances during social interaction (Hartnett, Bailey & Gibson, 1970; Meisels & Guardo, 1969; Mallenby, 1973, 1974a), the Ss and the X (either the normal person X_n, or the stigmatized person X_s) were of the same sex for each interaction.

A. Experiment I

1. Subjects

A total of 112 college students were recruited by asking for volunteers. The age range requested was between 18 and 25, the mean age for each group is referenced in the respective Tables. The Ss were assigned to one of four interaction situations: PIM - X_n, PIM - X_s, DPIM - X_n, or DPIM - X_s, appearing in Table 1. This assignment of Ss enabled an analysis of variance of the data for independent samples, appearing in Table 2 (See Table 2).

Two research assistants of opposite sex acted, respectively, as the normal person (X_n) for the S_n - X_n interactions and the stigmatized person (X_s) for the S_n - X_s interactions depending upon the sex of the S, such that the S and the X were of the same sex. The research assistants were volunteers.

2. Measurement Techniques

Two methods of measuring interpersonal distance were employed in this experiment. The first was a projective paper-and-pencil interaction measurement technique similar to Meisels and Guardo's (1969; Guardo & Meisels, 1971a, 1971b) modification of Kuethe's (1962a) earlier method; this will be referred to as projective interaction measurement$_1$ (PIM$_1$). It consisted of a one-sheet booklet (See Appendix A) which represented one or the other of the following two interactions:

(a) Normal person (S_n) approaches and stands face-to-face with normal person (X_n);

(b) Normal person (S_n) approaches and stands face-to-face with stigmatized person (X_s).

The second measurement technique was based on a direct physical interaction measurement situation similar to that employed by Mallenby (1973, 1974a, 1974b, in press; Mallenby & Mallenby, in press) in various contexts; this will be referred to as direct physical interaction measurement$_1$ (DPIM$_1$). It consisted of interactions identical to those above, except that they were real-life encounters rather than projective paper-and-pencil interactions, as for the PIM$_1$.

Table 1

EXPERIMENTAL DESIGN: MEASUREMENT TECHNIQUES AND TYPE OF INTERACTION

Technique			Interaction		
	$S_n - X_n$			$S_n - X_s$	
PIM_1	N = 28, Mean age:	Male 23.8 Female 21.5	N = 28, Mean age:	Male 21.6 Female 21.5	
$DPIM_1$	N = 28, Mean age:	Male 21.0 Female 21.0	N = 28, Mean age:	Male 21.9 Female 21.8	

Notes:- Ss were assigned to only one of the four possible interaction situations. The PIM_1 is the projective paper-and-pencil interaction measurement technique, and the $DPIM_1$ is the direct, real-life interaction measurement technique. Distances are in cms. for both techniques.

3. Procedure

The resulting design was a 2 by 2 block design, such as that exemplified in Table 1. For the PIM_1 and the $DPIM_1$ technique, there were respective sets of instructions corresponding to the given interaction:

(1) When Ss interacted with X_n (S_n - X_n), the instructions were, "We are interested in the most comfortable distance people maintain during interaction. During the following interaction, I would like you to approach and stand where you would feel most comfortable from this other person. The other person is a normal person (who has volunteered) and is aware that we are interested in finding the most comfortable distance between interacting people. Therefore, concern yourself with finding the most comfortable interaction distance."

During the PIM_1 presentation, the experimenter (E) displayed the paper-and-pencil social interaction (Appendix A) to the S, and pointed to the X_n (i.e., the pre-printed figure). The S was then given the cut-out silhouette figure which represented himself/herself, depending upon the sex of the S. The S was then asked if he/she had any questions as to the task. If there were none, the S was permitted to record his/her interaction

distance with X_n by tracing around the cut-out figure.

During the $DPIM_1$ presentation, the X_n was pointed to, and it was explained that the S should approach the other person. The S was also asked if there were any queries. If there were none, the S was permitted to respond. When comfortable, he/she was to notify the E who stood behind the S and out of his/her field of vision. The E then recorded the interaction distance.

(2) When Ss interacted with X_s (S_n - X_s), the instructions were, "We are interested in the most comfortable interaction distance people maintain during interaction. During the following interaction, I would like you to approach and stand where you feel most comfortable with this other person. The other person is a mentally retarded person (who has volunteered) and is aware that we are interested in finding the most comfortable interaction distance between interacting people. Therefore, concern yourself with finding the most comfortable interaction distance."

During the PIM_1 presentation, the E displayed the paper-and-pencil social interaction (Appendix A) to the S, and pointed to the X_s (i.e., the pre-printed figure). The S was then given the cut-out silhouette figure which

represented himself/herself, depending upon the sex of the S. The S was then asked if he/she had any questions about the task. If there were none, the S was then permitted to record his/her interaction distance with X_s by tracing around the cut-out figure.

During the $DPIM_1$ presentation, the X_s was pointed to, and it was explained that the S should approach that other person. The S was also asked if there were any questions about the task. If there were none, the S was permitted to respond. When comfortable, he/she was to notify the E who stood behind the S and out of his/her field of vision. The E then recorded the interaction distance.

4. Results

Mean interaction distances between the Ss and either the normal person (X_n) or the stigmatized person (X_s) for each measurement technique appear in Table 2.

An analysis of variance, also appearing in Table 2, reveals that the interaction distances maintained toward the X_n compared to the distances maintained toward the X_s were significantly different for both measurement techniques (PIM: $\underline{F} = 26.9$; df = 1; $\underline{p} < .01$; DPIM: $\underline{F} = 9.98$; df = 1; $\underline{p} < .01$). That is, on the average, the Ss maintained greater interaction distances from the stigmatized person during both types of interaction technique (i.e., projective and direct) than they did from the normal person. There was not a significant sex factor effect. (Raw data appears in Appendix B).

B. Experiment II

1. Subjects

There were 56 college students divided into the experimental conditions appearing in Table 3, such that each S interacted with another person (X) during two identical sets of four interaction situations (See Table 3). The Ss were of similar age, ranging from 18 to 25.

Table 2

MEAN INTERACTION DISTANCES AND
ANALYSIS OF VARIANCE

Technique	Factor	F	S.S.	df
PIM_1	X_n-X_s (A)	26.9*	64.5	1
	Sex (B)	1.28	3.06	1
	AB	1.53	3.65	1
	Error		124.46	52
$DPIM_1$	X_n-X_s (A)	9.98*	6651.0	1
	Sex (B)	2.76	1841.0	1
	AB	0.44	296.0	1
	Error		34647.0	52

* $p < .01$ level of significance

Technique	Means			
	X_n	X_s	Males	Females
PIM_1	1.95	4.096	3.257	2.789
$DPIM_1$	51.11	72.9	67.7	56.3

NOTE:- Distances are in cms.

The mean ages for each group appear in Table 3. Two opposite-sexed experimental assistants served as the X, depending upon the sex of the S, such that the S and the X were of the same sex. The assistants were paid participants.

