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## Psychological versus spatial effects on social schema distances of normal and schizophrenic subjects.

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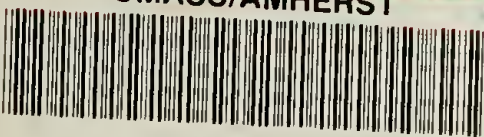
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PSYCHOLOGICAL VERSUS SPATIAL EFFECTS ON SOCIAL SCHEMA  
DISTANCES OF NORMAL AND SCHIZOPHRENIC SUBJECTS

A Thesis Presented

By

Charles J. Holahan

Submitted to the Graduate School of the  
University of Massachusetts in  
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April 1970

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## INTRODUCTION

An important step in learning to understand social behavior is the development of a technique to measure the degree of attraction between individuals. A number of researchers have suggested the usefulness of a figure placement technique as a nonverbal measure of interpersonal attraction (Weinstein, 1965; Carlson & Price, 1966; Fisher, 1967; Levinger & Gunner, 1967; Gottheil, Corey, & Paredes, 1968; Tolor, 1968; Higgins, Peterson, & Lise-Lotte, 1969). This technique is based on the earlier work of Kuethe (1962, 1964) on social schemata. Silhouette representations of human figures are placed upon a neutral background in order to assess subjects' cognitive dispositions toward their interpersonal world.

Researchers who have employed figure placements to study interpersonal attraction have assumed that the distance a subject places himself from another person in a schematic placement reflects the psychological closeness he feels toward that person. For example, Weinstein (1965) found that emotionally disturbed boys placed mother and child figures farther apart than did normal boys. She concluded that the woman-child relationship is especially negative and distant for emotionally disturbed boys. Fisher (1967) showed that school children with serious

deportment problems placed human figures father apart than did normal children. She inferred that disturbed children feel more distant or estranged from other people than do normal children. Carlson and Price (1966) found that adolescent males placed child and woman figures closer together than did pre-adolescents or adults. They speculated that social perception in the adolescent male may be influenced by "Oedipal notions." Higgins, et al. (1969) showed that male college students who demonstrated poor social adjustment placed mother and son figures father apart than did those whose social adjustment was good. Their conclusion was that "insofar as the physical distance placed between figures may be equated with emotional distance" these results indicated a negative maternal relationship in the early lives of males who show poor social adjustment. Tolor (1968), studying the figure placements of normal and disturbed children, stated explicitly: "Inherent in this approach is the assumption that physical distance placed between human figures on a field can be equated with psychological distance."

However, Holahan and Levinger (1969) have noted that in a number of studies it is uncertain to what extent indices of social schemata measure truly psychological distances as opposed to spatial or geographical distances between people. For example, in Weinstein's (1965) study the emotionally disturbed boys were living away from home

at a residential treatment center, while the normal boys were attending local public schools. It is possible that the figure placements of the emotionally disturbed boys were describing to some extent the increased physical distance between themselves and their mothers. Jarmon and DuHamel (1970) found no difference between the mother-child schemas of normal and disturbed boys, and also refer to the possible confounding of spatial and psychological factors in Weinstein's study in explaining their failure to replicate her findings. Fisher's (1967) results also might have reflected in part a greater physical separation between aggressive children and those around them, resulting from their aggressive behavior rather than from a psychological feeling of distance or estrangement.

The possible confounding of spatial and psychological factors in schematic placements is especially evident in a study by Gottheil, Corey, and Paredes (1968) carried out in a laboratory setting. In that study subjects were allowed to sit wherever they chose while being interviewed by an examiner with whom they were unfamiliar. They were then asked to place figures representing themselves and the interviewer on a field. Gottheil, et al. found that the distance between these two figures correlated highly with the actual distance subjects chose to sit from the interviewer. Assuming schematic distance reflected psychological distance, these researchers concluded that a sub-



ject maintains less interpersonal distance between himself and an interviewer when he "feels closer" to the interviewer. However, it is possible that their subjects' placements were essentially describing the physical distance they were sitting away from the interviewer, rather than showing their feelings toward him.

In a similar study, Levinger and Gunner (1967) found that students seated at the back of a lecture hall showed more distant schematic placements of self and professor figures than did students at the front of the hall. They concluded that students at the back of the hall felt more distant psychologically from the professor. Again, however, it is possible that students seated in the rear of the lecture hall were showing schematically the greater spatial separation between themselves and their professor, rather than their feelings toward him. Such an alternative spatial explanation of schematic distances raises a serious question about the validity of figure placement techniques as direct indices of psychological closeness between people.

Holahan and Levinger (1969) devised a laboratory situation to study the relative importance of psychological cues versus spatial cues as determinants of the schematic placements of college students. Subjects were seated at two different distances (3 feet and 6 feet) from an examiner with whom they were unfamiliar, and (during a

series of other placements) they were induced to place figures representing both self and examiner on a neutral field. After this placement, the examiner interacted in a friendly manner with half of the subjects at each distance and in an unfriendly manner with the other half of the subjects. Later, the subjects were induced to make a second schematic placement of the self and the examiner figures. The results showed that, in the absence of other information about a relationship, subjects employed cues of spatial distance for determining their first schematic placements. Following social interaction, though, psychological cues began to become a significant determinant of the figure placements. However, the observed psychological effect was smaller than expected; this may have resulted from a test-retest confounding effect in their study design, in that scores on the second schematic placement may have been constrained by the immediately prior placement.

### The Present Study

The first purpose of this experiment was to study further the relative importance of psychological distance versus spatial distance as determinants of human figure placements, after removal of the test-retest confounding effect present in the study of Holahan and Levinger.

A second purpose of this experiment was to extend



the design of Holahan and Levinger, to study the relative effects of psychological distance and spatial distance on the schematic placements of schizophrenic subjects.

The development of a measure of interpersonal attraction which can be used with schizophrenic patients would perhaps make available an important source of information in learning to understand the social behavior of the schizophrenic. The simplicity in administration and the non-verbal nature of the figure placement technique make it appear especially appropriate for use with schizophrenic subjects. Liebman (1969), for example, used schematic placements to measure improvement in the social relationships of chronic schizophrenics during a program of rehabilitative social therapy. To date, however, no attempt has been made to study the relative importance of psychological and physical distance as determinants of schematic placements by schizophrenic subjects. Such an investigation seems important in light of Holahan and Levinger's finding that figure placements may reflect either psychological or spatial events, depending on the availability of psychological information.

