

# THE EXPERIENCE OF CROWDING IN PRIMARY AND SECONDARY ENVIRONMENTS

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The behavioral effects of density have been documented most clearly and consistently in studies involving nonhumans. It is well established that the prolonged exposure of animal communities to conditions of high density eventuates in social disorganization and a variety of physiological anomalies (Calhoun, 1962; Christian, Flyger, and Davis, 1960; Davis, 1971; Thiessen and Rodgers, 1961). In general, the animal research portrays density as a stressor variable which places severe constraints on important social activities, such as allocation of

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food and sex partners, and thereby exerts a negative impact on the well-being of the individual and the community.

The effects of density on human populations, however, are considerably less clearcut than those observed among animal communities. Survey studies, for instance, suggest that the detrimental effects of population density may be offset by cultural traditions (Schmitt, 1957, 1966), and experiments concerning the human use of space provide further evidence that cultural norms mediate the perception and adjustment of interpersonal distance (Hall, 1966; Sommer, 1967, 1969). Moreover, laboratory investigations of human crowding demonstrate that when group size is held constant, and the physical concomitants of spatial restriction are controlled (e.g., heat, stuffiness), high density exerts negligible effects on human task performance (Freedman, 1970; Freedman, Klevansky, and Ehrlich, 1971; Freedman, Levy, Buchanan and Price, 1972; Stokols, Rall, Pinner, and Schopler, 1973).<sup>1</sup> Thus, though social problems are sometimes associated with density and people often regard situations of crowding as unpleasant, the research on humans suggests that density is not invariably correlated with psychological and behavioral maladies.

As a preliminary attempt to identify those circumstances under which people do or do not experience stress in the context of limited space, an analysis of human crowding phenomena was developed (Stokols, 1972a). Central to the analysis is the distinction between *density*, a physical condition involving the limitation of space, and *crowding*, an experiential state in which the restrictive aspects of limited space are perceived by the individuals exposed to them.

● On the basis of this distinction, density (or interpersonal proximity) is viewed as a necessary antecedent rather than a sufficient condition for the experience of crowding. Any instance of spatial limitation involves potential inconveniences, such as the restriction of movement, the preclusion of privacy, or exposure to stimulus overload. These potential constraints are not necessarily salient to the occupants of a high-density area. In order for the experience of crowding to occur, certain

contextual variables (e.g., hostile cues from others) must be present which sensitize the individual to the potential problems he might encounter as a result of being too proximal to others.

Recent analyses of human crowding have attempted to specify more fully critical determinants of the crowding experience. At least three theoretical perspectives have been proposed as a basis for understanding the antecedents, psychological experience, and behavioral manifestations of human crowding: (1) *stimulus overload*, (2) *behavioral constraint*, and (3) *ecological* orientations. These perspectives are reviewed below in regard to their continuities, dissimilarities, and respective limitations. On the basis of this discussion, an integrative extension of earlier approaches is proposed.

## AN OVERVIEW OF THEORETICAL PERSPECTIVES ON CROWDING

### OVERLOAD MODELS

Stimulus overload analyses of crowding are rooted in the sociological theories of urban life developed by Simmel (1950) and Wirth (1939). According to these theorists, the diversity, size, and density of most urban populations result in the exposure of city residents to excessive levels of physical and social stimulation. This surfeit of stimulation, as reflected in the congestion and noise arising from overloaded channels of transportation and communication, is linked to a number of consequences at the community level: a cultural lifestyle of impatience, aloofness, and social isolation, for example, and elevated levels of physiological and psychological pathology.

Milgram (1970), in an extension of earlier sociological work, examines the connection between urban overload resulting from structural features of large cities, and the psychological coping processes of individual city residents. Overload is defined by Milgram as a situation in which the amount and rate of environmental inputs impinging on an organism exceed its capacity to cope with them. The central message of Milgram's

analysis is that the individual must enact specific behavioral adaptations under conditions of overload, if he is to operate effectively, and even survive, in the urban environment. Disregard of low priority inputs, allocation of less time to each input, and the development of an aloof orientation toward strangers exemplify the kinds of insulative strategies one can adopt as protection against sensory overload.

Specific application of an overload model to the issue of crowding is reflected in the work of Desor (1972), Esser (1972), Baum and Valins (1973), and Zlutnick and Altman (1972). The Desor formulation equates crowding with "excessive stimulation from social sources." Similarly, Esser portrays crowding as a form of stimulus overload resulting from unfamiliar or inappropriate social contacts, and Baum and Valins conceptualize crowding as a syndrome of "unwanted social interaction." The Zlutnick and Altman framework, which emphasizes the individual's ability or inability to control his interactions with others, reflects an overload perspective on crowding, as well. More recently, Altman (1975) has characterized crowding as a condition in which interpersonal boundary control mechanisms break down, such that achieved privacy is less than the level of privacy desired.

Hypotheses derived from overload interpretations of crowding have been examined in a variety of experimental studies. Desor (1972), utilizing a role-playing technique (in which subjects were asked to place as many miniature people in a scale model room as it could hold without being crowded), found that subjects placed more stick figures in a room containing partitions, than in an identical one without such "screening" devices.

Similar results were reported by Baum, Riess, and O'Hara (1974), who found that subjects walking through a building corridor were more likely to stop and drink at screened rather than unscreened water fountains, when a confederate stranger was positioned near the fountain. Also, Baum and Valins (1973) observed that students at SUNY., Stony Brook rated corridor-design dorms as more crowded than suite-design dorms,

presumably because the former provide less shielding from unwanted social interaction than the latter.

Bickman, Teger, Gabriele et al. (1973), in a field study employing the "lost letter technique" (Milgram, 1969), found that residents of high density dorms were less likely to enact altruistic behavior than those of low density dwellings. These results were explained in terms of Milgram's (1970) analysis of adaptation to overload, which posits a pattern of decreased involvement with others as a means of avoiding excessive stimulation under conditions of high density.

And, consistent with the assumption that high density situations are informationally complex and thereby impair environmental perception, Saegert (1973) reported that Manhattan department store customers shopping for shoes were less able to recall details concerning the merchandise and layout of the shoe department under high versus low density conditions. Although these findings do not pertain directly to the perception of crowding, they do support the prediction that perceptual and behavioral deficits will occur in high density situations where individuals are unable to avoid excessive environmental stimulation.

#### BEHAVIORAL CONSTRAINT MODELS

Behavioral constraint perspectives on human crowding derive largely from Brehm's (1966) theory of psychological reactance, and Sommer's (1969) conceptualization of personal space. Brehm's theory deals with situations in which an individual realizes that his freedom to perform a particular behavior has been threatened or eliminated. Perceived limitation of behavioral freedom should provoke psychological reactance, a motivational state involving feelings of preemption and infringement and resulting in behavior directed toward reestablishment of the threatened freedom.