2. Measurement Techniques

Two measurement techniques were employed in this experiment. One was a projective paper-and-pencil measurement (PIM_2). It was similar to Duke and Nowicki's (1972b) new CID scale (See Appendix C), in that the scale consisted of a standard sheet of blank paper with interaction radii marked on it.

Although based directly on the CID scale, the present PIM_2 was designed to measure interpersonal distances completely surrounding the subject. The only difference between the present measurement and Duke and Nowicki's CID is that four radii were deemed sufficient to record interpersonal distances (i.e., on four body fronts, as the following description will indicate), rather than the eight radii typical of their work (e.g., Duke & Nowicki, 1972b; Duke & Wilson, in press; Duke & Mullens, 1973). The four interactions, appearing below, were randomly displayed in a four page booklet (See Appendix C),

Table 3

EXPERIMENTAL DESIGN: MEASUREMENT TECHNIQUES AND TYPE OF INTERACTION

Technique	Mean Ages	Type of Interaction 1 2 3 4
PIM_2 N = 28	Male - 22.2 Female - 21.7	Ss - - - - - - - - ->
$DPIM_2$ N = 28	Male - 22.4 Female - 22.9	Ss - - - - - - - - ->

NOTES:- Interaction #1: Where the X approached and stood behind S; #2: Where the X approached from the S's left; #3: Where the X approached from the S's right; and, #4: Where the X approached face-to-face. The four interactions were randomized for each subject, to control for any effects of order of presentation, then repeated in reverse order.

in which each page represented a different interaction situation.

The other measurement type was a direct physical interaction measurement ($DPIM_2$) based, as was the CID and the present PIM_2, on body-boundary room research. The four respective interaction situations were:

(a) Where the X approached the S from behind;

(b) Where the X approached the S from his/her left;

(c) Where the X approached the S from his/her right; and,

(d) Where the X approached the S face-to-face.

3. Procedure

So that reliability measures could be obtained, Ss were assigned to respond to two sets of four interactions, as exemplified in Table 3. The first four distances served as data for this experiment, while the second four distances were used to compute a split-half reliability coefficient for these interaction distances.

The following instructions were given for the $DPIM_2$ measurement technique:

"We are interested in the closest, yet most comfortable distance one stands from another person. While you are standing in the centre of the room, four interactions

will occur: (1) One where a person (X) approaches and stands behind you; (2) One where a person (X) approaches you from your left; (3) One where a person (X) approaches you from your right; and, (4) One where a person approaches you face-to-face. In each situation, I would like you to ask the other person (X) to stop where you would feel most comfortable. You may turn your head to see where the other person is, and may position him/her wherever you would like, but do not turn around to face the person. Remember, position the other person as close to you as possible, yet in such a place that you will feel comfortable."

Once the X was so positioned, the S was to notify the E who, would then record the distances between the two people (i.e., the S and the X). Once the S had finished these four interactions, he/she was informed that the process would be repeated immediately. The second set of four interactions were then presented in exact opposite order to the first presentation, such that if the initial order were interactions #1, #2, #3 then #4, the second order would be interactions #4, #3, #2, and then #1, and so forth.

During the PIM_2 presentation, the E displayed the first sheet of the interaction booklet (See Appendix C) and, at the same time, placed in view two Fisher-Price toy-people of the same sex as the S. The E then took the first doll and said, "This is you; we will place him/her in the middle of the room." Instructions identical to those for the $DPIM_2$ measurement technique were then given. The E then gave the other doll to the S and said that the other person (X) (i.e., the other doll) was approaching the S along the designated line of interactions. (This line, it should be noted, was designated by the appropriate number in the right hand corner of the page, which corresponded to the number beside the line of interaction - see Appendix C). The S was then asked if he/she had any questions. If there were none, then the S was allowed to respond to all four of the interactions. Once a comfortable distance was found between the S and the X during an interaction, the S was instructed to trace around the circumference of the base of the approaching doll. Distances were recorded from the toe-edge of the approaching doll and the centre point of the room (i.e., the subject's doll in the centre of the room).

4. Results

The mean distances for each of the four interactions for the two types of measurement technique appear in Table 4. An analysis of variance for the four interactions for each measurement technique proved non-significant ($F = 0.156$; df = 1 for the PIM_2 and $F = 0.092$; df = 1 for the $DPIM_2$). (Raw data appears in Appendix D).

Although personal sphere (interactions #1, #2, and #3) did not differ significantly from personal field (interaction #4) for either measurement technique (i.e., PIM_2 and $DPIM_2$), the most comfortable distance permitted between the X and the S did differ significantly ($F = 16.4$; df = 1, $p < .01$) between females and males during the direct measurement technique, but not during the projective measurement technique. The difference was that the females permitted the same-sexed X to approach more closely than did the males for their same-sexed X.

Rawls et. al. (1968a) have, in addition, indicated the internal consistency of the distances or measures for both techniques, ranging from .77 to .94 for a direct-field test and from .39 to .82 for a projective test situation. Split-half reliability coefficients for the present data appearing in Table 5

Table 4

MEAN DISTANCES FOR EACH OF THE FOUR INTERACTIONS FOR THE TWO TYPES OF MEASUREMENT TECHNIQUE

Technique		Interaction Situation X approaching from			
		BACK	LEFT	RIGHT	FACE-TO-FACE
		$\bar{X}$/S.D.	$\bar{X}$/S.D.	$\bar{X}$/S.D.	$\bar{X}$/S.D.
PIM_2	Male	4.1/1.1	4.3/1.3	4.4/1.2	4.3/1.1
	Female	4.7/1.0	4.3/0.9	4.1/1.0	4.5/0.9
	Total	4.4	4.3	4.3	4.4
	Sex Factor: F = 0.269, not significant Type of Interaction Factor: F = 0.092, not significant				
$DPIM_2$	Male	110.7/39.5	114.8/47.3	106.0/39.5	108.5/41.7
	Female	82.1/28.3	84.2/26.5	79.9/29.9	83.5/29.6
	Total	96.4	99.4	92.9	96.0
	Sex Factor: F = 16.4, df = 1, p <.01 Type of Interaction Factor: F = 0.156, not significant				

NOTE:- Distances are in cms.

reveals, for same-sexed stimuli, a value of .19 for males and .46 for females during the PIM_2, and a value of .12 for males and .53 for females during the $DPIM_2$. The overall correlation coefficient for the projective technique is 0.3029 and for the direct technique is 0.3459. (Further correlation coefficients for each interaction and type of measurement technique appear only in Appendix E for the reader's perusal). Attention should be given the unexplained difference between the reliability coefficients for males and females.