Psychological information is acquired through a receptiveness to relevant and often subtle cues emitted by other persons. The schizophrenic is, however, characteristically preoccupied with autistic modes of thought and emotionally uninvolved with the people around him (Coleman,

1964). Sullivan (1953) notes that even when the schizophrenic does participate in interpersonal relations, his perception of the emotional aspects of the situation is often distorted and fundamentally different from that of an objective observer. Safirstein (1967) has discussed the phenomenon by which many schizophrenics are able to carry on moderately complicated behaviors in a hospital setting while remaining emotionally detached from the specific persons who constitute the setting. In an empirical investigation, Harmatz, Mendelson, and Glassman (1970) found that only a very minimal percentage of the hospitalized schizophrenic's behavior is of a social nature. In light of the above considerations it seems possible that schizophrenics in making schematic placements may make relatively greater use of spatial information than do normals because psychological information is less available to them.

Specifically, in the present study the psychological and physical distance between subject and examiner were varied independently. The relative effects of these two kinds of distance on the schematic placement of subject and examiner figures by normal and schizophrenic subjects were studied.

Hypothesis 1 predicted a main effect for psychological distance, i.e., the examiner figure would be plotted closer when the examiner was friendly than when he was unfriendly.

Hypothesis 2 stated that a main effect would exist for physical distance, i.e., the examiner figure would be plotted closer when the examiner was sitting 3 feet from the subject than when he was 6 feet away.

Hypothesis 3 predicted that the psychological distance effect would be stronger with normals than with schizophrenics.

Hypothesis 4 stated that the physical distance effect would be stronger with schizophrenics than with normals.

The finding that psychologically disturbed individuals make more distant schematic placements than persons who are not disturbed has been highly reliable in figure placement studies dealing with well established social schemata (Lett, Clark, & Altman, 1969). In order to re-examine this general finding, subjects in the present study made five additional figure placements which concerned well established social schemata, i.e., father, mother, man, woman, boss. Hypothesis 5 predicted that schizophrenics would show greater schematic distances on these placements than would normals.



## METHOD

### Subjects

The normal group was comprised of 28 male nursing assistants and 8 male janitors employed at the Northampton Veterans Administration hospital who volunteered for the study. The schizophrenic group consisted of 36 male patients selected from the same hospital. Subjects in the normal group ranged in age from 21 to 58 years with a mean age of 40.8 years. The ages of subjects in the schizophrenic group ranged from 23 to 59 years with a mean age of 44.2 years. Several criteria were used to restrict the schizophrenic group to the least social and most withdrawn patients. First, schizophrenics were chosen who had received a chronic diagnosis from the hospital staff and whose total hospitalizations exceeded one year. Second, patients were selected who had never married because schizophrenics who have remained single typically demonstrate poorer premorbid social histories than those who marry (Gittleman-Klein & Klein, 1968). These authors note that marital status has no independent theoretical significance but retains empirical importance for prognostic purposes, correlating highly with decisions based on the Elgin and Phillips scales. Third, patients were restricted to those without a paranoid diagnosis and who did not demonstrate paranoid delusions at

the time of the study, because non-paranoid schizophrenics are more introverted (Blackburn, 1968) and show poorer pre-morbid social adjustments (Goldstein, Held, & Cromwell, 1968) than paranoid schizophrenics. Patients were also excluded who showed organic involvement or visual or auditory defects.

### Materials

The experimental room was furnished with two chairs and a table measuring three feet by six feet. Materials in the study also included the Interpersonal Grid developed by Levinger and Gunner (1967), a word-association test consisting of 20 non-threatening words, and a questionnaire concerning the subjects' evaluation of the examiner.

### Procedure

Subjects were tested individually. Physical distance between subject and examiner was varied by seating half of the subjects in each group three feet from the examiner and half of the subjects six feet away. Psychological distance was varied by having the examiner interact with half of the subjects at each distance in a friendly manner, and with half of the subjects at each distance in an unfriendly manner. In the friendly treatment, the examiner smiled frequently, looked at the subject, and addressed the subject in a friendly tone of voice. In the unfriendly treatment, the examiner did not smile, looked at what he was reading



rather than at the subject, and addressed the subject in a harsh tone of voice.

Possible experimenter demands, i.e., the examiner's presence influencing subjects to respond in a way to please him, were minimized in the following ways. The examiner introduced himself as a research assistant for a professor at a nearby university.<sup>1</sup> He explained that the tests would be sent directly to this professor without the subject's name on them, and were not for himself or for the hospital. A large sealable envelope was provided, and a mailbox with the professor's name on it was pointed out near the door.

To provide an opportunity for interaction during which psychological distance was varied, the examiner began the session with: 1. a short interview concerning the subject's experiences in the hospital, and 2. a word-association test administered verbally. Following this, the examiner presented the figure placement test by handing each subject a booklet with six Interpersonal Grid pages and a backing strip with six plastic figures. The first five figure placements were concerned with previously established social schemata, i.e., father, mother, man, woman, boss. These five placements were completely randomized, and were followed by the sixth placement which was concerned with the rela-

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<sup>1</sup>Because the examiner was a psychology trainee at the hospital, patients and hospital staff participating in this study were restricted to those who were unfamiliar with him in his training capacity.

tionship between the subject and the examiner. The five placements dealing with previously established social schemata were made before the examiner-self placement to camouflage the examiner's central interest in the latter placement. The instructions for each of these six figure placements were as follows:

Imagine the figure on the page is your father (or your mother, a man, a woman, your boss, me). Take one of the figures from the backing strip. Imagine this figure is you, and place it on the page in any manner you wish.

Two checks were then carried out concerning assumptions underlying the experimental hypotheses. Check 1 concerned the assumption that subjects are able to plot physical distances schematically. To test this assumption, subjects were instructed on one placement trial to describe the spatial arrangement between the examiner and themselves. After the first six schematic placements were completed, the examiner handed the subject a separate Interpersonal Grid page and a separate plastic figure with the following instructions:

Take the figure from the backing strip and place it on the page so that the two plastic figures on the page look like they are two people who are as far apart as we are at this table.