Somewhat related to the construct of reactance is Sommer's notion of personal space, an invisible, "emotionally-charged" zone surrounding each person, "into which intruders may not come." Personal space presupposes the existence of individual

needs and situational norms which establish the bounds of comfortable interaction distance. To the extent that spatial needs and norms are violated, a reactance-like pattern of emotional distress should arise, followed by behavioral adjustments aimed at preserving one's personal space.

Based upon Brehm's theory of reactance, Proshansky, Ittelson, and Rivlin (1970) have conceptualized crowding as a situation in which the presence of other people places restrictions on the individual's range of behavioral choice. Whereas overload models of crowding generally assume that one's level of arousal is a direct function of physical density, the Proshansky et al. formulation assumes that the sensory impact of density will depend largely on the person's needs and situational motives. Thus, when one desires privacy, high density is likely to increase his perception of crowding. But in high density situations where privacy is a nonsalient behavioral choice, reactance against the proximity of others is unlikely to occur.

Stokols (1972b), also drawing upon the theories of Brehm and Sommer, has defined crowding as a subjective experience in which one's demand for space exceeds the available supply. From this definition, a model<sup>2</sup> of human response to crowding stress is proposed which incorporates a series of sequential stages: (a) exposure of the individual to certain environmental conditions (e.g., physical density, social interference); (b) the experience of psychological and physiological stress; and (c) the enactment of behavioral, cognitive, and perceptual attempts to alleviate the experience of stress. According to this model, the experience of crowding develops through an interaction of physical, social, and personal variables, all of which combine to sensitize the individual to the actual or potential constraints of limited space. Behavioral adjustments of the environment, or cognitive and perceptual alterations of internal states, are viewed as adaptive or maladaptive depending on whether they reduce or sustain the cycle of crowding stress.

An important assumption underlying behavioral constraint analyses of crowding is that the mere anticipation of social interference from others in one's immediate area plays an

important role in determining the psychological and behavioral impact of high density. Moreover, it is assumed that the expectation of interference will be mediated by social and personal variables, as well as the spatial dimensions of an area. The results of several experimental studies relate directly or indirectly to these assumptions.

The effects of social structural factors on perceived crowding and spatial needs are reflected in four recent studies. Stokols et al. (1973) observed that the perception of crowding and restriction in an area of limited space was greater when subjects played a game under competitive conditions, than when they adopted a cooperative set toward each other. Competitive task set was viewed by the authors as a source of social interference in that it necessitates the monitoring of others' behavior whose interests conflict with one's own, and thereby makes the need to "keep others at a distance" more salient.

In an experiment by Schopler and Walton (1974), the anticipation of behavioral interference was manipulated by varying the degree of group structure subjects expected to encounter while working on an interactive task. As predicted, expectations of minimal structure induced a greater degree of felt crowding than was observed in the high-structure conditions.

The research of Epstein and Karlin (1975) emphasizes the importance of group norms concerning appropriate interaction distances in determining the behavioral impact of high density in a particular setting. The authors reasoned that the capacity of group members to share distress should enhance their adjustment to the discomforts of excessive interpersonal proximity imposed by high density conditions. Assuming that females would be more likely to commiserate with each other than males due to the influence of different sex norms, they predicted that female groups would display greater cohesiveness and cooperation than males in a high density situation. These hypotheses were supported by the experimental data.

The effects of interpersonal variables on spatial behavior were further revealed in an experiment conducted by Fisher (forthcoming). Subjects who perceived themselves to be attitudinally

similar to their partner gave lower self-ratings of crowding in a dyadic interaction setting, than did those who felt dissimilar. Because perceived similarity provides a basis for interpersonal attraction (see Byrne and Nelson, 1965), this dimension seems logically related to the enhancement of trust and the reduction of anticipated interference and infringement.

The role of personality variables in the phenomenology of crowding has been documented, as well, in a variety of experimental settings. Schopler and Walton (1974), investigating the relationship between perceived "internality-externality of control" (see Rotter, 1966) and crowding, found that internal subjects felt less crowded than externals in a small group situation. Similarly, Duke and Nowicki (1972) reported that externals manifested greater interpersonal distance needs, vis-à-vis an imaginary stranger, than internals. Presumably, perceived internality of control serves to minimize expected social interference and feelings of crowding, even under conditions of close proximity with others.

The personality dimensions of self-esteem (SE; See Cooper-smith, 1967), dominance (D; Jackson, 1967), social avoidance and distress (SAD; Watson and Friend, 1969), and "close" versus "far" personal space (PS; see Horowitz, Duff, and Stratton, 1964) also were found to be correlated with spatial behavior in an experiment conducted by Cozby (1973). Specifically, close PS subjects preferred a high to a low density setting, whereas far PS subjects generally displayed an opposite preference pattern. Moreover, individuals scoring high on the dimensions of esteem and dominance, but low on the SAD scales, exhibited relatively closer personal space when approached by the experimenter.

Parallel results were obtained by Dooley (1974) in a subsequent experimental study. In a high social density situation, men with far PS felt more crowded, restricted, uncomfortable, and unfriendly than those with close PS. Furthermore, far PS subjects perceived others to be more aggressive, and manifested more adverse aftereffects (see Glass and Singer, 1972) of exposure to high density on an index of proofreading performance than did those with close PS.



The pattern of results reflected in the Cozby and Dooley experiments, thus, suggests that those personal traits which predispose individuals to feelings of territorial and social control reduce expectations of behavioral interference, and thereby decrease sensitivity to crowding stress in the context of high density situations.

#### ECOLOGICAL MODELS

Another line of research on crowding stems from Barker's (1968) application of ecological theory to an analysis of human social behavior. The ecological perspective, which focuses on the collective adaptation of organisms to their environment, was first articulated in the late nineteenth century by biologists who emphasized the interdependence of plant and animal groups occupying the same habitat (see Clements, 1905). It was elaborated upon subsequently by sociologists (e.g., McKenzie, 1925; Park, 1936) in an attempt to develop a comprehensive model of human ecology, or "the study of the form and development of the human community" (Hawley, 1950: 68).

Barker's (1968) research in the area of ecological psychology represents an extension of ecological principles from the macro- or community level of analysis, to a consideration of micro-social phenomena. This shift in emphasis is evident in Barker's concept of "behavior setting," an environment-behavioral unit characterized by cyclical patterns of activity which occur within specific time intervals and spatial boundaries. Examples of behavior settings are dormitory lounges, shopping centers, and football games. Within Barker's framework, the ecology of the total community remains an important issue, but is approached in terms of the dynamics of multiple behavioral settings which, together, comprise the larger environment.