Table 5

CORRELATION COEFFICIENTS
FOR EXPERIMENT II

TECHNIQUE			
PIM		DPIM	
MALES	0.1937	MALES	0.1182
FEMALES	0.4606***	FEMALES	0.5328***
TOTAL	0.3029***	TOTAL	0.3459***

Significance level *** $p < .001$

CHAPTER IV

DISCUSSION

As the social process (Lett et. al., 1969; Altman & Lett, 1969) necessarily requires a direct examination of people during social intercourse and interaction, the present study attempted two separate comparisons between the two major types of measurement techniques (i.e., the PIM and the DPIM). The experimental design for each comparison was arranged so that comparisons between interaction distances were within each measurement type. Criticisms, therefore, regarding between-measurement comparisons (e.g., those by Duke & Nowicki, 1972b) have been eliminated and, correspondingly, the present results offer unique empirical evidence as to the effectiveness of each measurement type.

A. Experiment I

In the first experiment, results indicate that increased distances were maintained toward the ascribed stigmatized person, while less interpersonal distance was maintained toward the normal person; this held true for

both measurement techniques. These results support the second and third hypotheses, and are consistent with previous research (Fagan & O'Neill, 1965), which has indicated that greater distances would be maintained toward a stigmatized person.

The results, however, do not support the first hypothesis that "attitudinal-distances", as recorded by the PIM_1 technique, are different from the "behavioural-distances", as recorded by the $DPIM_1$ technique. In fact, results confirm similarities between projective and direct forms of measurement, a finding which is consistent with previous research (e.g., Martin, 1972; Little, 1965) that has noted consistency between "projective" and "direct" interaction situations.

In keeping with the fact that both techniques did differentiate between the distances maintained toward the X_n and the X_s, the present results seem to support Wolfgang and Wolfgang's (1971) suggestion that attitudes and behaviour go "hand-in-hand". It appears, then, from the present research that "attitudinal-distances" and "behavioural-distances" may coincide in most social situations. Attitudes and behaviour, if they do not initially coincide, can be made to do so through social

learning, as has been demonstrated with "normal" subjects (Lever, 1965; Diller, 1971; Genskow & Maglione, 1965) and with "handicapped" children (Mallenby, 1974b, in press). It will be necessary for further research to examine the exact relationship between "attitudinal-distances" and "behavioural-distances", as related to the type of subject employed (i.e., whether "normal" or "stigmatized"), the effect of social learning, and the emotional atmosphere during the specific social encounter.

Nevertheless, the present results suggest that, within the limits of the specific social interactions examined, "attitudinal-distances", as recorded by projective measurement techniques, and "behavioural-distances", as recorded by direct measurement techniques, are comparable states of behaviour.

B. Experiment II

McBride (1968a, 1968b) has indicated that animal species have a number of territories that they live within and defend. Animals will, for example, defend territorial boundaries, home ranges within a given territory, personal sphere as the animal moves within its home range, and personal field if another animal approaches face-to-face.

Defence of these territories is explained in terms of social dominance and maintenance of that animal's "personal space", just as man is obliged to do (e.g., McDowell, 1972; Dosey & Meisels, 1969; Felipe & Sommer, 1966; Sommer & Becker, 1969).

The two personal spaces maintained are personal sphere (around the body) and personal field (around the face). Although it would seem intuitively obvious that interpersonal distance in front of a person's face would be greater than that around the other extremities of the body, as was hypothesized, neither measurement technique recorded, nor supported this assumption. Rawls, Trego and McGaffey (1968) have also failed to confirm this notion, regardless of who approached whom (i.e., whether the S approached X, or whether X approached S, as in the present experiment).

It must be assumed, then, that an animal's instinctive behaviour (such as social dominance) does not adequately explain the different, and possibly more complex, human forms of social behaviour and interaction (such as, learned social responses, social politeness, social conformity, etc.). In this respect, perhaps the subjects felt that it would be impolite to request the

X to stop farther away during the face-to-face interaction, than during the other body-boundary (or non-face-to-face) interactions.

Furthermore, had personal sphere been established or differentiated from personal field in humans, it was hypothesized that the PIM technique would not have been as effective a device in differentiating the respective distances associated with each type of personal space (i.e., around the body, and around the face, respectively) as would the DPIM technique. Results did not confirm this hypothesis.

Instead, it was found that neither the PIM_2 nor the $DPIM_2$ differentiated personal sphere from personal field. These results, however, confirm an earlier study (Rawls, Trego & McGaffey, 1968), in which it was found that distances around a person's body (i.e., including both face-to-face interaction and body-boundary interactions) did not differ significantly during either a direct measurement technique (i.e., a "field" test, p. 4) or a projective measurement technique (i.e., a "circle drawing" test, p. 6). As suggested previously, this may have been because human behaviour is more complex than an animal's predominantly instinctive behaviour.

The significant methodological difference between the present experiment and the study by Rawls *et. al.* (1968) is that Rawls *et. al.* made inter-measurement comparisons (by utilizing procedures and instructions as similar as possible), whereas the present study was concerned with intra-measurement comparisons. As noted previously, the comparisons in the present study were methodologically more sound, since inter-measurement comparisons usually involve comparisons using different measurement units and social conditions (i.e., distances are usually much greater during a DPIM encounter than during a PIM encounter). Intra-measurement comparisons, on the other hand, make comparisons within a given technique; thus the measurement units and the social interaction situation are quite similar and more "standardized".

Although personal sphere (interactions #1, #2, and #3) did not differ significantly from personal field (interaction #4) for either the PIM_2 or the $DPIM_2$, the most comfortable distance permitted between the X and the S did differ significantly ($F = 16.4$; $df = 1$; $p < .01$) between females and males during the direct measurement technique, but not during the projective measurement

technique (See Table 4). The difference was that the females permitted the same-sexed X to approach more closely than did the males for their same-sexed X. These results are consistent with other research (Hartnett, Bailey and Gibson, 1970; Meisels and Guardo, 1969; Mallenby, 1973, 1974a) which has exemplified strong sex differences in distancing during interpersonal interaction. These differences were similar to previous research in that females tend to maintain less interpersonal distance during social interaction or encounter than do males. It is important to note that this difference was only significant during the direct measurement social encounter and not during the projective measurement paper-and-pencil encounter.

CHAPTER V

CONCLUSIONS

Although a hard-line approach was taken that PIM techniques are, perhaps, not as effective or sensitive in recording interpersonal distances during social interaction, as one might suspect, or as efficiently as would direct physical interaction measurement (DPIM) techniques, results from two separate experiments in the present study seem to indicate that these two techniques are equally sensitive in recording interpersonal distances. The present results, furthermore, support previous research (e.g., Little, 1965; Martin, 1972; Rawls, Trego & McGaffey, 1968), in which the two measurement techniques have been compared under different circumstances.

It seems, therefore, that if researchers or field workers are interested in recording "distance" behaviours only, either a PIM or a DPIM technique could be used with equal effectiveness. In other words, one need not go to the trouble of examining actual people in a naturalistic or experimental social setting. Rather, easy-to-administer and less costly projective forms of

measurement technique can be employed.