Check 2 dealt with the assumption that normals would be more responsive to the psychological treatment than would schizophrenics. To test this assumption, all subjects were given a verbal questionnaire at the end of the testing session concerning their perception of the examin-

er's friendliness or unfriendliness. The examiner presented the questionnaire explaining that the professor wished the subject's evaluation of the test experience. He pointed out that honest answers would be most helpful, and that the subject's name would not be put on the form. He provided a sealable envelope for the questionnaire and instructed the subject to drop it in the box when completed. The examiner left the room while the subject filled out the questionnaire.

A previous study (Holahan & Levinger, 1969) with college students using similar friendly and unfriendly conditions demonstrated that a questionnaire involving a rating scale differentiated very significantly between subjects under the two conditions. However, a pilot study indicated that schizophrenics similar to those participating in the present study were unable to use a rating scale technique. This necessitated for the present study the use of a questionnaire requiring merely a choice between two extreme positions. The critical questionnaire item asked:

How friendly was the examiner?

Mostly unfriendly

Mostly friendly



## RESULTS

In analyzing the results of this experiment, we will examine first the two checks of assumptions underlying the experimental hypotheses. Check 1 tested the assumption that subjects are able to plot physical distances schematically. Check 2 examined the assumption that normals would be more responsive to the psychological treatment than would schizophrenics.

We will then turn to an analysis of the five experimental hypotheses. Hypotheses 1 through 4 pertain to the examiner-self figure placement, while hypothesis 5 deals with figure placements of well established social schemata. Hypotheses 1 and 2 predicted main effects for psychological distance and physical distance respectively. Hypothesis 3 predicted that the psychological distance effect would be stronger with normals than with schizophrenics, while hypothesis 4 stated that the physical distance effect would be stronger with schizophrenics than with normals. Hypothesis 5 predicted that schizophrenics would make more distant schematic placements than would normals on the placements dealing with well established social schemata.

The dependent measure in the figure placements consisted of the absolute distance placed between figures,

measured from head to head in 1/10th inch units. The Mann-Whitney U Test<sup>2</sup> was used in analyzing figure placement data, because the normal distribution and homogeneity of variance assumptions of parametric tests could not be met. The Chi Square Test was used in analyzing questionnaire responses.

### Checks of Underlying Assumptions

Check 1. To test the assumption that subjects are able to plot physical distances schematically, subjects were instructed on one placement trial to describe the spatial arrangement between the examiner and themselves. Considering normal subjects<sup>3</sup> first, we find an inter-figure distance of 20.8 units for subjects at 3 feet, and 28.1 units for those at 6 feet. This mean difference of 7.3 units was statistically significant at the .03 level of probability ( $\underline{U} = 102$ ,  $\underline{z} = 1.90$ ,  $\underline{n}_1 = 18$ ,  $\underline{n}_2 = 18$ , one-tailed test). Looking now at schizophrenic subjects, we see that subjects at 3 feet showed an inter-figure distance 27.6 units, against 44.9 units for those at 6 feet. This difference of 17.3 units

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<sup>2</sup>When both groups being compared contain more than 8 subjects (Mann & Whitney, 1947; McNemar, 1962) or the larger of the two groups contains more than 20 subjects (Siegal, 1956), the statistic U is distributed normally and may be converted to a z score. In the present experiment, all group comparisons fulfilled these conditions, and the U statistic was converted to a z score in all cases. The formula used for converting U to z was taken from Siegal (1956), and included a correction for tied scores.

<sup>3</sup>No difference was found between nursing assistants and janitors on any experimental measures.



was also statistically significant ( $U = 97$ ,  $z = 2.06$ ,  $n_1 = 18$ ,  $n_2 = 18$ ,  $p < .02$ , one-tailed test).

These findings confirmed the assumption that both normals and schizophrenics are able to plot physical distances schematically. This figure placement also showed a tendency at the 6 foot distance for schizophrenics to plot the spatial arrangement as more distant than normals ( $U = 96$ ,  $z = 2.09$ ,  $n_1 = 18$ ,  $n_2 = 18$ ,  $p < .04$ , two-tailed test). At the 3 foot distance, there was no difference between normal and schizophrenic subjects' placements. Figure 1 depicts graphically the mean inter-figure distance on this placement for normals and schizophrenics at 3 feet and 6 feet. This placement was not affected by psychological treatment for either normal or schizophrenic groups.

Check 2. A questionnaire was used to test the assumption that normals would be more responsive to the psychological treatment than would schizophrenics. Looking first at the questionnaire responses of normal subjects, we see that all 18 subjects treated in a friendly manner reported on the questionnaire that the examiner had been friendly, while of those treated in a unfriendly way, 12 reported the examiner had been friendly and 6 reported he had been unfriendly. This difference between friendly and unfriendly subjects in the normal group was statistically significant by the Chi Square Test ( $\chi^2 = 5.0$ ,  $df = 1$ ,  $p < .025$ , one-tailed test). Turning to schizophrenics, we find that there