Through a series of longitudinal, naturalistic comparisons among diverse behavior settings, Barker and his colleagues have developed a theory of undermanning (see Barker, 1960; Barker and Gump, 1964; Barker and Wright, 1955). A central assumption of this theory is that all behavior settings have

essential tasks or functions which are associated with specific personnel requirements. To the extent that a particular setting is understaffed, systemic pressures should arise which place demands on available personnel for more intensive participation in its activities. Thus, for undermanned settings in which there are fewer participants than the number of available roles, maintenance pressures should induce members to take on a greater variety of tasks, work longer hours, and assume greater responsibility than they would under conditions of optimal manning (i.e., where the numbers of participants and available roles are matched). These predictions have received support in a variety of studies involving the comparison of large and small schools (see Baird, 1969; Barker and Gump, 1964; Wicker, 1968; Wicker, 1969a; Willems, 1967), churches (Wicker, 1969b; Wicker and Mehler, 1971), and whole communities (cf., Barker and Schoggen, 1973).

In an attempt to provide a more comprehensive analysis of manning conditions, Wicker, McGrath, and Armstrong (1972) developed the construct of overmanning as an extension of Barker's theory. Overmanned settings were defined as those in which the number of eligible participants exceeds the personnel capacity of the system. As in the case of undermanning, overmanning was viewed as an unstable condition which would generate forces toward adequate or optimal manning. These forces would be manifested as pressures to increase the setting capacity, or decrease membership by raising eligibility standards and discouraging potential applicants.

More recently, Wicker (1973) has suggested the potential applicability of overmanning theory to the study of human crowding. From his perspective, the degree of manning in a behavior setting may be more critical in determining whether the area is perceived as crowded, than the supply of space available to each occupant. On the basis of this assumption, it is plausible that members of a low density, overmanned setting might feel more crowded than those of a high density, undermanned setting, due to the greater scarcity of social roles and, hence, potential for competition and exclusion, in the former situation vis-à-vis the latter.

Research on overmanning has not been extensive, primarily due to the recency of Wicker's (1973) analysis. To date, two experimental studies have examined hypotheses derived from overmanning theory. Hanson and Wicker (1973) compared the experiences and activities of overmanned (three people present when only two could be accommodated) and adequately-manned (two persons present when two were required, and three present when three were required) groups working on a "slot car" task. As expected, members of overmanned groups felt significantly less needed, less important, and less valuable to the group than those working under adequate manning conditions. Consistent with overmanning notions, these differences were attributable to manning level rather than group size.

In a subsequent investigation reported by Wicker (1974), a slot car task incorporating four group members was used in which the degree of manning was manipulated by varying the number of available job assignments. As in the Hanson and Wicker study, members of overmanned groups generally perceived themselves to be less important to the group, less influential in decision-making processes, and viewed their situation as less pleasant than their under- or adequately-manned counterparts. Surprisingly, however, the pattern of group means obtained for a measure of felt crowding indicated that members of undermanned groups felt more crowded than those of overmanned groups. Although this finding seems inconsistent with the relatively lower quality of experience reflected in overmanned groups, it is perhaps understandable in terms of the greater degree of physical movement and coordination which was required in the undermanned groups, as members attempted to handle more than one role at the slot car table.

An important direction for future research is the development of criteria for determining under what circumstances pressures arising from a scarcity of roles in a behavior setting will contribute more heavily to the subjective experience of crowding than will the constraints of behavioral interference and spatial restriction. A complicating issue in this regard is that experiences involving crowding associated with conditions of

overmanning are likely to be of a different quality than those associated with stimulus overload or behavioral constraint. Thus, another area for future research concerns the delineation and measurement of diverse crowding experiences.

It should be noted that Wicker's work on overmanning represents a particular application of the more general ecological framework to an analysis of crowding. The distinctive features of the ecological perspective, vis-à-vis other theoretical approaches, are reflected in its conceptualization of crowding as a resource management problem, and its emphasis on the collective adaptation of group members to environmental limitations over time. The overmanning construct focuses upon one type of environmental limitation as an antecedent of crowding, namely, the limited availability of social roles within a behavior setting. A useful extension of the ecological perspective would be an examination of the effects of physical resource-scarcities on spatial behavior and perceived crowding.

#### **CONTINUITIES, DISSIMILARITIES, AND LIMITATIONS REFLECTED IN VARIOUS CONCEPTUALIZATIONS OF CROWDING**

Stimulus overload, behavioral constraint, and ecological analyses of human crowding converge on two basic themes: the experience of crowding (1) is mediated largely through non-spatial factors and (2) involves a dynamic process of stress and adaptation. The analyses diverge in that each emphasizes different antecedents, emotional responses, and behavioral outcomes in its portrayal of the crowding experience.

Implied in each analysis is the distinction between physical density and crowding stress. From overload, constraint, and ecological perspectives, it is presumed that conditions of high density often (but not invariably) generate certain inconveniences for the occupants of an area. These annoyances arise from proximity-based pressures which interfere with the goals and activities of group members. Thus, to the extent that density promotes excessive social stimulation, threatens behavioral freedom, or depletes the supply of local resources, a unique syndrome of crowding stress is predicted by each of the models.

**TABLE 1**  
**Summary of Theoretical Perspectives on Crowding**

Theoretical Perspective	Critical Antecedent of Crowding	Emotional Concomitants	Primary Adaptive Processes
<u>Stimulus Overload</u>	excessive stimulation	confusion, fatigue	escape stimulation: behavioral or psychological withdrawal; architectural intervention
<u>Behavioral Constraint</u>	reduced behavioral freedom	psychological reactance, infringement	leave situation or improve coordination and relations with others
<u>Ecological</u>	scarcity of resources	marginality, competition	collective defense of group boundaries and resources; increased territoriality, exclusion of outsiders

Overload theories, for example, postulate a pattern of confusion, fatigue, and either overt or covert withdrawal from others in the context of too much social stimulation. Behavioral constraint formulations posit the arousal of psychological reactance and perceived infringement in response to the reduced freedom imposed by density. And ecological analyses predict that in situations where a scarcity of social roles exists, members of the setting will undergo feelings of marginality, decreased importance to the group, and exhibit a collective pattern of increased territoriality and resource conservation.

Aside from the fact that each theoretical perspective emphasizes different determinants and manifestations of crowding, there are some other dissimilarities among overload, constraint, and ecological conceptualizations which should be noted. First, although all of the models consider the impact of crowding on individuals, ecological analyses place most emphasis on collective or group processes of adaptation. Second, the experience of crowding is more directly linked to feelings of spatial restriction in constraint vis-à-vis overload and ecological perspectives on crowding. Finally, in comparison with other analyses, constraint formulations give more consideration to dispositional mediators of perceived crowding, and place more emphasis on the anticipated inconveniences of crowding, as well as those that are actually experienced by the individual.