Obviously, if experimental factors, such as costs, speed, numbers of assistants or researchers, and experimental setting are a problem or at a premium, one might fruitfully employ a projective form of measurement, rather than risk the "expenses" of a direct interaction situation. Hence, certain of Duke and Nowicki's (1972b) easy-to-administer criteria for projective techniques may be adopted, or considered when deciding upon the type of measurement technique to be used. If the entire social process, such as gestures, eye contact, facial expressions, cognitions, etc., is of major importance to the researcher or field worker, however, carefully contrived direct forms of measurement are the most advisable to use. In this respect, limitations of projective techniques, as emphasized by Lett et. al. (1969) and Mallenby (1974b), should be taken into consideration.

It should be noted that the present study was conducted on the assumption that the reliability of both measurement techniques was high. In essence, previous research (e.g., Little, 1965) has suggested that comparable results could be obtained regardless of the

type of measurement technique employed to record or measure interpersonal distance. The present results, from both experiments, also seem to confirm this fact.

However, when routine split-half reliability coefficients were calculated on the data from Experiment II, the resulting correlations were found to be extremely low (See Table 5). These low reliability coefficients dictate that the relative efficacy of these measurement techniques be seriously questioned. Although both experiments revealed that, on the average, maintained interpersonal distances were comparable for both techniques (as has been demonstrated by others - e.g., Little, 1965; Rawls et. al., 1968a), on an individual basis, there was little consistency between distances maintained from one testing situation to another in Experiment II.

It seems, then, that until reliable measures are identified or developed, the original question as to whether there is a difference between projective and direct measurement techniques will remain unanswered. That is to say, because the measurements seem to be unreliable, they are not apt to record any actual differences between these techniques, even if differences do exist. This may

be the very reason that other researchers have not reported differences between these two techniques, but since very few studies have reported reliability estimates, this point is difficult to confirm.

Split-half reliability coefficients (i.e., in an immediate test-retest situation) are usually expected to be inflated, yet those from Experiment II were extremely low, which indicates that caution should be utilized when employing either technique. These correlational results - very unexpectedly, it might be added - seem to raise serious questions regarding the whole body of experimentation which has compared measurement techniques, as well as these studies which have employed either technique, but have not yet reported correlational coefficients for the specific research situation. Consideration must therefore be given to Duke and Nowicki's (1972b) statement that, although measurement techniques designed to measure interpersonal distance may seem to be commonsensically similar, they are, indeed, only weakly correlated (Sommer, 1959; Rawls et. al., 1968b). The low correlations from Experiment II have extended Duke and Nowicki's concern that there is little consistency not only between types of measurement technique but also within

each measurement technique, from a test-to-retest situation.

In culmination, although both experiments have indicated that both measurement techniques are equally effective in measuring interpersonal distance and that, indeed, they may be interchanged when measuring the "interpersonal distance" between individuals, reliability coefficients or estimates should be calculated for each experiment in which these techniques are employed. Many studies have previously gone unchallenged since the reliability of either or both measurement techniques has not been calculated or computed for the specific social situation being examined by the respective researchers. Perhaps they, as did the present author, automatically assumed the measures to be reliable, as they "commonsensically" appear to be.

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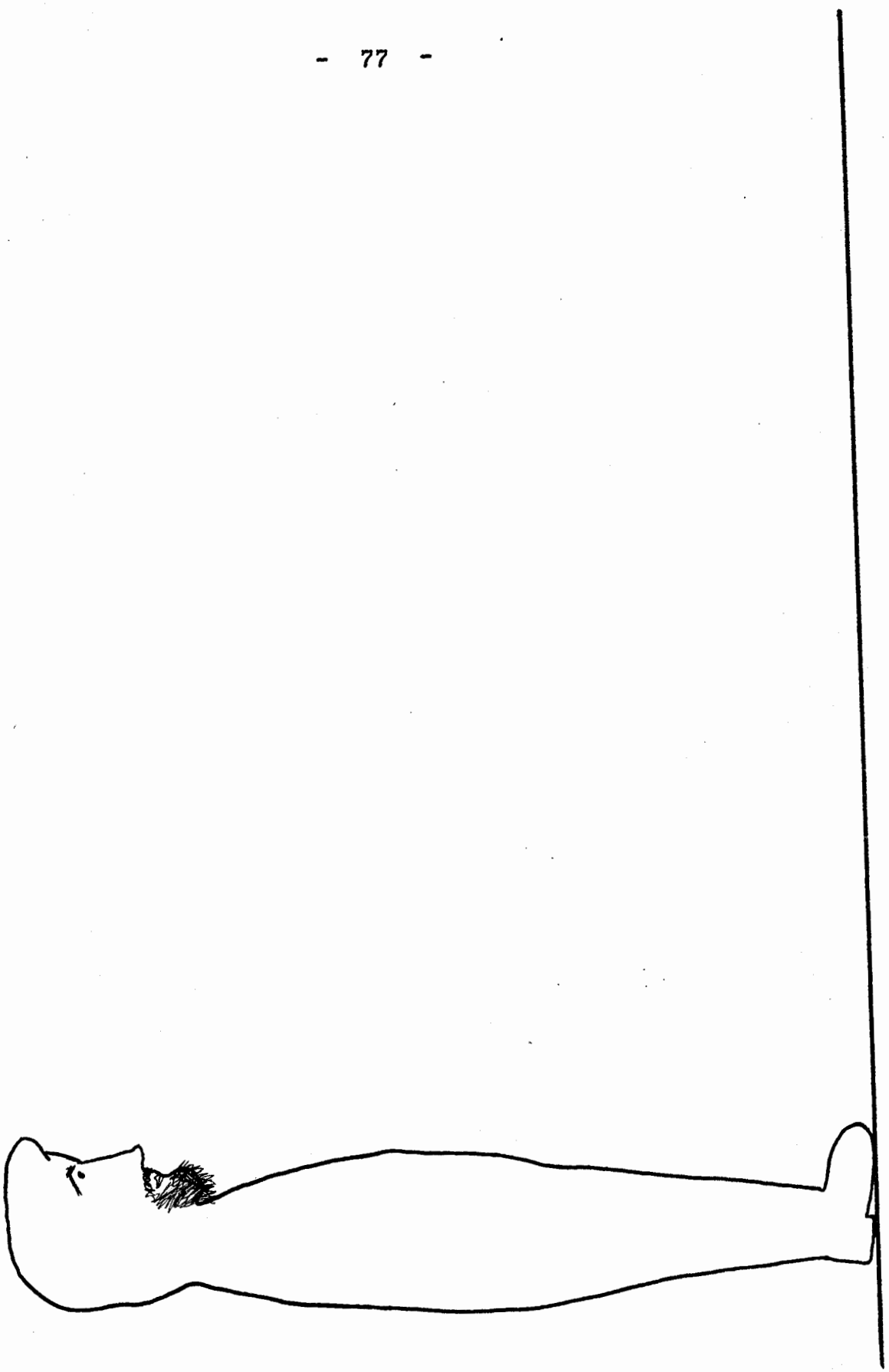
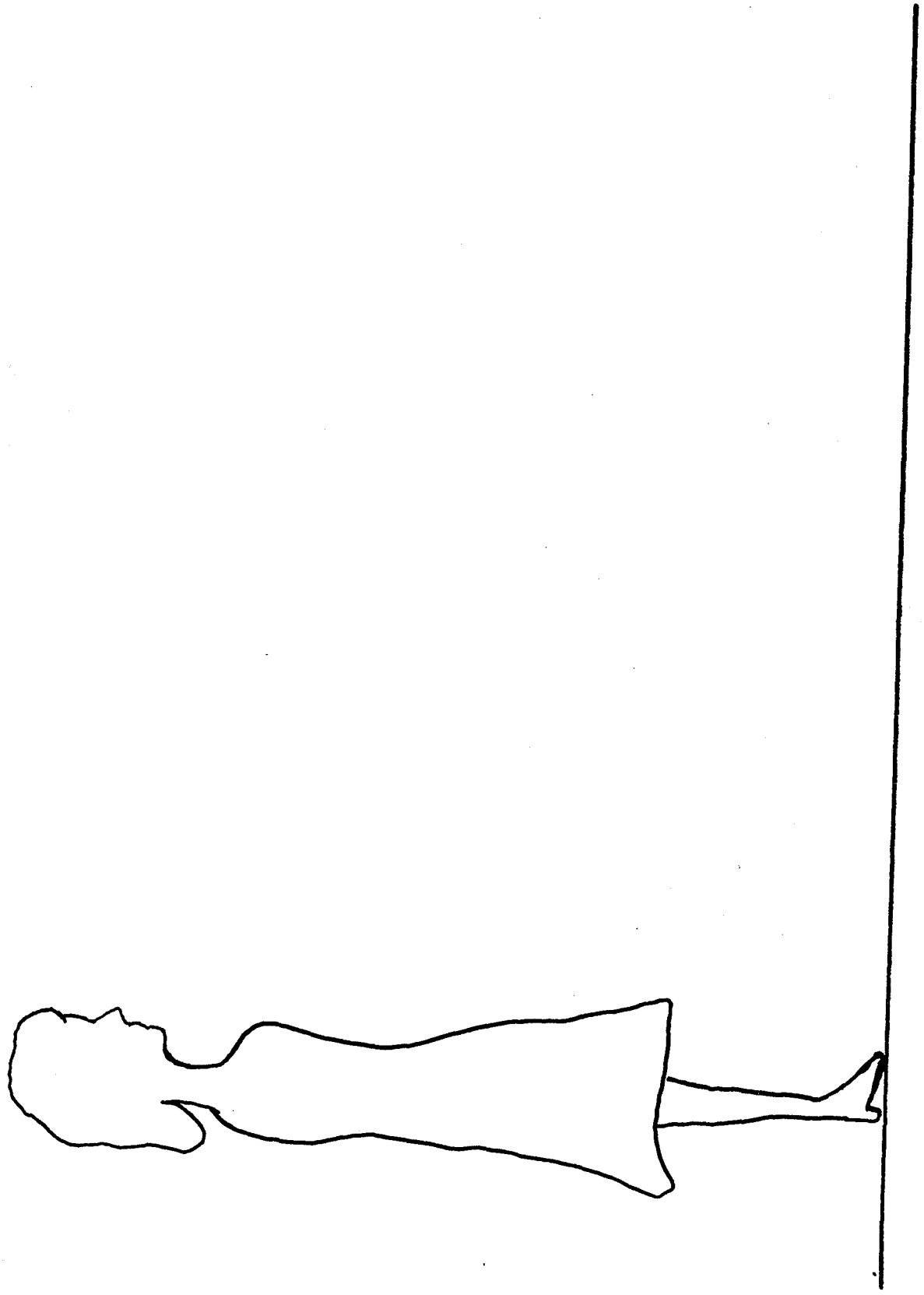
APPENDIX A