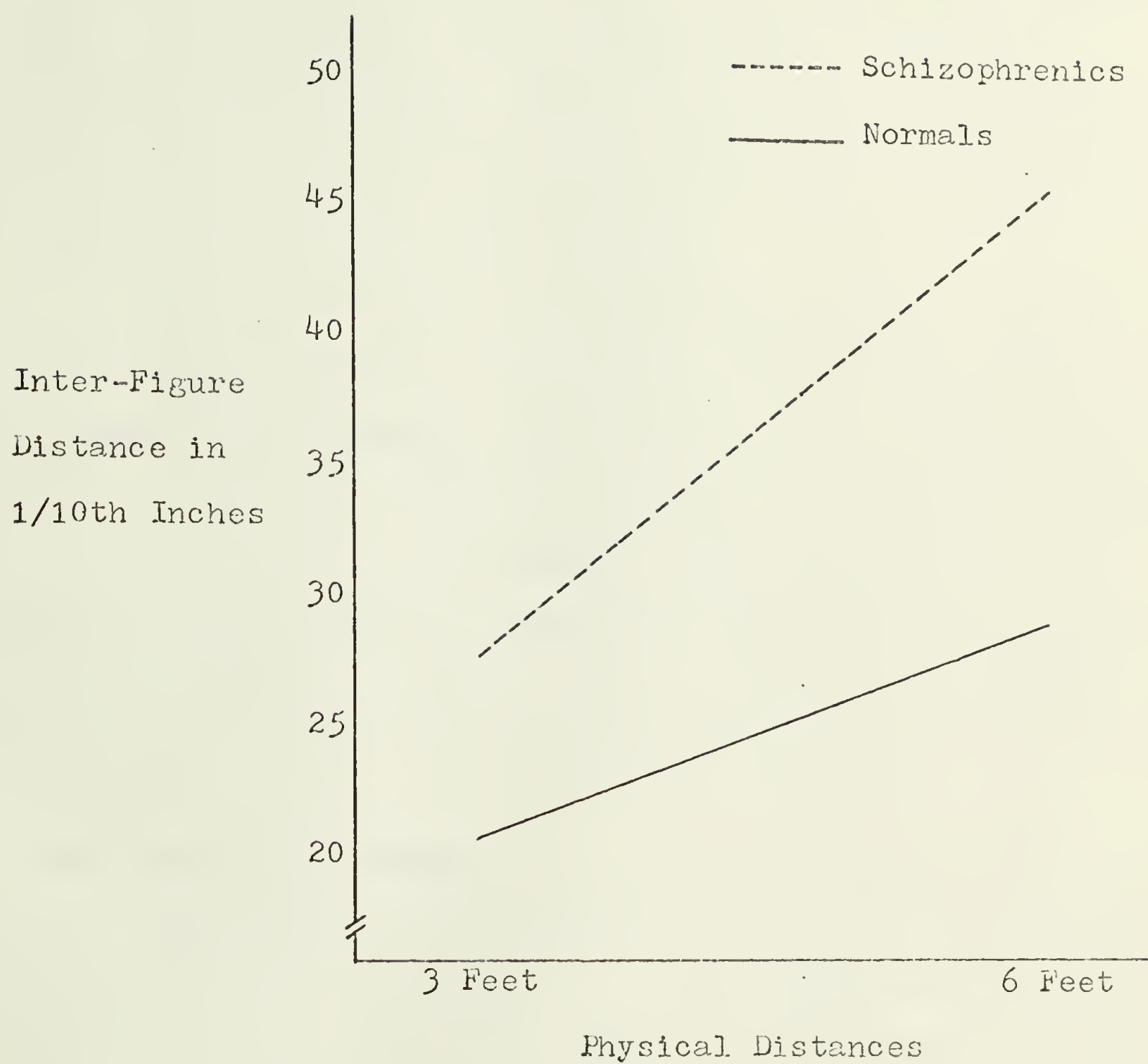


Fig. 1. Mean inter-figure distance for normal and schizophrenic subjects at 3 feet and 6 feet, under instructions to describe their spatial relationship to the examiner.

were no significant differences between those treated in a friendly manner and those treated in an unfriendly manner. All 18 schizophrenics under the friendly treatment responded that the examiner had been friendly, and all but one of those under the unfriendly treatment also responded that the examiner had been friendly.

This finding that the questionnaire measure of psychological treatment differentiated significantly between friendly and unfriendly subjects in the normal group, while failing to do so in the schizophrenic group, confirmed the assumption that normals would be more responsive to the psychological treatment than would schizophrenics. Physical distance had no effect on questionnaire responses for either the normal or the schizophrenic groups.

### Experimental Hypotheses

Hypothesis 1. This hypothesis predicted a main effect for psychological distance, i.e., the examiner figure would be plotted closer when the examiner was friendly than when he was unfriendly. Considering the data for all subjects, we find that subjects treated in a friendly manner placed the examiner and self figures a mean distance of 10.9 units apart, while those treated in an unfriendly way placed the figures 14.6 units apart. This mean difference of 3.7 units was in the predicted direction, but did not attain statistical significance. The prediction of a main effect for

psychological distance was not supported.

Table 1 summarizes the mean placement distance on the examiner-self placement for all experimental groups. The table has been corrected by removing one extremely high score from the group of normals under the 3-feet-cold treatment, which alone accounted for 53% of the sum of scores in this group.

Table 1

Mean Inter-Figure Distance on Examiner-Self  
Figure Placement for All Experimental Groups

Physical Distance	Normals		Schizophrenics	
	Friendly	Unfriendly	Friendly	Unfriendly
3 Feet	6.3	8.6*	11.0	15.7
6 Feet	12.8	11.3	13.6	14.8

\*Corrected by removing  
one extreme score

Hypothesis 2. A main effect was predicted for physical distance, i.e., the examiner figure would be plotted closer when the examiner was sitting three feet from the subject than when he was six feet away. Looking at the data for all subjects, we find that subjects three feet from the examiner showed a mean inter-figure distance of 12.4 units on the examiner-self placement, compared to 13.1 units for those six feet away. This difference was in the



predicted direction, but was again short of statistical significance. The hypothesis that a main effect would be found for physical distance was not supported.

Hypothesis 3. This hypothesis stated that the psychological distance effect would be stronger with normals than with schizophrenics. Considering normal subjects first, we note that the mean inter-figure distance on this placement for subjects treated in a friendly manner was 9.6 units, compared to 13.9 units for those treated in an unfriendly way. Although this mean difference of 4.3 units was in the predicted direction, it was not statistically significant.<sup>4</sup>

Turning now to the examiner-self placement of schizophrenic subjects, we find that subjects treated in a friendly way showed a mean inter-figure distance of 12.3 units, against 15.2 units for those treated in an unfriendly manner. This difference of 2.9 units was not statistically significant.

This finding that psychological distance affected neither the placements of normals nor those of schizophrenics failed to support the prediction that the psychological distance effect would be stronger with normals than with

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<sup>4</sup>This failure to obtain statistical significance is clarified by noting that the mean of 13.9 units for the unfriendly group was inflated by the extremely high score mentioned earlier, which accounted for 32% of the sum of scores in this group. If this one score is removed, the mean distance for the unfriendly group becomes 10.1 units, only .5 units greater than the mean for the friendly group.