Each of the orientations discussed above poses unanswered questions which merit further consideration in future research. Overload analyses, for instance, do not address the following important issues: Under what conditions will extreme levels of social stimulation be sought rather than avoided? When will excessive social stimuli be most aversive for the individual? Do physical and social sources of overstimulation exert differential effects on behavior?

Similarly, constraint formulations ignore several important questions: Considering the wide range of potential density constraints (e.g., restriction of movement, task coordination problems, reduced privacy, proximity to hostile others), which yield the most intense and enduring experience of crowding?

How stable are personal sensitivities to crowding across various situations of high density? In a given situation, which adaptive routes will be chosen following exposure to density constraints?

Ecological analyses, also, have not yet addressed a variety of critical issues: For what types of behavior settings will conditions of overmanning induce the most negative reactions in group members? To what extent are the dimensions of density, overmanning, and perceived crowding correlated across different behavior settings? What types of scarcities (e.g., lack of social roles, physical resources, or space) will be most closely related to feelings of crowding in a particular behavior setting?

In summary, earlier analyses of crowding based on overload, constraint, and ecological theories share the following major limitations: (1) They fail to provide criteria for determining the relative salience of different density constraints within specific situations; (2) They do not distinguish among diverse crowding experiences in terms of the intensity and persistence of each; and (3) They do not provide a basis for predicting the circumstances under which behavioral, cognitive, or perceptual adaptations to crowding stress will occur.

### **AN INTEGRATIVE EXTENSION OF EARLIER APPROACHES**

In this section, a theoretical perspective on crowding is developed which incorporates elements from earlier analyses and confronts some of the unresolved issues discussed above. Major assumptions are listed and new concepts proposed as a basis for delineating a typology of crowding experiences.

#### **CENTRAL ASSUMPTIONS**

In the present analysis, crowding is defined as a form of psychological stress in which one's demand for space exceeds the available supply (see Stokols, 1972a). This formulation reflects two basic elements found in previous analyses, to wit,

experiential crowding is distinguished from physical density and viewed as a syndrome of stress. It differs from certain earlier conceptualizations, however, in assuming that feelings of crowding necessarily involve an increased salience of spatial concerns. Before considering the adequacy of the proposed definition, further elaboration on it is required.

First, the characterization of crowding as a form of stress implies an imbalance between environmental demand and the individual's capacity to cope with it (see Selye, 1956). Most of the early research on stress focused on its physical dimensions, especially physiological reactions that occur as a result of abrupt environmental changes. Lazarus (1966) later extended the general notion of stress to the construct of "psychological stress," i.e., a process of cognitive appraisal which reveals a disparity between *perceived* environmental demand and *perceived* ability to cope. The critical factor in psychological stress, then, is the individual's expectation that he will not be able to exert control over the situation and meet environmental demands.

In the experience of crowding, the crucial dimension of adaptive environmental control is reflected in the individual's behavioral or perceptual augmentation of space. Feeling crowded involves the apprehension that one's inability to obtain more space will lead to unpleasant consequences, such as being unable to perform some activity or fulfill certain needs. A person's demand for more space can exceed the available supply for a variety of reasons: e.g., the desire to increase solitude by using open or enclosed space as a buffer against impinging stimulation; the desire to bolster security by putting more distance between oneself and threatening others; and the desire to procure more space as a means of widening one's range of behavioral alternatives, or transcending resource scarcities in the immediate area. In some of these situations, overt behavioral strategies of spatial augmentation will be adopted. In others, the individual may attempt to increase his supply of space symbolically or perceptually (e.g., psychological cocooning). In all of these examples, though, it is assumed that the person's perception of crowding and his related attempts to cope with it



presuppose a basic psychological antecedent: the desire to put more space or distance between oneself and others.

To what extent are these assumptions compatible with earlier analyses of crowding? From the foregoing discussion of overload, constraint, and ecological models, it is evident that all of these conceptualizations portray crowding as a perceived loss of control over the environment. Insufficiency of environmental control is reflected in the individuals' unwilling exposure to the excessive stimulation, behavioral restrictions, or potential scarcities associated with crowding situations.

It is less apparent from previous analyses that crowding involves the perceived need for more space. This assumption, however, does seem consistent with earlier approaches in the sense that unwanted stimulation, infringements on privacy, and competition for scarce resources all represent forms of social interference which would sensitize the individual to proximity-related problems.<sup>3</sup> Moreover, decreased involvement with others, withdrawal from the situation, and the group's exclusion of outsiders, all can be viewed as strategies designed to augment physical or "psychological" space (*psychological space* here refers to the individual's capacity to ignore impinging stimuli or potential interferences from the external environment).

Whereas the aforementioned assumptions seem consistent with earlier analyses, they provide only a partial basis for delineating situational determinants of the intensity, persistence, and reducibility of perceived crowding. In order to address these issues, an additional assumption must be incorporated into the present analysis.

It is proposed that the intensity and duration of stress are greatest when the individual's perceived lack of control over the environment is viewed by him as posing a direct threat to his physical or psychological security. In the context of crowding, environmental control is essentially a matter of augmenting space as a means of reducing actual or anticipated interferences. In some situations, failure to obtain more space will pose slight inconveniences, such as having to forego the luxury of free movement in order to attend a crowded<sup>4</sup> concert. In other

instances, however, the inability to augment space may increase the individual's vulnerability to serious consequences, as in the case where one is in close proximity with a violence-prone person. Thus, the effects of stimulus overload, behavioral constraints, and scarcity of resources on the experience of crowding can be more fully understood in terms of the implications they pose for the individual's sense of security.

To summarize, three major assumptions have been posited: (1) the experience of crowding involves the perception of insufficient control over the environment; (2) perceived crowding evokes the desire to augment physical or psychological space as a means of gaining control over the environment and avoiding actual or anticipated interferences; and (3) feelings of crowding will be most intense, persistent, and difficult to resolve where the failure to augment space maximizes security threats.

It should be clear that the present analysis emphasizes the cognitive and emotional concomitants of crowding, as well as its behavioral manifestations. Among nonhuman species, spatial behavior is controlled primarily through genetically-based, instinctual mechanisms (see Hediger, 1950). At the human level, though, spatial behavior is mediated largely through social learning processes and cognitive factors (see Hall, 1966; Sommer, 1969). Thus, it seems more appropriate to adopt an experiential/behavioral approach to crowding rather than a strictly behavioral one.