THE PROJECTIVE PAPER-AND-PENCIL INTERACTION MEASUREMENT (PIM_1) TECHNIQUE





APPENDIX B

RAW DATA FOR

EXPERIMENT I

PIM - Xn		PIM - Xs	
Male	Female	Male	Female
1.5	2.5	7.5	4.2
1.7	1.0	8.0	5.5
3.2	2.4	9.4	4.2
2.0	3.2	3.8	5.5
1.6	1.0	3.0	3.6
1.7	1.7	9.5	1.8
2.0	2.0	5.5	7.5
2.5	1.6	3.7	2.7
2.0	1.5	9.0	2.4
1.3	1.3	2.7	1.8
1.7	1.8	4.6	4.0
3.2	2.7	1.7	2.0
1.4	2.5	1.8	3.3
1.2	2.4	2.0	2.0

DISTANCES ARE IN CMS.

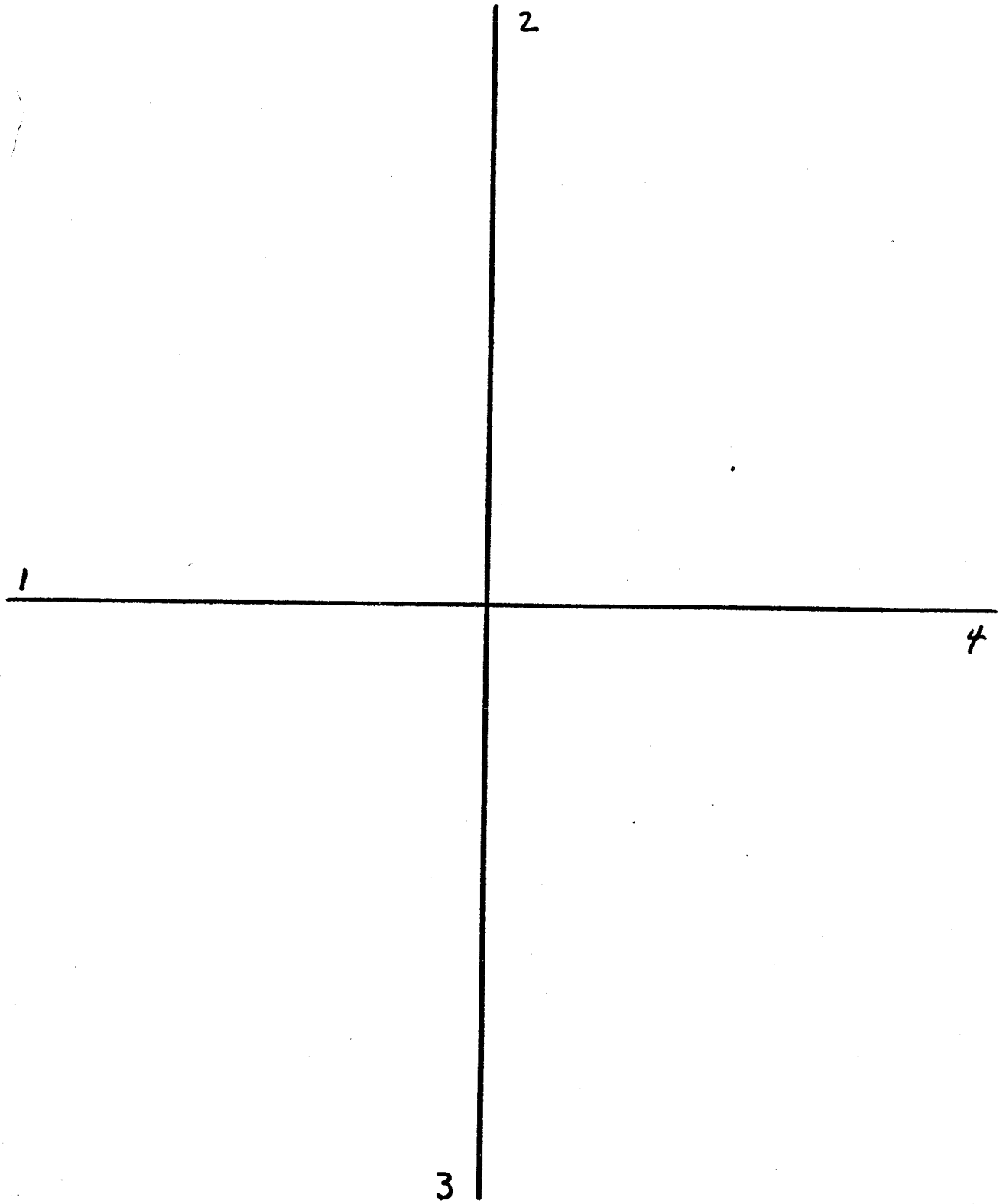
DPIM - Xn		DPIM - Xs	
Male	Female	Male	Female
30.0	75.0	77.5	57.5
135.1	35.4	47.5	45.5
27.5	22.5	52.5	50.0
42.4	30.1	42.5	32.5
42.5	50.7	65.2	78.7
50.8	75.5	87.5	75.7
45.5	48.4	80.4	65.8
37.6	75.8	127.5	32.5
70.0	30.0	50.7	50.6
75.2	48.6	80.0	55.6
66.5	51.0	78.8	130.2
42.5	32.0	120.6	100.0
20.0	47.0	122.5	58.5
78.0	45.5	100.0	75.4