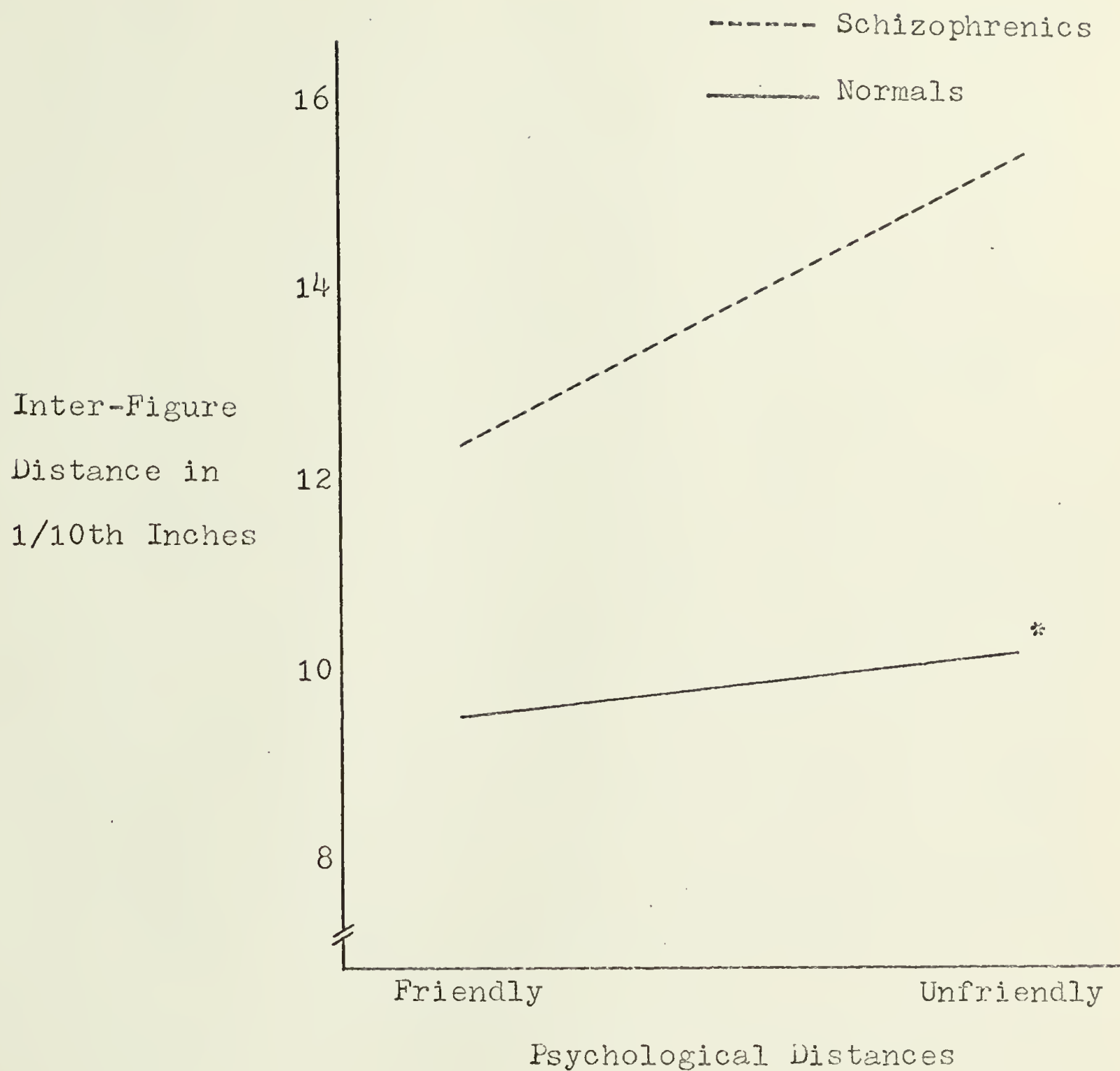


Fig. 2. Mean inter-figure distance on the examiner-self placement for normal and schizophrenic subjects at friendly and unfriendly psychological distances.

\*Corrected by removing one extreme score

schizophrenics. Figure 2 depicts graphically the findings relating to psychological distance for normal and schizophrenic subjects. The extreme score noted above was removed to permit a more accurate portrayal of the overall relationship between subjects under the friendly and unfriendly treatments. Although schizophrenics gave slightly more distant placements than normals on this placement, the difference was not statistically significant.

Hypothesis 4. This hypothesis predicted that the physical distance effect would be stronger with schizophrenics than with normals. Looking first at this figure placement for normal subjects, we find that subjects seated 3 feet from the examiner showed a mean inter-figure distance of 11.4 units, compared to 12.1 units by those 6 feet away. This mean difference of .7 units was statistically significant at the .05 level of probability ( $U = 110.5$ ,  $z = 1.64$ ,  $n_1 = 18$ ,  $n_2 = 18$ , one-tailed test).<sup>5</sup>

Turning now to the examiner-self figure placement of schizophrenic subjects, we see that the mean inter-figure distance for subjects at 3 feet was 13.3 units, against 14.2 units for those at 6 feet. This difference of .9 units was

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<sup>5</sup>This finding is clarified by noting that the same extreme score mentioned earlier accounted for 39% of the sum of scores in the 3-foot group. If this score is removed, the mean schematic distance for the 3-foot group is decreased from 11.4 to 7.4 units, making the mean schematic distance of the 6-foot group 4.7 units greater than that of the 3-foot group.