In the ensuing discussion, additional constructs are introduced in order to specify more fully the conditions under which situational antecedents of crowding pose the greatest degree of threat to the individual's physical and psychological security.

#### **NEUTRAL AND PERSONAL THWARTINGS**

The experienced or anticipated inconveniences associated with crowding can be considered in terms of the construct of thwarting (Cofer and Appley, 1964; Dollard, Doob, Miller, Mowrer, and Sears, 1939). Thwarting implies the arousal of frustration in a person, P, resulting from an interference in his activities or motives. A thwarting can be characterized with

respect to three basic dimensions: (1) its source, (2) direction, and (3) intentionality. The first refers to the origin of the interfering force; that is, whether it emanates from others, O, who are proximal to the individual, or from the physical environment. The second relates to the target of the force: for example, whether or not it is directed specifically at P. And the third concerns P's attribution of intentionality to the source of the force. These dimensions combine in a variety of ways to yield different types of thwartings.

A distinction between two major classes of thwarting was proposed by Stokols (1975) in a recent discussion of psychological alienation. *Neutral* thwartings were defined as those that do not emanate directly from O, are not specifically directed at P, and are perceived by P as being unintentional. *Personal* thwartings, on the other hand, were characterized as those which stem directly from O, are specifically directed at P, and perceived by P as reflecting O's intentions. It was assumed that both kinds of thwartings lead to a perceived deterioration in the adequacy of the physical and/or social environment, but that P's psychological and behavioral patterns of response to each type will be different.

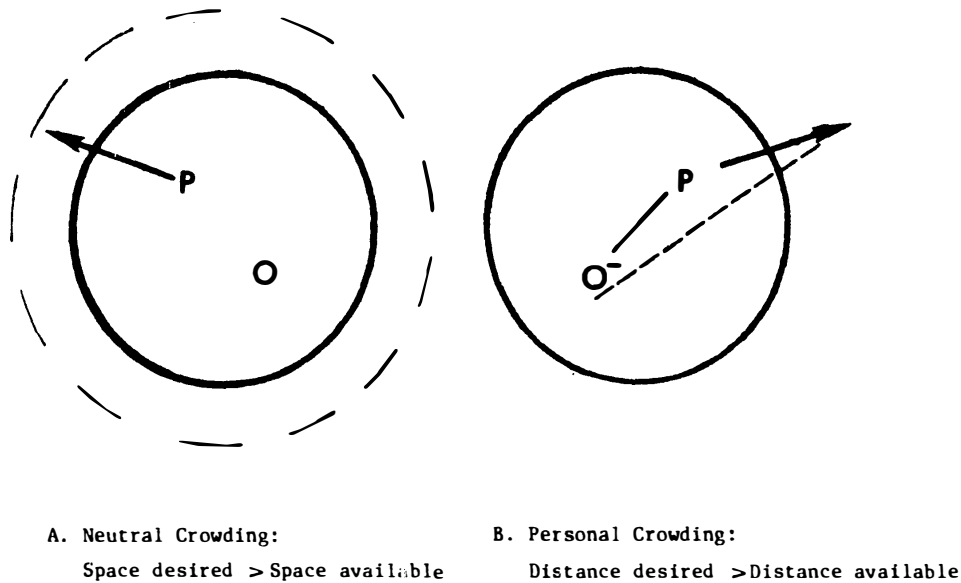
As an extension of the current analysis, it is assumed that the various forms of interference connected with crowding can be arrayed along the continuum of neutral/personal thwarting. Consider, for example, the residents of a dormitory suite who are sharing an area of confined space, limited bathroom facilities, and poor acoustical insulation. In this situation, the inconveniences of cramped quarters, the lack of adequate resources, and excessive noise may reduce each person's sense of control over the environment and increase the desire for more space as a means of maintaining freedom of movement, access to facilities, and privacy. Situational annoyances such as these remain neutral thwartings as long as they are attributed by the individual to features of the physical environment (e.g., inadequate architectural design) or only indirectly to well-meaning members of the social environment (e.g., even the presence of a good friend may sometimes restrict privacy).

The same inconveniences in the context of social strife, however, become personal thwartings to the degree that spatial constraints, limited resources, and lack of privacy are directly associated with (and attributed to) the presence of others whose interests conflict with one's own, and whose intentions are viewed as unpredictable or malevolent. As an example, one member of the suite may not get along well with the other residents. Under these circumstances, the individual's perception of insufficient environmental control extends both to physical and social dimensions of the environment, and thereby heightens the urgency of obtaining more space as a means of protecting his physical and emotional security (e.g., by avoiding open conflict, insults, and the like).

In the examples given above, both neutral and personal thwartings imply a violation of expectations regarding environmental quality and control. That is, the individual's reward-to-cost ratio in the situation is below his comparison level (CL; Thibaut and Kelley, 1959), the level of outcome-quality he expects or feels he deserves. Under conditions of neutral thwarting, dissatisfaction with inferior outcomes is related primarily to the perceived inadequacies of the physical environment. In situations of personal thwarting, though, dissatisfaction is associated not only with the restrictions of the physical environment, but also with threatening social forces which accentuate these restrictions and pose additional threats, as well.

The patterns of experience reflected in these examples suggest two basic varieties of human crowding: *neutral crowding* and *personal crowding*. As depicted in Figure 1, both patterns involve a configuration of circumstances in which an individual, P, is proximal with others, O, and perceives his immediate situation to be unsatisfactory in some sense. Moreover, P's dissatisfaction in both situations presupposes an increased sensitivity to spatial limitation as a consequence of certain situational annoyances.

Whereas in neutral crowding a violation of spatial expectations relates primarily to the physical dimensions of the environment, the increased salience of space in the personal case



**Figure 1: Neutral and Personal Varieties of Crowding**

stems largely from the security concerns made salient by proximity with hostile or unpredictable others. Thus, the latter variety of crowding thwarts expectations concerning the adequacy of the social environment, as well as those pertaining to the amenity of one's physical surroundings.

In Figure 1A, P's displeasure with the situation is denoted by the arrow leading from the inner circle to the outer one. P's movement to the outer circle would represent a direct augmentation of physical space. Such movement might be prompted by architectural constraints on activities, or excessive stimulation generated by others in the area. If P's freedom to leave the situation were precluded by physical barriers or situational norms, perceived crowding might be reduced through cognitive or perceptual strategies designed to expand psychological space.