DISTANCES ARE IN CMS.

APPENDIX C

THE PROJECTIVE PAPER-AND-PENCIL INTERACTION MEASUREMENT (PIM_2) TECHNIQUE

#1



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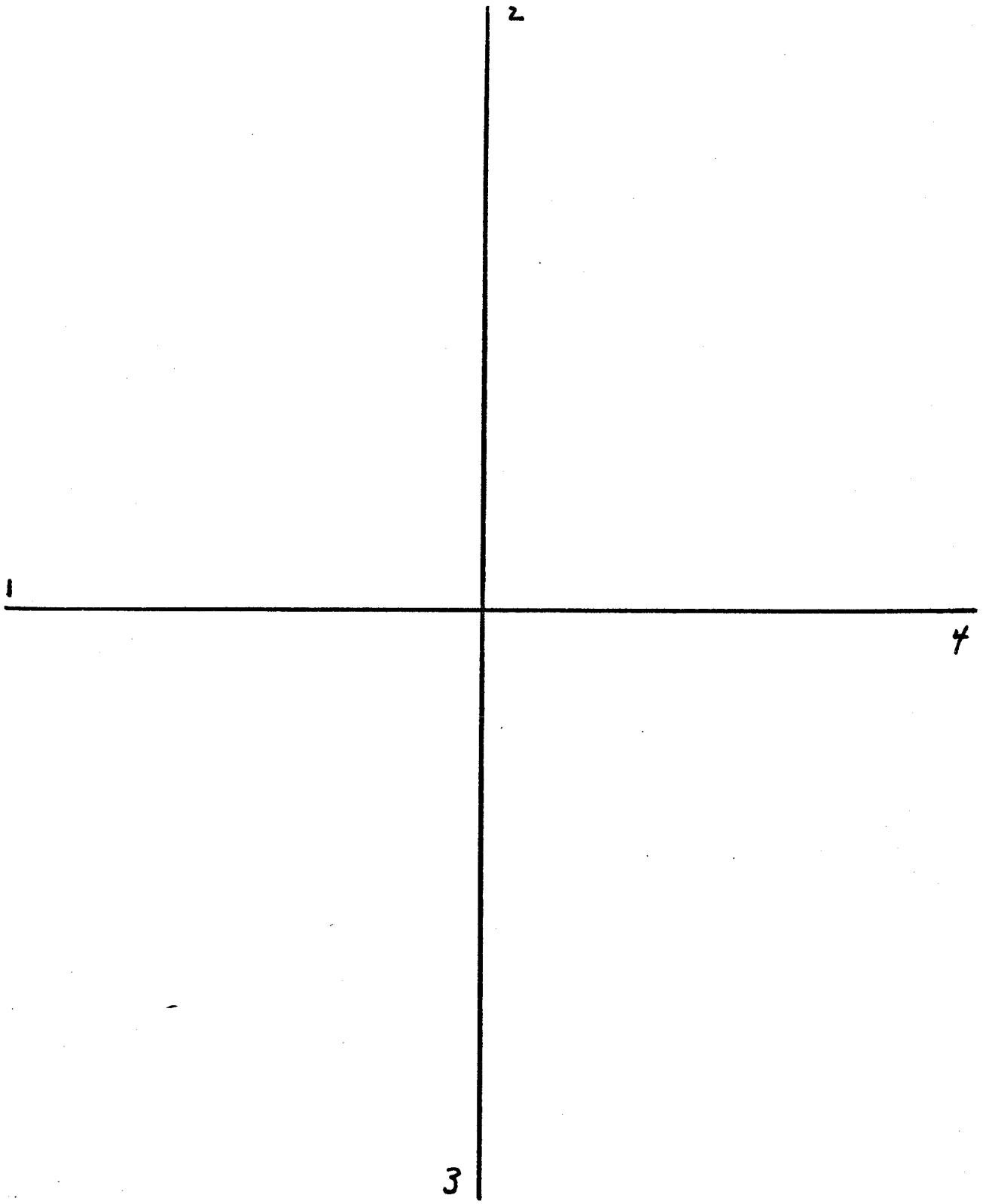