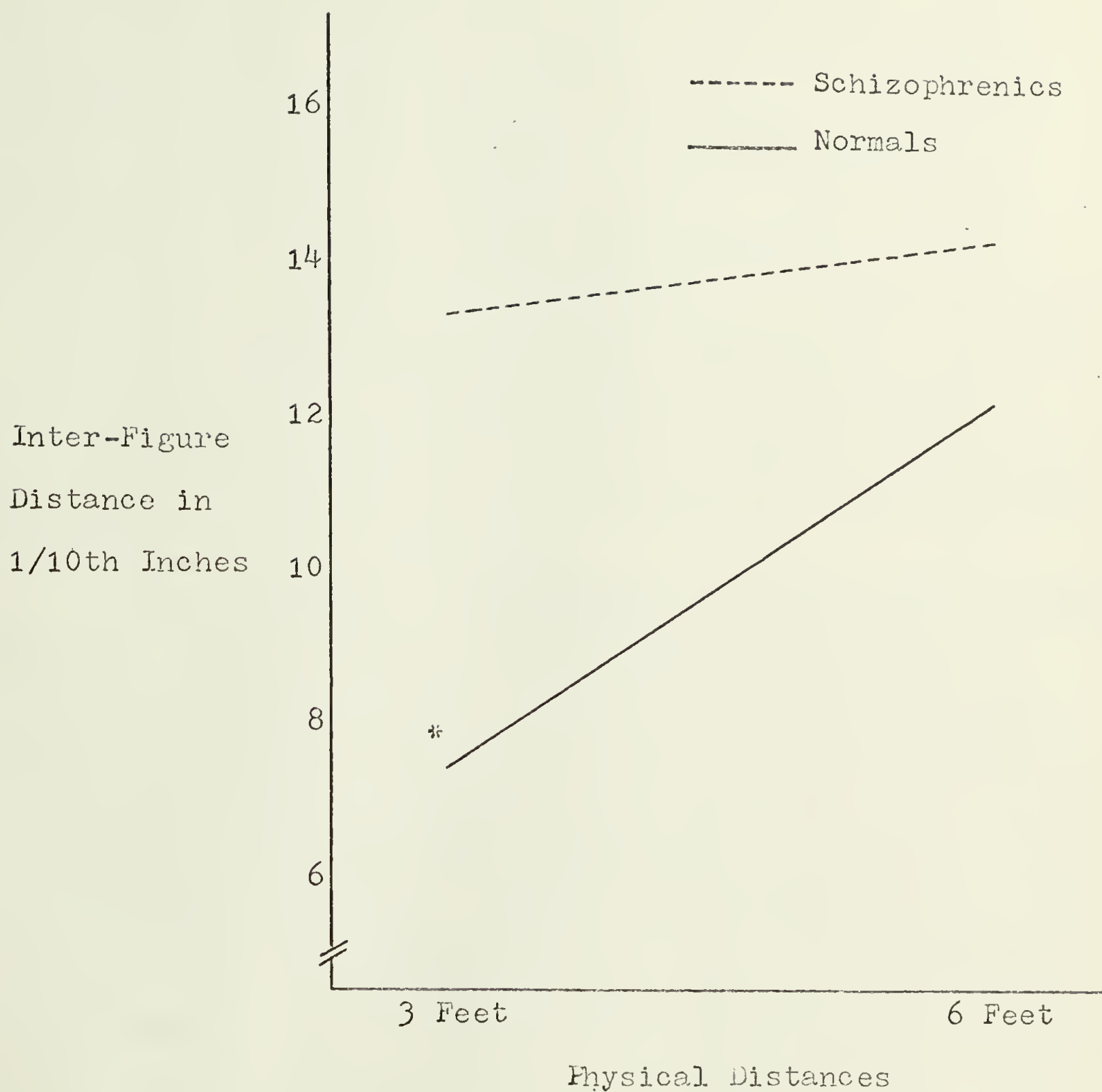


Fig. 3. Mean inter-figure distance on the examiner-self placement for normal and schizophrenic subjects at 3 feet and 6 feet physical distances.

\*Corrected by removing one extreme score

not statistically significant. This finding that placements of normals were significantly affected by physical distance while those of schizophrenics were not, was precisely opposite to the prediction that the physical distance effect would be stronger with schizophrenics than with normals. Figure 3 shows graphically results relating to physical distance for normal and schizophrenic subjects. The extreme score previously mentioned was again removed to reflect more accurately the overall relationship between subjects at 3 feet and 6 feet.

When we examine the placements of normals more closely, however, there is evidence of an interaction between the effect of physical distance and that of psychological distance. The physical distance effect found for normal subjects was contributed almost exclusively by subjects under the friendly treatment. Looking only at those normals who were treated in a friendly manner, we see that subjects at 3 feet showed a mean distance of 6.3 units between figures, as compared to 12.8 units for those at 6 feet. This mean difference of 6.5 units was highly significant ( $U = 16$ ,  $z = 2.17$ ,  $n_1 = 9$ ,  $n_2 = 9$ ,  $p < .02$ , one-tailed test). Normal subjects under the unfriendly treatment showed no difference between the 3-foot and 6-foot distances. Figure 4 shows graphically the interaction of physical distance and psychological distance on the examiner-self placement of normal subjects.