In Figure 1B, P's discontentment is indicated both by the arrow leading outside of the circle, as well as the minus sign denoting negative sentiment toward O. The broken line between O and P's desired location reflects P's need to put more distance between himself and O. The increased salience of spatial

concerns associated with experiences of personal crowding, then, is defined specifically in terms of the disparity between levels of desired and available distance from O. Although in a neutral situation, augmentation of psychological space may prove to be a viable mode of adaptation, it will be relatively less effective in the personal case due to the potential dangers of remaining proximal to O and the intensity of negative emotions which may be difficult for P to ignore.

The distinction between neutral and personal varieties of crowding provides the basis for one of the major hypotheses of this analysis: crowding experiences which involve a violation of spatial as well as social expectations will be of greater intensity, persistence, and more difficult to resolve than those that derive solely from perceived deficiencies of the physical (spatial) environment. Considering first the intensity of crowding experiences, those involving a personal thwarting are expected to be relatively more intense for they yield frustration arising both from a discrepancy between the actual and anticipated quality of the physical environment, as well as disappointment in the actions of a specific and malevolent other. Insult or injury by O introduces the element of rejection into P's experience of disillusionment, especially to the degree that P's initial expectations concerning the quality of the social environment were high. Thus, the "gain-loss" element (Aronson and Linder, 1965) arising from P's rejection by O, when coupled with the frustration of expectancies regarding the adequacy of space, should promote a more intense experience of crowding than when standards of spatial adequacy alone are thwarted.

The persistence of crowding experiences is a function of their intensity as well as their potential reducibility. To the extent that P is able to withdraw behaviorally from the situation, both neutral and personal varieties of crowding are potentially reversible, though it will be suggested later that the probability of cross-situational carryover effects is relatively higher in the personal case. The greater persistence of personal vis-à-vis neutral crowding experiences becomes more apparent when P is confined to the situation. Given this condition, the potential for improving the quality of the situation is lower in the personal case for at least two reasons: (1) there is a tendency on P's part

to reciprocate O's rejection (Berscheid and Walster, 1969); and (2) the probability of open aggression is high owing to the presence of hostile cues (e.g., insults and injury) as well as a specific target for P's counteraction (See Berkowitz, 1965; Buss, 1961). Therefore, cognitive and perceptual strategies of adaptation to crowding will be more obstructed in the personal pattern of experience than in the neutral one.

By contrast, a greater range of adaptive options are available in situations of neutral crowding. Since P's frustration is attributed to unintentional environmental circumstances, a basis for cooperation between P and O exists. Thus, P's response to neutral crowding will be of a problem-solving nature. In response to spatial constraints, for example, he may initially attempt to improve the coordination of his behavior with the activities of O; withdraw temporarily into passive isolation; or cooperate with O in developing interventions designed to improve the physical environment. In Calhoun's (1971) terminology, situations of neutral versus personal crowding place fewer constraints on "conceptual space," or the group's "total information pool from which rules, codes, and theories may be condensed which permit more effective coping with the physical and social environment" (p. 365).

Although the neutral/personal thwarting dimension helps to distinguish among diverse crowding experiences in terms of their intensity, persistence, and potential reducibility, it leaves a number of questions unanswered. For example, in what types of environments will neutral and personal experiences of crowding be most likely to occur? Also, are there circumstances under which neutral crowding experiences will be more intense than personal ones? In this regard, it seems reasonable to expect that the personal crowding associated with temporary proximity to an obnoxious stranger would be less troublesome than the neutral crowding experienced by members of a family unavoidably confined to an area of extremely limited space and resources. Certainly, the degree of environmental degradation, resource scarcity, and duration of exposure to the situation

would have an important bearing on the intensity of crowding stress.

Additional questions for further consideration pertain to the predictability of behavioral aftereffects across various situations of crowding, and the degree of correlation between high-density conditions and neutral/personal thwartings. In an effort to address these and related issues, an additional theoretical construct is introduced in the ensuing discussion.

#### TOWARD A TYPOLOGY OF CROWDING EXPERIENCES

Within the past few years, several behavioral scientists have emphasized the importance of developing environment-behavioral taxonomies as a basis for predicting human response consistencies across diverse situations (see Altman, 1968; Barker, 1968; Mischel, 1973; Moos, 1973; Rotter, Chance, and Phares, 1972). Increasing interest in the classification of situation-behavioral regularities can be traced to developments both within the field of psychology and society at large. Many psychologists have become disenchanted with theoretical approaches that overemphasize person variables while giving little attention to environmental determinants of behavior (see Brunswik, 1949; Heider, 1958; Lewin, 1951; Murray, 1938). In addition, growing societal concern over the quality of the environment has contributed to the development of a burgeoning body of research detailing the impact of the physical environment on behavior (see Craik, 1973; Newman, 1972; Proshansky et al., 1970).

It is assumed in the present analysis, that identification of the relevant situational dimensions may facilitate a more thorough delineation of diverse crowding experiences (than is permitted by the neutral/personal dimension, alone) and, ultimately, may provide guidelines for architectural and planning interventions aimed at reducing levels of stress within the community. Specifically, a distinction between *primary* and *secondary environments* is proposed. These environments can be differentiated along three basic dimensions: (1) the continuity of social encounters in a particular setting; (2) the psychological



centrality of behavioral functions performed within the setting; and (3) the degree to which one's relations with others occupying the environment occur on a personal or anonymous level.

Primary environments are defined as those in which an individual spends much of his time, relates to others on a personal basis, and engages in a wide range of personally-important activities. Examples of primary settings are residential, classroom, and work environments. Secondary environments are those in which one's encounters with others are relatively transitory, anonymous, and inconsequential. Examples of these settings are transportation, recreation, and commercial areas.

It is hypothesized that conditions of high density or proximity with others are associated with a greater range of potential threats to emotional and physical well-being in primary rather than secondary environments and, consequently, experiences of crowding will tend to be more intense and persistent in the former settings than in the latter. This prediction is based on the assumption that an individual's expectations for control over the environment are associated with a wider range of personal needs and goals in primary settings than in secondary ones. Hence, social interferences arising from conditions of high density or proximity will be potentially more disruptive and frustrating in the former environments than in the latter.

It should be emphasized that the stressful effects of exposure to high density are likely to occur in primary environments *only* to the extent that occupants' expectations for control over the setting (and especially over personal security) are thwarted. In many cases, the high degree of personal control exercised by persons in primary settings (especially among high-status persons; see Baldassare, 1976) enables them to structure the situation so as to minimize behavioral interferences and avoid feelings of crowding. Thus, the frequency of crowding experiences will not necessarily be greater in primary versus secondary settings, nor will all occupants of a given setting be equally susceptible to crowding. But to the extent that crowding experiences do occur, their impact on the individual generally

will be greater in primary environments than in secondary ones.