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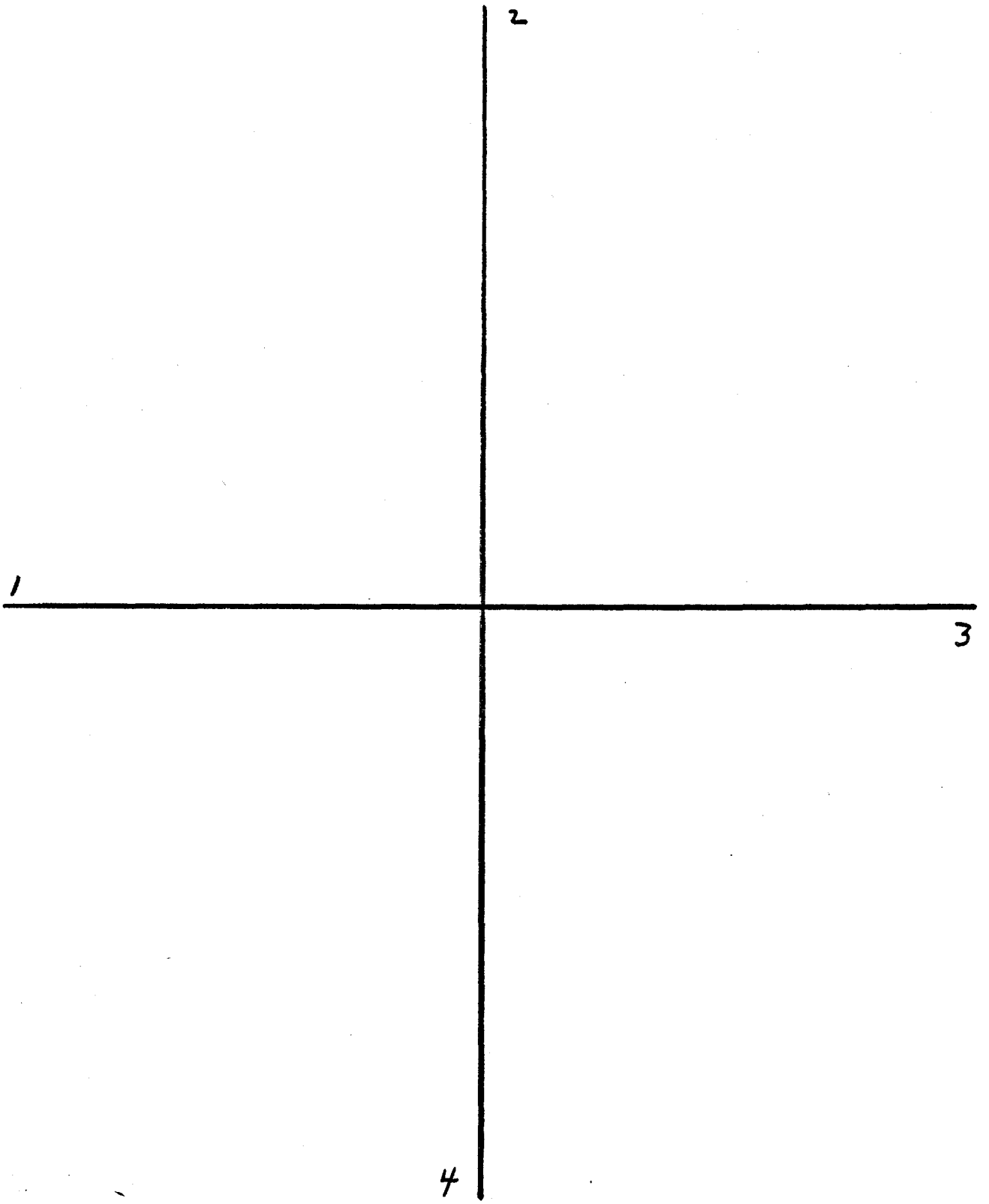

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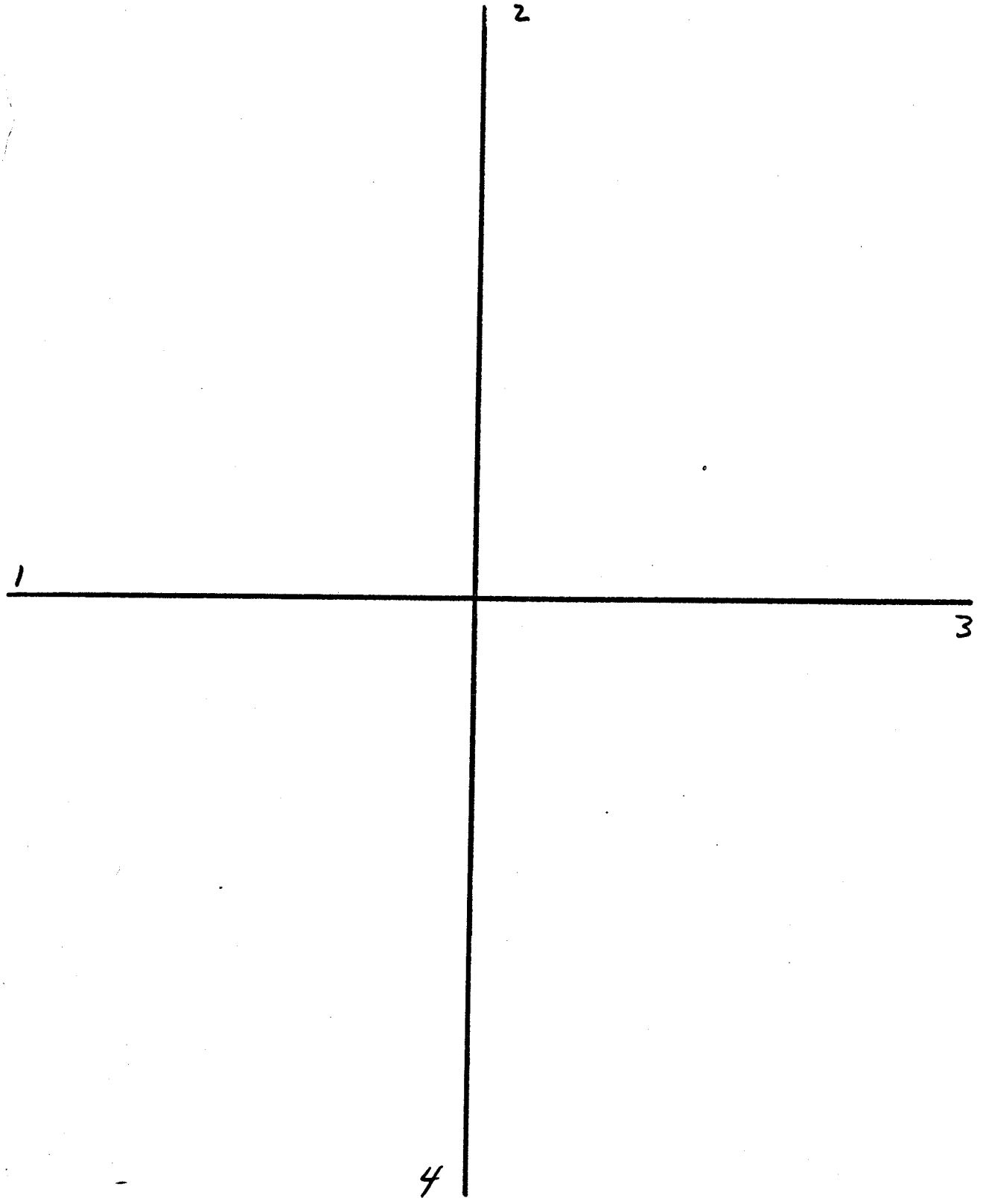

