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ABSTRACT

This document discusses research in the context of four basic issues in the area of crowding and personal space. The research upon which the author draws is from a series of three laboratory studies of the effects of manning levels on group experiences, performance, and verbal interaction. In these studies, groups of male college students worked on a task which required: (1) fewer than the number of persons present over-manning); (2) precisely the number of persons present (adequate manning); and, (3) more than the number of persons present (undermanning). The four issues relating to this research are discussed, and the theoretical developments which evolved are reviewed. (Author/PC)

Comments Prepared for a Roundtable Discussion Session,

THEORETICAL DEVELOPMENTS PERTAINING TO PERSONAL SPACE AND CROWDING

Western Psychological Association Convention

San Francisco, April, 1974

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The participants of this roundtable have been asked to discuss, in the context of their own research, four basic issues in the areas of crowding and personal space: 1) The relationships between various constructs which have been proposed, 2) The contributions of personal and situational factors (either as main effects or interactions) on behaviors related to our topic, 3) The development of multiple response measures, and 4) The use of micro and macro levels of analysis (i.e., short-term, small unit approaches versus longer-term, grosser unit approaches).

The research which I will draw upon is a series of three laboratory studies[1] of the effects of manning levels on group experiences, performance, and verbal interaction. In these studies, groups of male college students worked on a task which required (a) fewer than the number of persons present (overmanning), (b) precisely the number of persons present (adequate manning), or (c) more than the number of persons present (undermanning). The task was to run a slot car around a track for a given number of laps as quickly as possible. The number of jobs required of the group was varied by placing different numbers of obstacles across the track. The obstacles were hinges which had to be raised each time the car passed.

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[1] Others participating in the research were Robert Fetty, Lois Hanson, Sandra Kirmeyer, and Dean Alexander. Two of the three studies were supported by Grant No. GS 34998 from the National Science Foundation.

Turning now to the first issue to be discussed, our basic construct is degree of manning, which is based on the relationship of the number of people available to participate in an activity (called applicants) to two other factors: (a) the minimum number of people required (called maintenance minimum) and (b) the maximum number which can be accommodated (called capacity). When the number of applicants is smaller than the minimum for maintaining the activity, undermanning exists. When the number of applicants is greater than the maintenance minimum, but less than the maximum which can be accommodated, adequate manning exists. When applicants exceed capacity, overmanning exists. This conception differs from most notions of crowding in two important ways: 1) The constraints operating on people in a setting are primarily social structural (based on the task at hand) and only secondarily physical (e.g., size of room). 2) The focus is on the basic function or purpose of the group or setting being considered. What people are doing in the setting is central, and not peripheral, as in some notions of crowding. Also, the absolute number of people present is less important than the relationship of that number to the maintenance minimum and capacity of the activity[2].

Relating these notions to research, in our most recent study we asked subjects about their subjective experiences in working on the slot-car race. Questions were derived from three sources: 1) Barker's theory of manning (e.g., feelings about being needed, having an important role), 2) the literature on crowding (e.g., feelings of frustration, pressure, being restless), and 3) the literature on effects of group size (e.g., feelings of having an influence on group decisions and performance). As expected, feelings based on Barker's theory varied with degree of manning. However, no differences

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[2]These issues are more fully presented in: Wicker, A. W. Undermanning theory and research: Implications for the study of psychological and behavioral effects of excess human populations. Representative Research in Social Psychology, 1973, 4, 185-206.

were found among manning conditions for the experiences based on the crowding literature. Manning and crowding thus seem to be different both conceptually and empirically. In contrast, the experiences which have been proposed as being due to different sizes of groups were found to vary with manning conditions, even though group size was constant, suggesting that manning levels may mediate at least some effects of group size.

The second issue to be dealt with is the contributions of personal and situational factors on behavior under conditions of excess populations. Our research has emphasized situational factors (see above) but we have also attempted to study personal factors. In one study, following Helson's adaptation-level theory, we conceived personal factors to be residuals of experience, and sought to learn if prior manning conditions experienced by our subjects either in the laboratory or in their everyday environments would affect their subjective experiences in working on the slot-car task. Using questionnaire data, we found no evidence for carry-over effects from the everyday environment. And only one carry-over effect was found due to the immediately preceding manning level: subjects who were shifted from undermanning or adequate manning conditions to overmanning tended to see the overmanned condition as requiring fewer people than subjects who experienced overmanning on two successive occasions. A second way we have studied personal factors was to devise a paper and pencil measure of individual differences in tolerance for situations in which one must wait (e.g., having to wait at a restaurant in order to be seated). We found a weak but significant tendency for persons having a higher tolerance for waiting, also to feel more involved in the task and to feel they had more influence on their group's decisions and performance (r's are around .20). To summarize, we have not found our measures of personal factors to explain much of the variance in subjective experiences of persons working on our experimental task.

The third issue is methodological, and concerns the use of multiple response measures. In our research on the effects of manning levels, we have used a number of different methods to tap different behavior modalities. Questionnaires were used to measure subjective experiences, manning levels in the subjects' everyday environments, and individual differences in tolerance for waiting. Group performance was measured by the experimenter's observation of how fast the groups got the car around the track, and how many errors they made. The distance group members stood from the scoreboard on which the experimenter posted their running times for laps just completed (a possible index of task involvement) was observed by a person behind a one-way mirror. Verbal interaction among group members was tape recorded for subsequent analysis by two raters, who placed all comments into one of nine categories.

Data from these measures were analyzed in basically two ways: comparisons of manning conditions, and interrelationships among measures across manning conditions. The results of these analyses (beyond those cited above) are too complex to summarize here: Some measures showed differences due to manning condition, some did not. Some measures correlated closely with others, some were unrelated to any other. In fact, it seems appropriate to note here that one by-product of the use of multiple measures is a much more complex picture of the phenomenon one is studying than would result from using a single dependent variable. Rarely do results on all measures fall into the expected or most interpretable pattern; this often poses a serious exposition problem for the researcher wishing to communicate his findings.

The final issue raised has to do with the level of analysis on which research on excess populations should be conducted. The truism that all methods have their strengths and weaknesses probably applies equally to levels of analysis. The theory of manning proposed by Barker grew out of work attempting to enumerate and describe all of the public activities occurring in two entire communities during a period of one year. It was subsequently

applied to at least two different kinds of organizations (schools and churches). And in the studies I have cited, the theory has been tested in the laboratory. We now have plans for returning to the field to do further research in organizations.

Finally, in going over the four questions insightfully posed by Stokols and Evans, I was repeatedly struck by how much good advice there is available to researchers or potential researchers in this area, in 10 pages of one book. I am referring to McGrath and Altman's chapter on methodology in their book, Small Group Research, published in 1966. Among other things, they call for more standardization and sharing of terms, more empirical validation of constructs, more programmatic research across a range of diverse settings, use of multivariate approaches, more concern with processes as opposed to outcomes, and above all, more and better theory. I hope researchers in the area of personal space and crowding will consider and whenever possible implement their suggestions.