Earlier in the discussion, it was stated that crowding experiences are distinguishable in terms of whether they involve a violation of spatial expectations alone, or of spatial as well as social needs. Similarly, Loo (1974) has proposed a distinction between crowding situations which promote spatial stress, social stress, or both. In order to facilitate a further delineation of crowding experiences in terms of situationally-determined thwartings, it would be useful at this point to consider more fully the salient need dimensions associated with primary and secondary contexts of crowding.

Rotter et al. (1972) have proposed a classification of human needs which includes six basic need categories: (1) physical comfort, (2) independence, (3) protection-dependency, (4) recognition-status, (5) love and affection, and (6) dominance. Extending this framework to the present analysis, it is proposed that all six need dimensions are salient within primary environments, whereas only the first three categories of needs would typically be of importance in secondary settings. The greater variety of salient needs in primary environments is attributable to the fact that close, personal relations with others, revolving around activities of mutual importance to group members, open a wider range of potential "reinforcement paths" for the individual, than arise from social encounters which are transitory, anonymous, and personally-unimportant. In primary settings, then, the social dimensions of status, dominance, and affection would become just as salient as those pertaining to physical comfort, safety, and independence while in secondary environments, the former set of dimensions would remain relatively less salient than the latter.

In the preceding paragraphs, two related predictions were stated: crowding experiences will be more intense, persistent, and difficult to resolve (1) under conditions of personal vs. neutral thwarting, and (2) in primary vs. secondary environments. The linkage between these hypotheses now can be made. Because primary vis-à-vis secondary environments are associated with higher expectations of personal fulfillment along a greater diversity of need dimensions, interferences resulting from the

proximity of others will be more likely to thwart psychologically-important goals and activities and, thereby, threaten one's emotional security in the former settings. In short, the probability of exposure to personal thwartings as a consequence of inadequate control over the regulation of space is greater in primary environments, and thus, experiences of crowding in these settings generally will be of greater magnitude and duration than those that occur in secondary environments.

The correlation between primary environments and personal thwartings, however, is by no means perfect. Transitory experiences of personal crowding can occur in secondary environments just as prolonged feelings of neutral crowding can arise in primary settings. Therefore, in the proposed typology of crowding experiences, the constructs of neutral/personal thwarting and primary/secondary environments are incorporated as separate components rather than combined into a single dimension (see Table 2).

Four basic types of crowding are represented in Table 2, i.e., personal and neutral experiences which occur in either primary or secondary environments. Hypothetical profiles for the four varieties of crowding are presented in terms of their respective antecedent, experiential, and behavioral dimensions. It is assumed that within each cell of the matrix, spatial proximity exists among individuals in the situation. Interpersonal proximity would be positively correlated with high density but could exist under low-density conditions, as well.

Given conditions of low density, intense crowding experiences could arise in both primary and secondary environments to the degree that personal thwartings occurred. The threats of a menacing stranger, for example, would heighten spatial needs in both types of environments. In general, though, it is assumed that low densities will be less promotive of intense crowding experiences within each cell of the matrix, in view of the increased potential for encountering physical and social interferences associated with high-density conditions.

For purposes of the present discussion, high density is held constant across all four cells of the matrix. Furthermore, it is assumed that preestablished social conflict is not imported into

**TABLE 2**  
**A Typology of Crowding Experiences**

		ENVIRONMENT	
		Primary	Secondary
THWARTING	Personal	<p><u>Antecedents:</u> violation of spatial and social expectations in the context of continuous, personalized interaction</p> <p><u>Experience:</u> rejection, hostility, alienation; high intensity, persistence, and generalizability</p> <p><u>Behavior:</u> behavioral withdrawal, aggression, passive isolation</p> <p><u>Example Situation:</u> antagonistic suitemates occupying mutual living space</p>	<p><u>Antecedents:</u> violation of spatial and social expectations in the context of transitory, anonymous interaction</p> <p><u>Experience:</u> annoyance, reactance, fear; moderate intensity, low persistence and low generalizability; tendency toward "neutralization"</p> <p><u>Behavior:</u> self-defense, leave situation</p> <p><u>Example Situation:</u> approach by threatening strangers on a crowded street</p>
	Neutral	<p><u>Antecedents:</u> violation of spatial expectations in the context of continuous, personalized interaction</p> <p><u>Experience:</u> annoyance, infringement, reactance; moderate intensity, persistence, and low generalizability; tendency toward "personalization"</p> <p><u>Behavior:</u> behavioral withdrawal, improve coordination with others, augmentation of psychological space</p> <p><u>Example Situation:</u> family confined to a small apartment</p>	<p><u>Antecedents:</u> violation of spatial expectations in the context of transitory, anonymous interaction</p> <p><u>Experience:</u> annoyance, reactance, low intensity, persistence, and generalizability</p> <p><u>Behavior:</u> improve coordination with others, augmentation of psychological space</p> <p><u>Example Situation:</u> attendance of a crowded concert; laboratory experiment</p>

the immediate situation (e.g., as where prior enemies find themselves together in the same area). Under these circumstances, and on the bases of earlier-stated assumptions regarding the differential importance and variety of personal needs in diverse settings, it is expected that two modal patterns of crowding will develop over time: personal-primary and neutral-secondary experiences of crowding.

Crowding experiences occurring within the neutral-primary and personal-secondary cells of the matrix should be relatively "unstable" due to a propensity for the former experiences to become "personalized," (attributed to intentional social forces) and a similar tendency for the latter variety to become "neutralized" (attributed to unintentional sources). These perceptual shifts toward modal configurations of crowding are posited on the basis of self-attribution notions (e.g., Schachter

and Singer, 1962) which emphasize the importance of cognitive cues as well as physiological arousal in the process of emotional labelling (see also Jones et al. 1971; Kelley, 1967). In primary settings, for example, the presence of arousal as well as potentially hostile cues arising from socially-mediated (albeit unintentional) thwartings of crucial personal needs should increase the likelihood of negative emotional labelling and attributions of intentionality. On the other hand, the transitory nature of secondary settings would decrease emotional investment in the situation and thereby reduce arousal in response to personal as well as neutral thwartings. Thus, feelings of crowding within personal-secondary situations, being of low intensity and duration, eventually would be assimilated to unintentional sources of environmental interference.