APPENDIX D

RAW DATA FOR EXPERIMENT II

DISTANCES DURING THE
FIRST FOUR INTERACTIONS

PIM

INTERACTIONS

	1	2	3	4
MALE	5.3 cm	6.5	3.0	4.7
	2.7	2.2	2.1	2.2
	5.0	4.8	5.8	2.7
	2.9	5.3	4.5	5.2
	6.3	2.3	5.2	4.7
	4.4	4.0	4.4	5.2
	3.3	2.9	2.8	4.8
	4.3	4.3	3.7	2.7
	3.4	4.5	6.3	3.8
	5.2	5.0	5.0	4.5
	4.5	3.5	4.5	4.7
	4.5	4.5	3.7	3.6
	2.5	6.4	6.4	5.7
	3.6	4.0	4.5	5.7

INTERACTIONS

	1	2	3	4
FEMALE	4.0 cm	5.0	5.0	6.0
	6.0	4.0	5.2	4.1
	4.0	5.1	5.0	6.0
	3.0	4.2	4.6	4.4
	5.2	4.2	4.0	5.0
	3.2	3.5	4.0	4.2
	5.0	3.8	2.6	4.4
	4.5	4.9	2.9	3.0
	4.1	2.2	3.0	4.0
	6.0	5.5	4.5	4.4
	4.2	3.2	3.0	2.9
	5.1	4.5	6.2	5.0
	6.2	4.5	4.0	5.0
	4.9	5.5	4.2	4.3

Distances are in cms.

DPIM

INTERACTIONS

	1	2	3	4
MALE	69.5 cm	187.0	106.0	167.0
	126.0	37.6	45.7	113.0
	116.0	76.3	57.3	47.6
	143.5	180.0	112.0	127.0
	176.0	127.0	135.0	123.0
	122.0	125.6	127.0	117.0
	174.0	134.0	67.3	174.0
	45.7	114.0	123.8	123.5
	123.0	34.7	130.0	123.5
	109.0	120.0	119.5	67.3
	93.7	55.9	119.0	35.6
	66.5	140.0	187.0	60.9
	120.0	137.0	108.0	137.0
	64.3	137.5	45.7	102.0

INTERACTIONS

	1	2	3	4
FEMALE	106.0 cm	122.0	140.0	152.0
	127.0	114.0	127.0	114.0
	55.9	63.5	50.8	76.2
	88.9	58.4	63.5	71.1
	127.0	114.0	63.5	66.0
	55.9	76.2	81.3	68.6
	78.7	127.0	114.0	96.5
	48.2	55.9	45.7	58.4
	60.9	96.5	66.0	48.2
	102.0	91.4	94.0	76.2
	60.9	71.1	96.5	102.0
	86.3	63.5	60.9	66.0
	45.7	76.2	55.9	53.3
	106.0	49.0	59.0	120.0

Distances are in cms.

DISTANCES DURING THE SECOND FOUR INTERACTIONS

PIM

INTERACTIONS

	1	2	3	4
MALE	4.8 cm	2.8	4.9	4.9
	2.3	2.4	1.9	2.1
	2.3	5.3	4.1	6.7
	6.2	2.7	4.4	4.3
	4.7	5.2	6.0	2.4
	4.0	4.2	4.6	4.6
	4.8	3.2	3.3	3.2
	4.5	4.5	4.5	3.9
	4.3	5.9	4.0	3.9
	5.0	5.0	4.0	4.5
	5.0	4.5	4.0	5.0
	4.5	4.7	4.0	3.7
	5.7	6.5	7.0	2.5
	5.0	3.9	4.0	5.0

INTERACTIONS

	1	2	3	4
FEMALE	4.3 cm	5.4	5.4	5.0
	3.6	5.4	5.0	5.0
	5.0	5.0	4.6	4.5
	5.0	4.8	2.5	3.0
	5.5	5.0	4.2	4.9
	3.8	2.6	4.0	4.2
	4.6	3.0	3.5	4.7
	3.0	4.0	3.0	2.8
	4.0	4.2	5.0	5.2
	6.4	6.0	4.5	5.0
	2.8	3.5	4.0	3.8
	4.5	5.2	6.2	6.0
	4.8	3.5	4.0	5.0
	5.3	4.8	4.0	3.8

Distances are in cms.

DPIM

INTERACTIONS

	1	2	3	4
MALE	70.3 cm	176.0	108.0	157.0
	38.0	130.0	115.0	46.8
	49.7	60.5	80.0	120.0
	178.0	143.5	130.0	122.0
	120.0	135.0	130.0	180.0
	135.0	125.0	118.0	127.0
	183.0	68.7	140.0	174.0
	120.0	45.0	130.0	135.0
	134.0	140.0	40.0	123.0
	115.0	110.0	70.0	120.0
	40.5	119.0	60.0	95.0
	140.0	65.0	70.0	170.0
	137.0	110.0	140.0	125.0
	137.0	65.0	102.0	45.0

INTERACTIONS

	1	2	3	4
FEMALE	152.0	65.0	88.9	106.7
	114.0	127.0	94.0	152.0
	88.9	81.3	91.4	102.0
	102.0	88.9	66.0	86.3
	93.0	102.0	96.5	81.3
	50.8	43.2	66.0	58.4
	88.9	102.0	106.7	116.8
	50.8	63.5	66.0	50.8
	86.3	76.2	66.0	74.5
	78.7	106.7	88.9	78.0
	55.9	48.2	71.1	76.2
	78.7	86.3	76.2	102.0
	106.0	63.5	68.6	76.2
	118.0	60.0	50.0	104.0

Distances are in cms.

APPENDIX E

CORRELATION COEFFICIENTS FOR EXPERIMENT II

PIM TECHNIQUE

BETWEEN INTERACTIONS FOR MALES	1 and 5	-0.1158
	2 and 6	0.2306**
	3 and 7	0.6142**
	4 and 8	-0.0011
	1234 and 5678	0.1937
BETWEEN INTERACTIONS FOR FEMALES	1 and 5	0.3035*
	2 and 6	0.4642**
	3 and 7	0.5798*
	4 and 8	0.5179***
	1234 and 5678	0.4604***
TOTAL FOR PIM	1234 and 5678	0.3029***

DPIM TECHNIQUE

BETWEEN INTERACTIONS FOR MALES	1 and 5	0.2690
	2 and 6	0.0807
	3 and 7	0.2598
	4 and 8	0.2991
	1234 and 5678	0.1182
BETWEEN INTERACTIONS FOR FEMALES	1 and 5	0.5635**
	2 and 6	0.5076*
	3 and 7	0.5363***
	4 and 8	0.6080***
	1234 and 5678	0.5328***
TOTAL FOR DPIM	1234 and 5678	0.3459***

Significance level *$p < .05$
**$p < .01$
***$p < .001$