The present study represents an attempt to discern the extent to which both judged similarity (i.e. similarity in the way persons are judged by others) and perceptual similarity (i.e. similarity in the way persons view others) relate to interpersonal attraction. There is little question that judged similarity is related to interpersonal attraction across a variety of attributes and measurement techniques (e.g. Byrne, 1961, 1969; Rubin, 1973; Berscheid & Walster, 1969). However, relatively little is known about the effects of perceptual similarity on interpersonal attraction.

These two aspects of similarity differ in terms of observability. Persons are judged to be similar because they appear to be similar in terms of overt physical characteristics, expressed attitudes, activities, etc. To say that persons are perceptually similar requires knowledge of the types of information they take into account in forming judgments and how they tend to combine this information in forming judgments. That persons like others who express similar judgments says little about the relationship between perceptual similarity and interpersonal attraction. Similar thought processes need not precede similar judgments.

Tesser (1971, 1972) has provided a series of studies related to this distinction, investigating what he has termed "structural similarity," or the consistency of relationships among attitudes, independent of evaluative similarity, or the proportion of similar attitude statements. Both factors were significantly related to interpersonal attraction.

In these studies, as in others concerned with the experimental investigation of interpersonal attraction, subjects were provided with a limited range of information about hypothetical others. As Kahneman and Tversky (1973) have noted, such procedures may serve to exaggerate the importance of the available information rather than provide an understanding of its importance in natural social situations.

To provide reasonable tests of the hypotheses that persons like others who are judged to be similar to themselves and who are perceptually similar to themselves, it would seem necessary to (1) consider patterns of judged similarity, perceptual similarity and interpersonal attraction within a group of persons who are all well acquainted with one another, and (2) measure similarity unobtrusively without forcing subjects to attend only to experimenter selected information.

The present study employed a method of individual differences multidimentional scaling (INDSCAL) developed by Carroll and Chang (1970, also see Carroll, 1972) to provide measures of judged similarity and perceptual similarity within a group of women bridge players. The members of the bridge club served both as judges and as objects of judgment. The judgment task required that each member indicate how similar (on a nine point doubly anchored scale) she thought each of all possible pairs of members was to one another. The bridge players were subsequently asked to indicate (among other things) who their one or two best friends in the group were.

The INDSCAL technique provides (1) a matrix of weights that indicates how objects are judged with respect to the dimensions and (2) a matrix of weights that indicates the extent to which each judge weighs each dimension in formulating judgments.

This allows one to locate subjects as judged objects and as perceivers in spaces of equivalent dimensionality. Euclidian distances between subjects within each of these two spaces were used in conjunction with friendship choice information to test the experimental hypotheses that judged similarity and perceptual similarity are related to interpersonal attraction.

### Method

Subjects. Twelve women who were members of a duplicate bridge club participated in the experiment. The Experimenter was acquainted with most of the subjects. Except for one woman who was a regular substitute, all subjects had been members of the group for at least two years. Club meetings were all day sessions held twice monthly at members' homes on a rotating basis. Unlike many duplicate games, partners as well as opponents shifted after every third hand; hence all members had, over time, opportunity to observe and interact with one another as bridge partners and opponents in each of the members' homes. Most of the members live near one another and interact in other social situations as well. Ages ranged from late thirties to middle sixties.

Procedure. As the subjects arrived, the hostess served them coffee or a Bloody Mary and the experimenter gave them pencils and paper. Subjects were seated and their cooperation was solicited. The following instructions were then read to them: "You will be making a series of similarity judgments on members of this group. That is, I want to know how nearly alike you think pairs of members of the group are. You may take anything you like into account in making these judgments." The ratings were made on a nine point doubly anchored rating scale with one representing "most similar" and nine representing "least similar." To insure some variability of response the subjects were told, "In general, the average amount of similarity should be about 'five'; the two people you consider to be most like one another should be 'one' and the two people you view as most unlike one another should be 'nine.' This is offered to provide a frame of reference for you; you are not bound to using the two ends of the scale and your judgments may on the average, be higher or lower than five." The experimenter then proceeded to read the 66 Ross ordered (Ross, 1934) pairs of names with subjects indicating their judgments on the rating form after each pair was read.

When the rating task was completed, subjects were asked what they took into account in making their judgments. They were then asked to respond on the back of the evaluation form, to the following questions:

- How many people in this group are better bridge players than you? (self rating of bridge playing ability)
- 2. How long have you lived in (name of community)?
- 3. Name the single person (or, if necessary, 2 persons) in this group whom a. you have known the longest
  - b. you think plays bridge best
- c. you like most
- 4. What magazines do you read regularly?
- 5. What political party do you belong to?

Information on each subject's age and educational level was subsequently collected.

## Analyses

An INDSCAL (Carroll & Chang, 1970) analysis was performed. This procedure, like other multidimensional scaling techniques yields a dimensional solution to account for the judged distances among objects (in this case bridge players), with weights to indicate the extent to which each object was judged to possess the dimensional characteristics. Unlike other techniques, the solution simultaneously provides weights to indicate the extent to which each judge apparently uses each dimension in forming his impressions.