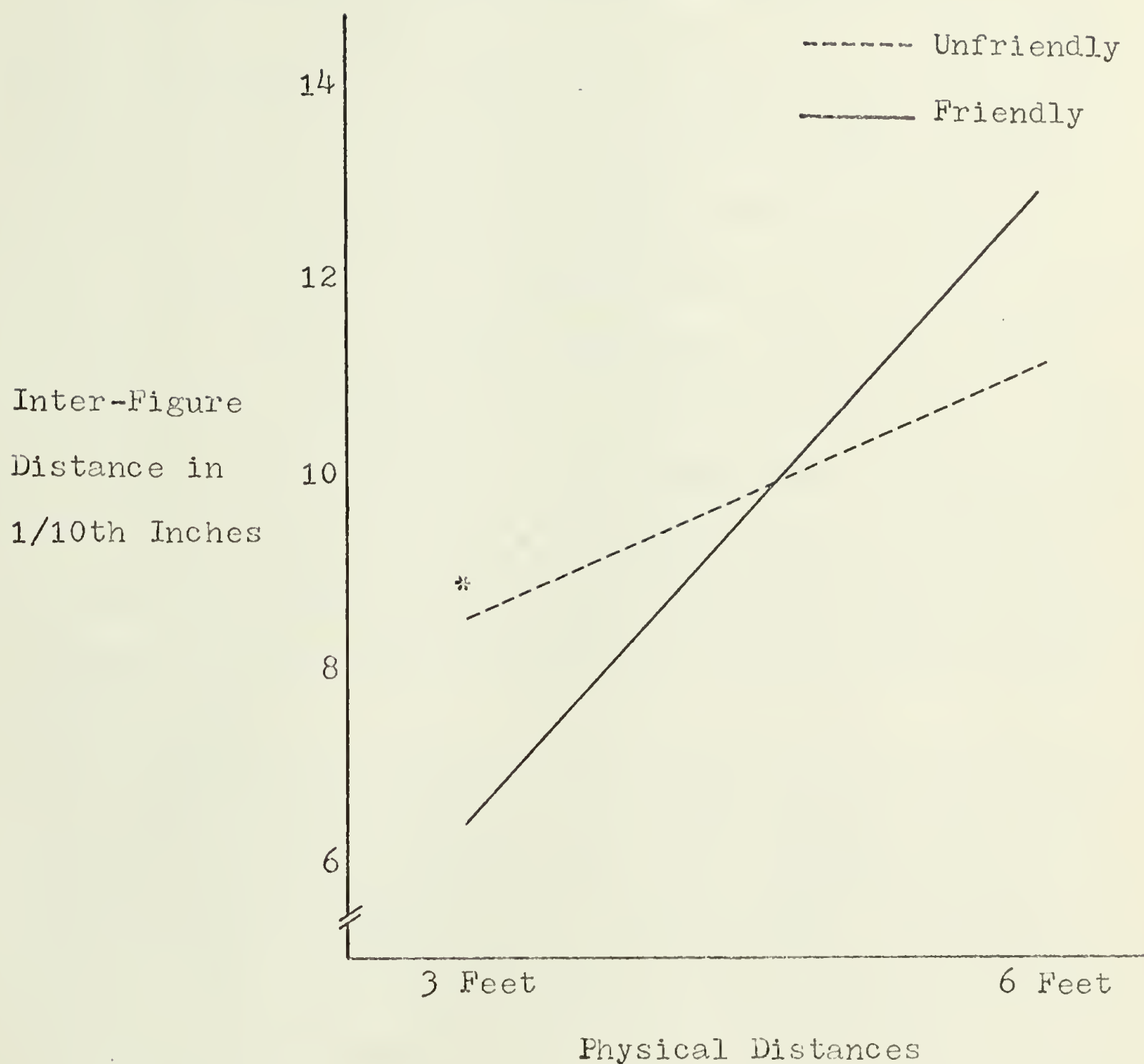


Fig. 4. Mean inter-figure distance on the examiner-self placement for normal subjects under friendly and unfriendly treatments at 3 feet and 6 feet physical distances.

\*Corrected by removing one extreme score

Comparison of placements with questionnaire. A further test for a psychological distance effect on the schematic placements was carried out by comparing the examiner-self placement of subjects who reported on the questionnaire that the examiner had been friendly with the placement of those who reported on the questionnaire that he had been unfriendly. Since no overall difference was found between normals and schizophrenics on this figure placement, these two groups were pooled for this comparison. A strong tendency was found for those who reported that the examiner had been unfriendly to show more distance in their figure placement toward him than those who reported that he had been friendly.

Subjects who stated on the questionnaire that the examiner had been friendly placed the examiner and self figures a mean distance of 11.1 units apart, compared to 28.0 units for those who stated on the questionnaire that he had been unfriendly. This mean difference of 16.9 units represented a strong statistical tendency ( $U = 145$ ,  $z = 1.57$ ,  $n_1 = 7$ ,  $n_2 = 65$ ,  $p < .06$ , one-tailed test). This finding that subjects who showed more negative responses toward the examiner on the questionnaire also tended to place themselves a greater distance from him on the figure placement test may indicate that schematic does reflect in part interpersonal attraction.

Hypothesis 5. This hypothesis stated that schizophre-

nics would make more distant schematic placements than would normals on placements dealing with well established social schemata, i.e., father, mother, man, woman, boss. Normal subjects showed an average inter-figure distance across all 5 placements of 7.5 units, compared to 16.8 units for schizophrenics. This difference was in the predicted direction and was statistically significant ( $U = 12704$ ,  $z = 3.56$ ,  $n_1 = 180$ ,  $n_2 = 180$ ,  $p < .001$ , one-tailed test). Looking at these placements individually, we find that schizophrenics showed greater inter-figure distances between self and other figures on all 5 placements. This effect

Table 2

Mean Inter-Figure Distance in 1/10th Inch Units for Normal and Schizophrenic Subjects on Well Established Social Schemata, and Significance Level of Group Differences

Placement	Group		Significance
	Normals	Schizophrenics	
Father	7.6	15.1	.02
Mother	6.2	15.3	.03
Man	8.8	22.3	.05
Woman	5.0	13.9	.05
Boss	10.1	17.6	.34

was found statistically significant by the Mann-Whitney  $U$  Test for the father, mother, man, and woman schematic place-

ments. Table 2 summarizes the mean placement distances on these placements for the normal and schizophrenic groups along with the significance level of the group differences.



## DISCUSSION

The experimental hypotheses dealing with the effects of psychological distance and physical distance on schematic placements were not supported. There was evidence, however, that psychological distance did exert an indirect influence on figure placements. A surprising finding was that physical distance influenced the placements of normals but not those of schizophrenics. The hypothesis predicting greater placement distances by schizophrenics than normals on well established social schemata was confirmed.

Consider first the effect of psychological distance on schematic placements. It had been predicted that a psychological distance main effect would be found, and that this effect would be stronger with normals than with schizophrenics. In fact, however, no main effect was found, and figure placements by both normals and schizophrenics failed to provide a direct measure of the psychological treatment.

However, the examiner's friendliness or unfriendliness did influence schematic placements in two indirect ways. First, although psychological distance did not directly influence the placements of normals, there was an interaction of the effects of psychological and physical distance as determinants of these subjects' figure placements. This interaction is demonstrated clearly in figure 4. A second

indirect influence of psychological distance on schematic placements was observed when the placements of all subjects who reported on the questionnaire that the examiner was unfriendly were compared with the placements of all subjects who reported on the questionnaire that he was friendly. A strong tendency was found for subjects who felt the examiner was unfriendly to place him farther away in figure placements than did those who felt he was friendly.