While the proposed typology is highly tentative and remains to be examined empirically, it nonetheless seems potentially useful as a basis on which to order previous research and develop hypotheses for future study. A number of experimental studies, for example, have revealed sex differences in sensitivity to crowding, with males generally exhibiting greater stress than females under high density conditions (see Freedman et al., 1972; Ross et al., 1973; Stokols et al., 1973). These findings can be interpreted in terms of the present framework if it is assumed that high-density laboratory situations represent secondary environments, but that the interferences associated with crowding under these conditions are taken more personally by males than by females due to the salience of different sex norms. That is, males in close proximity with same-sex strangers may feel more personally challenged and infringed upon by others due to a cultural emphasis on male territoriality and aggressiveness vis-à-vis potential intruders. In contrast, females would be less sensitive to personal thwartings while in the presence of same-sex others. And in mixed-sex situations, the presence of females who appear to be relatively more affiliative than males in their initial encounters with others, may provide a cue which enables males to adopt a more neutral and less defensive posture (Freedman et al., 1972).

To the extent that individuals are able to neutralize and replace competitive cues with those of comradery and teamwork, their sensitivity to feelings of crowding should decline. Thus, in the context of sustained, cooperative interaction, it is hypothesized that crowding-sensitivity differentials between male and female groups would disappear.

Another area for future research pertains to the psychological and behavioral aftereffects of different crowding experiences. In a recent series of investigations concerning the behavioral impact of environmental stressors, Glass and Singer (1972) observed that both tolerance for frustration and quality of task performance in human subjects were impaired following their exposure to unpredictable and uncontrollable noise. When subjects perceived that they could control their exposure to the noise, however, frustration tolerance and task performance were significantly improved. Similarly, in an experiment investigating the relationship between perceived control and residual effects of exposure to high density, Sherrod (1974) found that subjects who believed they could leave a crowded room at any time during the experimental session exhibited significantly greater tolerance of frustration on a post-density task than did those subjects who were instructed not to leave the room. Finally, in a correlational study utilizing census tract data, Galle, Gove, and McPherson (1972) observed that residential density, as measured in terms of persons per room, was more highly correlated with measures of community pathology than were measures of density pertaining to rooms per housing unit, housing units per structure, and residential structures per acre. The authors concluded that the statistical association between the former density measure and various indices of pathology reflected the stressful effects of "interpersonal press" (or prolonged exposure to uncontrollable social encounters) which would be more likely to occur at microresidential rather than macroneighborhood levels of interaction with others.

In terms of the proposed framework, it is expected that psychological and behavioral deficits will be most pronounced subsequent to the experience of personal crowding in primary environments, the least apparent following neutral crowding in

secondary settings. This prediction is based on the assumption that there will be fewer adaptive routes available and, hence, a lower level of perceived control over the situation, in the context of personal vs. neutral crowding experiences. Also, the increased potential for feelings of rejection, hostility, and disillusionment, associated with thwartings in primary vs. secondary environments, should contribute further to the intensity and duration of postcrowding aftereffects in the former settings.

A related hypothesis is that experiences of personal crowding in primary environments will generalize more readily to other situations than will neutral-secondary crowding experiences. That is, the individual's general sensitivity to proximity-related problems will be higher following his experience of personal-primary crowding. The major assumption underlying this prediction is that personal-primary crowding, because it typically involves negative attributions about others, would provide a cognitive base from which situation-specific anxieties regarding proximity with certain persons could generalize to other people in similar settings. This assumption is consistent with social learning theory which postulates that one's general expectations concerning the quality of interaction with others will be determined largely by his interpersonal experiences in specific situations (see Duke and Nowicki, 1972; Rotter, 1966; Rotter et al., 1972). By the same reasoning, it is expected that the transitory frustrations of neutral-secondary crowding will be less closely associated with persisting attitudinal changes, more easily resolved, and, thus, their impact on the individual generally will be confined to the immediate situation.

There are a number of additional issues for future research which are not addressed specifically within the proposed theoretical framework. The interactive effects of numerous physical, cultural, and personal variables, within each cell of the matrix, are unpredictable in terms of the limited assumptions of the model. Group size, for example, will probably modify the

impact of high-density conditions within different environmental contexts (see Saegert, 1973). It can only be speculated that the contribution of large group size to feelings of crowding would be greatest in primary environments where the potential for overmanning on important group functions is high. As for the effects of other physical, cultural, and personality factors on perceived crowding, even indirect speculations are precluded within the present framework. Clearly, extensive exploratory investigations are required before additional variables can be incorporated into the model.

In order to examine the specific assumptions and hypotheses associated with the proposed typology of crowding experiences, several measurement issues must be addressed. Most importantly, it is essential to develop a multiple-measure, longitudinal approach to the assessment of crowding experiences for purposes of examining their respective antecedent, experiential, and behavioral patterns over time. Moreover, it will be important to develop *subjective* and *observational* measurement strategies for determining the degree to which a particular environment is perceived as primary or secondary by its occupants. A street corner, for example, would be classified as a secondary environment for strangers, but for residents of the neighborhood, it could serve as a primary behavior setting.

The proposed typology, if empirically validated, poses some interesting implications for architecture and urban planning. For instance, it suggests that the maintenance of low-density standards may be most critical in the design of primary environments where individuals would be particularly vulnerable to both spatial and social thwartings. Also, the implementation of designs which permit maximal architectural flexibility in primary settings (e.g., the provision of movable walls and ceilings) would enable occupants to establish and maintain adequate personal space and, thereby, minimize threats to psychological security.

In primary spaces where it is difficult to avoid high-density conditions, as in crowded classrooms, it may be necessary for



planners to rely more heavily on the development of social intervention strategies which prevent the misattribution of situational annoyances (e.g., the behavioral constraints and spatial infringements associated with high density) to intentional and malevolent sources. Such strategies might include a concerted effort to reduce competitive cues in the situation, and the establishment of opportunities for small-group interaction through which individuals could develop a sense of cohesion and identity in relation to other group members.

Within secondary or public environments, personal space and privacy needs may become less crucial for occupants of the area than mutual-protection and physical-safety concerns. In these settings, architectural facilitation of collective surveillance and alleviation of congestion (see Jacobs, 1961; LeCorbusier, 1933; Newman, 1972) might offer the most effective strategies for reducing individuals' susceptibility to both personal and neutral crowding experiences.

## NOTES

1. It should be noted that the apparent lack of density effects on task performance may be attributable to the relatively simple and short-term nature of the activities undertaken by subjects in these experiments.

2. The term "model," as used here and throughout this discussion, refers to a descriptive heuristic framework rather than a formal axiomatic theory.

3. Although overmanning is not defined in terms of density or proximity constraints, it is assumed that the potential competition for social roles, associated with overmanned settings, would signal the possibility of future conflict with others and, thereby, increase the salience of personal space requirements and group-territorial concerns.

4. In this discussion, the term "crowded" denotes a condition of high density and is distinguished from the term "crowding" which refers to a subjective state. Thus, the perception of being in a crowded area does not necessarily imply the experience of crowding stress, especially if the benefits derived from the situation are more salient than its potential costs.

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