It was therefore, possible to locate each subject in both a "judged" space and a perceptual space. That is, both the extent to which each subject was judged to possess each of the dimensional characteristics and the extent to which she used each of these characteristics in forming her own judgments were determined. Sociometric and self report data were used to name the dimensions and in some cases, additional information was gathered from the individuals who used the dimension to the greatest extent in forming judgments.

Euclidian distances (across dimension) between subjects were calculated within the judged space and within the perceptual space. These indices reflected judged similarity and perceptual similarity among all pairs of subjects.

Distance between subject and best friend(s) was compared with average distance between subject and all others in both the judged space and the perceptual space using t tests.

### Results and Discussion

A four dimensional solution to the multidimensional scaling of distance judgments was selected for interpretation and subsequent analysis. The correlation between distances within this space (using the obtained dimensional weights) and actual distance judgments was .71; hence the solution accounted for approximately half of the variance in these judgments. Correlations for individual subjects ranged from .82 (one of the two members with longest tenure in the club) to .45 (the substitute). All four of the obtained dimensions were interpreted using data obtained at the time of testing, combined with information subsequently obtained from subjects. Rank-order correlations between orderings of persons on various attributes and orderings of these persons on the obtained dimensions were employed to interpret the dimensions. The obtain dimensions and the methods used to name each are described below. Weights indicating judged position on the dimension, and use of the dimensions are presented in Table 1.

## Table 1

# Subjects' Positions in Judged and Perceptual Spaces

A. Dimensions in Judged Space

S	Ι	II	III	IV
A	41	29	.18	16
В	18	.40	01	26
С	.22	47	10	.51
D	.17	.14	.17	25
Е	11	37	37	50
F	30	.26	.53	.13
G	.27	.08	.17	23
Н	.39	16	.04	.07
I	15	.17	53	. 33
J	.38	.12	.28	06
К	.18	.48	37	.04
L	46	12	.01	. 39
		imoncione	in Percentual	Snace
	<b>B.</b> D	Imensions	In . or copeaa	Space
S	в. р	II	III	IV
S A	в. D I .29	II . 35	.45	IV .27
S A B	в. D I .29 .22	II .35 .23	III .45 .13	IV .27 .29
S A B C	в. D I .29 .22 .24	III .35 .23 .28	III .45 .13 .15	IV .27 .29 .36
S A B C D	В. D I .29 .22 .24 .41	III . 35 . 23 . 28 . 38	III .45 .13 .15 .46	IV .27 .29 .36 .13
S A B C D E	в. D I .29 .22 .24 .41 .26	III . 35 . 23 . 28 . 38 . 56	III .45 .13 .15 .46 .37	IV .27 .29 .36 .13 .24
S A B C D E F	I .29 .22 .24 .41 .26 .31	III . 35 . 23 . 28 . 38 . 56 . 52	III .45 .13 .15 .46 .37 .26	IV .27 .29 .36 .13 .24 .25
S A B C D E F G	I .29 .22 .24 .41 .26 .31 .30	III .35 .23 .28 .38 .56 .52 .44	III .45 .13 .15 .46 .37 .26 .38	IV .27 .29 .36 .13 .24 .25 .22
S A B C D E F G H	I .29 .22 .24 .41 .26 .31 .30 .66	III . 35 . 23 . 28 . 38 . 56 . 52 . 44 . 25	III .45 .13 .15 .46 .37 .26 .38 .27	IV .27 .29 .36 .13 .24 .25 .22 .17
S A B C D E F G H I	I .29 .22 .24 .41 .26 .31 .30 .66 .43	III . 35 . 23 . 28 . 38 . 56 . 52 . 44 . 25 . 21	III .45 .13 .15 .46 .37 .26 .38 .27 .04	IV .27 .29 .36 .13 .24 .25 .22 .17 .41
S A B C D E F G H I J	I 29 22 24 41 26 31 .30 .66 .43 .73	III . 35 . 23 . 28 . 38 . 56 . 52 . 44 . 25 . 21 . 14	III .45 .13 .15 .46 .37 .26 .38 .27 .04 .23	IV .27 .29 .36 .13 .24 .25 .22 .17 .41 .20

.42

.19

L

I. <u>Interpersonal Warmth</u> (Likeability): The ordering of persons on this dimension correlated .79 with an ordering of persons according to number of times they were mentioned as most liked (ties, of course, serve to suppress the magnitude of the correlation). The subject whose judgments were most saturated with this dimension had mentioned warmth as a basis for her judgments. She was, several months later (without seeing the solution), asked to rank order the members (selfexcluded) on warmth. Her ranking correlated .89 with the obtained ordering of persons on the dimension.