Consider now the effect of physical distance on figure placements. A physical distance main effect had been predicted, and originally it was hypothesized this effect would be stronger with schizophrenics than with normals. The main effect was not found, and surprisingly the placements of normals were influenced by physical distance, while those of schizophrenics were not.

The finding that physical distance was more important than psychological distance in determining figure placements by normal subjects in the present laboratory situation bolsters considerably the suggestion of Holahan and Levinger (1969) that schematic placements may not reflect purely psychological relationships, but may to some extent indicate non-psychological, spatial distances between the respective people. The present findings tend to indicate that Holahan and Levinger's failure to obtain a significant psychological effect in the figure placements of college students may have been caused by an interaction of psychological and spatial

factors in determining the students' placements rather than by a test-retest confounding effect in their study design.

These findings raise a serious question concerning previous conclusions about the meaning of schematic distances, for example those dealing with the "psychological" distances between disturbed individuals and other persons (Weinstein, 1965; Fisher, 1967; Higgins, Peterson, & Lise-Lotte, 1969), between adolescent males and women (Carlson & Price, 1966), and between students at the back of a lecture hall and their professor (Levinger & Gunner, 1967). To the extent that the impact of psychological distance is either secondary to or confounded with that of spatial distance in schematic placements, it is uncertain what proportion of the placement variance is determined by each of these sources.

Hypothesis 5, which predicted greater placement distances by schizophrenics than normals on placements of well established social schemata, was strongly supported. On all five placements dealing with well established social schemata, schizophrenics tended to place themselves farther away from other persons than did normals. This difference between schizophrenics and normals was statistically significant for the placements of self in relation to father, mother, a man, and a woman. These results are in accord with the general finding in previous studies noted by Lett, et al., (1969) that individuals who are psychologically disturbed place more



distance between human figures in schematic placements than do normal persons.

This reliable finding in past studies and in the present experiment that more disturbed persons show more distance between figures in schematic placements, attests that the figure placement technique possesses significant diagnostic value. However, the present finding that distance in schematic placements is not a pure measure of psychological closeness, complicates the interpretation of what the greater distance in placements by disturbed persons means.

Previous studies have usually interpreted more distant placements by disturbed persons as indicative of stronger "negative feelings" (Weinstein, 1967; Higgins, Peterson, & Lise-Lotte, 1969) or greater "feelings of estrangement" (Fisher, 1967) in disturbed individuals. However, the finding in the present study that psychological and physical distance interacted as determinants of placements by normals may indicate that the difference in placement distance between disturbed and normal individuals on well established social schemata is caused by both emotional and spatial factors. For example, it is possible that the greater placement distance shown by disturbed persons represents to some extent a greater spatial separation between themselves and other people, which is an outcome of social censure or hospitalization, rather than representing solely an emotional state toward other persons. An alternative interpretation



is that figure placements by schizophrenics reflect a response bias toward exaggerating placement distances, i.e., the same levels of psychological closeness or of actual interpersonal distance may be plotted as more distant by schizophrenics than normals. This possibility is supported by the finding in the present study that schizophrenics did in fact exaggerate the 6 foot distance in relation to normals when instructed specifically to describe the spatial arrangement between the examiner and themselves.

The non-verbal nature of the figure placement technique makes it especially appealing for measuring psychological closeness in withdrawn and non-verbal subjects. However, in the context of the experimental approach used in this study, figure placements by schizophrenics did not reflect either psychological distance or physical distance. This result may point to a weakness in applying to schizophrenics the figure placement procedure as it has generally been used, or it may indicate limitations in the present experimental design. We will consider each of these possibilities in turn.

It is possible that the usual technique of employing ambiguous instructions with figure placements is more confusing than productive with schizophrenics. This possibility is strengthened when we note that the only significant result in figure placements by schizophrenics in this study was obtained under precise instructions. When instructed specifically to do so, schizophrenics were able to describe

schematically their spatial relationship with the examiner. In attempting to measure psychological closeness in schizophrenics, more precise instructions, e.g., "show how you feel about this person" or "show how much you like this person," might result in more reliable responses and more valid interpretation.

The failure to obtain a psychological distance effect in the examiner-self placement of either schizophrenic or normal subjects might also be explained in terms of limitations in the experimental design of the present study. Previous studies of social schemata have generally studied relationships which were better learned over longer periods of time than the relationship between subjects and examiner in this experiment. It is possible that the examiner's friendly and unfriendly treatments were not strong enough to effect significant differences in levels of interpersonal attraction. It is also possible that employees and patients in the hospital setting approached the experiment with previously learned feelings toward researchers or psychologists in general which were resistant to change during the limited period of interaction. An important goal of future research dealing with this problem must be to study the importance of spatial factors in schematic placements dealing with better established relationships.

In conclusion, it must be stressed that the present findings indicate that schematic distance is a complex vari-

able, which may reflect both spatial and psychological factors. The complexity of schematic distance, and of actual interpersonal distance, presents a rich field of study to the research psychologist. Future research is needed to study what proportion of the variance in schematic placements is caused by psychological and spatial factors under different conditions.

## SUMMARY

Feelings of psychological closeness have been measured by the inter-figure distances in placements of human figures, as in recent studies of social schemata. However, such inter-figure distances may not reflect purely psychological relations between people. To some extent, they may also indicate non-psychological, spatial distances between the respective people. In this study, the psychological and spatial distances between a subject and an examiner were varied independently by seating subjects near to or far from either a friendly or an unfriendly experimenter. Schematic placements of self and examiner figures were made by both normal and schizophrenic subjects. Psychological distance did not directly affect placements by either normals or schizophrenics, however, there was evidence that the psychological treatment did influence placements indirectly. The indirect influence of psychological distance on placements was especially clear with normal subjects, whose placements showed an interaction between the effects of psychological and spatial distance. A surprising finding was that spatial distance affected the placements of normals but not those of schizophrenics. On figure placements dealing with well established social schemata, placements by schizophrenics tended to be more distant than those by normals. These findings



are discussed in relation to assumptions concerning inter-figure distances in recent studies of social schemata.

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