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AUTHOR Becker, Franklin D.; Mayo, Clara

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ABSTRACT

Two concepts predominate in studies of spatial invasion: territoriality (personalization and defense of a fixed spatial area) and personal space (a portable area surrounding the individual, which is responsive to environmental change). Spatial invasions were carried out by occupying a marked seat (invade condition), and adjacent seat (adjacent condition), and one across from the marked space (across condition) in a cafeteria situation using students as subjects. Reactions were tested by methods increasing in realism: (1) questionnaire; (2) doll placement; (3) laboratory simulation; (4) field simulation; and (5) field experiment. The results supported the expectations that (1) individuals respond to social distance rather than territorial defense in a cafeteria situation; and (2) except where experimental manipulation is so powerful as to eliminate virtually all variation among subjects (i.e., the invade and across conditions), different methods produce different results, with the greatest differences between those methods most different. These findings are explained in terms of the decreasing number of task relevant cues available to the subject in increasingly artificial situations. (KS)

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Measurement Effects in Studying Reactions to Spatial Invasions

Franklin D. Becker and Clara Mayo

Boston University

In a period of renewed concern about artifacts and limitations in experimental methods in social psychology, relatively few attempts have been made to assess the extent to which different methods applied to the same problem yield consistent results. The study of spatial behavior lends itself to a direct comparison of methods in that it has generated considerable methodological innovation with concomitant conflicting results. Methods have ranged from anthropological observations (Hall, 1959, 1966) to experimental studies (Horowitz, Duff, and Stratton, 1964; Leipold, 1963; Sommer, 1962) including specific instruments such as social schema (Kuethe, 1962, 1964); line drawings, silhouette photographs, and human models (Little, 1965); and paper and pencil tests and questionnaires (Sommer, 1966; Sommer and Becker, 1969). As to results, Little (1965) found congruent effects using drawings, photographs and human models to relate conversational distance to friendship and setting while Sommer and Becker (1969) obtained conflicting findings on spatial defense by questionnaire and field study. To investigate these discrepancies further, the present study compared reactions to spatial invasions as assessed by five methods varying from field setting to laboratory.

Two concepts predominate in studies of spatial invasions: territoriality and personal space. Hediger (1950) defined territoriality as the personalization and defense of a spatial area with fixed geographic or topographic reference. The term personal distance or space describes an area surrounding the individual which is both portable and responsive to environmental change (Hall, 1966). Unlike territoriality, there is no implied topographical reference.

In the present study, it was reasoned that the distinction between

territoriality and personal space could be drawn by differentiating between persons who do and do not move in response to spatial invasion of a marked area. The former seek only to maintain comfortable distance between themselves and others and move accordingly to reestablish that distance when it is breached; the latter, having marked a specific spatial area, refuse to move thereby protecting this valued territory (Becker and Mayo, 1971). Spatial invasions were carried out by occupying a marked seat (invade condition), an adjacent seat (adjacent condition), and one across from the marked space (across condition) and reactions were tested by methods increasing in realism: 1) questionnaire, 2) doll placement, 3) laboratory simulation, 4) field simulation, and 5) field experiment. Greatest differences in reactions to spatial invasions were predicted between extremes on the methodological continuum tested (questionnaire and field experiment) with lesser differences between other methods.

Method

Subjects

Introductory psychology students who received course credit for participation served as subjects distributed as follows: 140 in the questionnaire method (52 males and 88 females); 42 in the doll placement (20 males and 22 females); 45 in the laboratory simulation (21 males and 24 females); and 67 in the field simulation (23 males and 44 females). The 48 subjects in the field experiment (26 males and 22 females) were selected occupants of the student cafeteria. No subject participated in more than one methodological variation or in more than one spatial invasion condition.

Procedure

Questionnaire. The questionnaire described the following situation: The setting is a large student cafeteria, such as the student union. The time is around noon, 11:30 - 1:00, when the cafeteria is most likely to be crowded and busy. You have just come in, by yourself, and are going

to go to the self-service counter and buy your lunch. Before getting in line, however, you leave your books or coat at an empty table, or one ith only one other person. You plan on returning.