.54

.27

II. <u>Active-Passive</u>: While this dimension was clearly related to age (rho=.72), the person who used the dimension most mentioned athletic ability as a basis of judgment. However, the experimenter was unable to contact her for additional information. Two other subjects with relatively high perceptual weights on this dimension had mentioned related criteria for formulating distance judgments (one mentioned general activity level and the other, active vs. passive interests). When asked to order persons on the mentioned attribute they produced lists that correlated .82 and .91 with the obtained ordering.

III. <u>Neatness</u> (Attention to appearance): None of the initially collected sociometric information was useful in naming this dimension. It seemed to one colleague who was acquainted with the subjects that the dimension reflected attention to personal appearance and neatness of home environment. While the person whose judgment was most saturated with this dimension did not mention using it, when asked to rank the members on attention to appearance of self and home she produced a list which correlated .83 with the obtained dimension.

IV. <u>Bridge Playing Ability</u>: This dimension correlated .81 with self ratings of bridge playing ability. The three people who received nominations as best bridge player in the group occupied the top three positions on the dimension. It should be noted that all three of these persons perceived themselves to be the second best bridge player.

Distances between pairs of subjects in the judged space and in the perceptual space were obtained. Distances in the two spaces were unrelated (r=.03). That is, judged similarity was orthogonal to perceptual similarity.

While these two types of similarity were unrelated to one another, each was related to friendship choice. The expected probability of best friend choices being closest (in either the perceptual space or the judged space) to the person making the choice is .13. [Because four persons chose to name two rather than one "best friend," this figure is derived by distributing 16 choices among 11 (subjects could not name themselves) ordered distance categories.] Of the 16 friendship choices, nine (56%) were persons judged to be most similar to the person making the choice. Of these same friendship choices, five (31%) were least distant within the perceptual space from the person making the choice.

Euclidian distances of best friend from subject and average Euclidian distance to all other subjects for both the judged space and the perceptual space are presented in Table 2. It should be noted that the distance from friend exceeded the average distance from all others in only one case in either configuration; in both cases distance from friend(s) was significantly less than distances from others in judged and perceptual spaces, t (11) = 4.00, p < .01 and t (11) = 3.85, p < .01, respectively.

### Table 2

## Euclidian Distances across Judged and Perceptual Space

	Judged Space		Perceptual Space	
	Best		Best	
Subject	Friend	Average	Friend	Average
A	.60	.85	.15	.35
В	.81	.80	.25	.39
С	.69 <sup>a</sup>	1.03	.45	.32
D	.12	.68	.17	.36
Е	.97	1.81	.28	.41
F	.71 <sup>a</sup>	.94	.25	.35
G	.12	.77	.17	.33
Н	.46 <sup>a</sup>	.82	.25	.45
Ι	.55	.98	.28	.45
J	.59 <sup>a</sup>	.83	.41	.56
K	.55	.92	.28	.30
L	.60	.90	.15	.45
	t=4.00,	p<.01	t=3.85,	p<.01

<sup>a</sup>These subjects chose two best friends; the reported distance represents an average of the two choices.

Thus, in addition to demonstrating that persons like others who are perceived to be similar to themselves, the present results suggest that persons like others who form judgments in the same manner as they.

Whether it is the case that persons like one another because they are perceptually similar or that they become perceptually similar as a result of liking one another is impossible to discern from the present study; association undoubtedly effects a wide variety of types of similarity (Newcomb, 1961). At the same time, initially high levels of perceptual congruence probably attract persons to one another. To have a common basis for discussion it is at least necessary that persons attend to common dimensions, despite possible differences in their positions on these dimensions.

Despite association and exposure to a common stimulus field it can be argued that perceptually dissimilar persons can't share experiences. We have all had the experiences of A who attends a play with B and after a bit of discussion feels they have not seen the same play at all, or of negotiating with someone and having no consensus about the points to be negotiated. These kinds of experiences are not likely to foster attraction to one another.

While these examples generalize the notion of perceptual similarity to modes of judging various types of stimuli, the present study was limited to judgments of persons. It would be of considerable interest to determine the extent of reliability of perceptual congruence across various stimulus domains familiar to a set of subjects. That is, do persons who attend to common elements in judging persons likewise attend to common elements in judging books, art, clothes, etc. If not, which of these are associated with attraction? When persons are perceptually similar with respect to one, but not another domain, is conversation generally focused on the former? In general, the use of multidimensional scaling techniques to examine the bases of attraction within an intact group appears to offer several advantages over the use of artificially constructed stimuli: because subjects are reasonably well acquainted with one another they have a wealth of real-life information for making similarity judgments which they are free to use in any manner they desire to report actual, rather than hypothetical, friendship choices.

Using this information a relationship between perceptual similarity and interpersonal attraction as well as the frequently observed relationship between judged similarity and interpersonal attraction was obtained. That this relationship was obtained despite the fact that numerous "noise" factors were undoubtedly operating and that perceptual similarity was unobtrusively assessed attests to its strength.

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