The students were asked to imagine themselves in this setting and to respond to one of three prescribed outcome conditions as follows: 1) invade condition - when you return with your food to the place where you left your books, you find someone sitting right where you left your books and where you planned to sit; 2) adjacent condition - when you return with your food to the place where you left your books, you find someone sitting right next to where you left your books; and 3) across condition - when you return with your food to the place where you left your books, you find someone sitting across from where you left your books. Questions elicited response alternatives of moving or not moving from the chosen seat.

Doll placement. Subjects were presented with a tabletop display of dolls seated at doll-size tables in varying configurations designed to simulate a crowded cafeteria situation. Given a bendable doll of the same sex, they were asked to enact the cafeteria behavior described above and to respond to one of the spatial invasions conditions.

Laboratory simulation. Subjects came to a room in the psychology laboratory with empty tables and chairs and were asked to imagine and enact the situation described above when a male confederate of the experimenter carried out the seating conditions.

Field simulation. Subjects were asked to come to the student union cafeteria, given a dime to purchase a beverage, and asked to behave as they normally would in the cafeteria, leaving books or coat at a seat before getting their food. Ss were told that someone would be sitting at their table when they returned, but not specifically where. An experimental confederate sat in one of the three positions described above while S was in the cafeteria line.

Seating choice and other overt reactions were recorded by an observer nearby. The physical situation in this method was real in every sense, yet the S knew he was in an experiment and that he was being observed.

Field experiment. At lunch time, a male experimental assistant located a table at which some standard marker of books or coat had been left and seated himself according to one of the spatial invasion conditions. An observer nearby recorded the subject's response upon return.

Results and Discussion

Data were analyzed by looking at the differences among methods within each condition separately. Since the methodological differences were of central interest, predicted relations among conditions were analyzed only in so far as they made meaningful the methodological findings. No sex differences were found under any condition or method.

As shown in Table 1, in the invade condition, no differences were found among methods ($x^2 = 6.0$, d.f. = 4, N.S.). When someone sat in their marked seat, virtually all subjects moved to distance themselves from others by one or two seats. No territorial defense was observed. Thus, the experimental manipulation in this condition dominated any effects that might have been a function of the different methods.

Insert Table 1 about here

In the adjacent condition, differences among methods were found ($X^2 = 23.6$, d.f. = 4, $p < .001$) supporting the prediction of greatest differences between extremes with little difference between similar methods. The field experiment differed most from the questionnaire ($X^2 = 6.0$, d.f. = 1 $p < .02$) with no differences between questionnaire and doll placement or between field experiment and field simulation. The questionnaire differed most from the others. The nature of the behavioral differences found among methods was that with increasing

realism of the situation, more subjects moved than retained their original positions. On the questionnaire, subjects reported staying seated adjacent to the spatial invador significantly more than they actually did this in the laboratory or field. While the adjacent condition generally produced less movement than the invade condition, there was much more variation among the different methods for the adjacent condition.

In the across condition, as in the invade condition, there were no significant differences among the methods. Virtually all subjects in the across condition were unaffected by the addition of another person across the table from them; the overwhelming majority of subjects did not move to another seat or table. The lack of movement when another person did not intrude into one's comfortable social distance (across condition) as compared to the similarity of reactions when that distance was breached (adjacent and invade conditions) supported the expectation that in a cafeteria situation individuals respond to social distance rather than territorial defense.

These results indicate that except in those situations in which the experimental manipulation is so overwhelmingly powerful that it eliminates virtually all variation among subjects, different methods do, in fact, produce different results, with the greatest differences between those methods most different.

These findings are best explained in terms of the decreasing number of task relevant cues available to the subject in increasingly artificial situations. For example, the field simulation provided all of the cues available in the field experiment in terms of the size of the room and its noise level, the arrangement and availability of tables, the density, movement, and pattern of people, and the salience of norms governing activity in the cafeteria as well as the particular social atmosphere prevailing. In addition, these cues make the subject's own past experience in the cafeteria salient. The only difference between the field simulation and the field experiment is the subject's knowledge that he is in an experiment and is being

observed. Only in the field simulation, with virtually all task relevant cues available, were the task irrelevant cues, variously termed demand characteristics (Orne, 1962) and experimental expectancy (Barber and Silver, 1968; Rosenthal, 1966) less potent than the task relevant ones. In the other three methods used, the task irrelevant cues, which are a by-produce of the experimental situation, became increasingly powerful, generally cancelling the effects of the relevant cues and rendering the results invalid in terms of the behavior actually observed in the field. The extreme discrepancy between the results of the laboratory simulation and all the other methods reflects the passivity such experimental situations can evoke. Ss suspend their feelings and thoughts in order to appear "normal," please the experimenter, or appear unaffected. The presence of the experimenter seems to enhance these effects, as evidenced by the great discrepancy between the laboratory simulation results and the questionnaire and doll play results.

The importance of different results obtained using a variety of role playing techniques is even more significant in light of the particular role playing situations used. All of the subjects were familiar with the situation described and had been faced with similar behavioral choices in their natural routine. Unlike most role playing situations in which the subject is asked to guess how he would behave in an unfamiliar situation, subjects were not asked to imagine a strange situation and guess how they would behave. The differences in results obtained using different methods is all the more notable given the subjects' familiarity with the situation. If subjects cannot reproduce familiar behavior, there is reason to believe that they will have even more trouble trying to produce unfamiliar or new behaviors.

While role playing techniques have their shortcomings, the results of laboratory experimentation are no more valid in the sense of revealing the subjects' genuine responses. Laboratory results may be invalid in terms of a field situation, for example, where the individual may choose to leave the situation

rather than either to resist or conform to social pressure. The laboratory method, by precluding flight as a means of adaptation to eliminate subject attrition, thereby eliminates one of the most natural ways of dealing with a variety of situations. It seems plausible that the results obtained in a laboratory are, at least to some extent, as much a function of the method as are the results of simulation methods.

Obviously the laboratory method has time-tested advantages in reducing confounding factors by isolating and controlling variables. But psychology has neglected, with some classical exceptions, the potential of the field experiment. The advantages of knowing that the data are valid would seem to outweigh the disadvantages of increased time and energy. As Webb and his associates (1966) have noted, greater experimenter ingenuity is needed to replace fixed methods whose external validity is questionable.

In summary, the results of this study indicate that different results obtain using different methods to study one phenomenon except where the experimental condition was so potent so as to eliminate virtually all subject variation. It is suggested that to increase external validity with as little sacrifice of internal validity as possible, greater use be made of field experiments and other naturally occurring events.

Table 1

Percentage of Ss Moving by Conditions and Methods

CONDITIONS	Question-naire	Doll Play	Laboratory Simulation	Field Simulation	Field Experiment
Invade	N=54 88%	N=15 100%	N=15 93%	N=22 100%	N=15 100%
Adjacent	N=46 52%	N=15 46%	N=15 7%	N=27 63%	N=18 89%
Across	N=40 5%	N=12 0%	N=15 13%	N=18 0%	N=15 7%

References

Barber, T. X. and Silver, M. J. Fact, fiction, and the experimenter bias effect. Psychological Bulletin Monograph, 1968, 70, 1-29.

Becker, F. D. and Mayo, C. Delineating personal distance and territory. Environment and Behavior, 1971, in press.

Hall, E. T. The silent language. New York: Doubleday, 1959.

Hall, E. T. The hidden dimension. Garden City, New York: Doubleday, 1966.

Hediger, H. Wild animals in captivity. London: Butterworths, 1950.

Horowitz, M. J., Duff, D. F., and Stratton, L. O. Body-buffer zones. Archives of General Psychiatry, 1964, 11, 651-656.

Kuethe, J. L. Social schemas. Journal of Abnormal and Social Psychology, 1962, 64, 31-38.

Kuethe, J. L. Pervasive influence of social schemata. Journal of Abnormal and Social Psychology, 1964, 68, 248-254.

Leipold, W. E. Psychological distance in a dyadic interview. Unpublished doctoral dissertation, University of North Dakota, 1963.

Little, K. B. Personal space. Journal of Experimental Social Psychology, 1965, 1, 237-247.

Orne, M. T. On the social psychology of the psychological experiment: With particular reference to demand characteristics and their implications. American Psychologist, 1962, 17, 776-783.

Rosenthal, R. Experimenter effects in behavioral research. New York: Appleton-Century-Crofts, 1966.

Sommer, R. Man's proximate environment. The Journal of Social Issues, 1966, 22, 59-70.

Sommer, R., and Becker F. Territorial defense and the good neighbor. Journal of Personality and Social Psychology, 1969, 11, 58-92.

Webb, E. J., Campbell, D. T., Schwartz, R. D., and Sechrest, L. Unobtrusive measures: Nonreactive research in the social sciences. Chicago: Rand McNally, 1966.