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The articles in this issue offer fundamentally new conceptions of environment and behavior. Taken together, they provide a partial but provocative glimpse of certain general, theoretical directions of the environment and behavior field. The first portion of this article focuses on the unique contributions of the analyses contained in the present volume. Subsequently, seven general themes or directions suggested by these analyses are identified, namely, (1) a concern with molar units of environment and behavior, and with spatially and temporally extended patterns of person-environment transaction; (2) a tendency toward paradigm-merging, or the integration of concepts and methods from multiple research areas; (3) an emphasis on taxonomic, descriptive theory as a basis for identifying previously neglected facets of person-environment transaction; (4) increasing concern for the ecological validity of environment-behavior research; (5) increasing attention to the behavioral and health impacts of technological change; (6) a recognition of the limitations of personal-control formulations of environment, behavior, and well-being; and (7) increasing emphasis on the temporal context of environment and behavior and the ways in which people subjectively represent their past and anticipated environmental experiences.

EDITOR'S INTRODUCTION

Theoretical Directions of Environment and Behavior Research

DANIEL STOKOLS is Associate Professor and Associate Director for Graduate Studies in the Social Ecology Program at the University of California, Irvine. His research and teaching interests are in the areas of environmental and social psychology, with emphasis on the health and behavioral consequences of exposure to community environmental stressors (such as noise and overcrowding) and on psychological dimensions of personal and group attachment to place. He is President of the Population and Environmental Psychology Division of the American Psychological Association and a member of the Board of Directors of the Environmental Design Research Association.

This is the first issue of *Environment and Behavior*, since its inception in 1969, devoted exclusively to theoretical developments. Earlier issues of the journal examined the theoretical underpinnings of phenomena such as spatial behavior (Evans and Stokols, 1976; Saegert, 1975), environmental dispositions (Craik and McKechnie, 1977), and urbanism (Sadalla and Stea, 1978), but none has taken a broader look

at conceptual developments across several subareas of the field and at theoretical trends within the field as a whole.

During the past 15-20 years, substantial scientific progress has occurred within the environment and behavior field (cf. Moore et al., 1982; Russell and Ward, 1982; Stokols, 1982). The major purposes of this volume are (1) to take stock of recent theoretical developments within several subareas of the field and (2) to identify potentially novel directions for future research on environment and behavior. Each of the articles included in this issue serves these two basic purposes.

Containing only five articles and the present introduction, this volume does not represent the full diversity of contemporary theoretical work on environment and behavior. The five articles in this issue sample only a small subset of research topics that are currently under investigation within the sprawling, interdisciplinary field of environment and behavior. These articles, for example, give greater attention to psychological dimensions of environment and behavior than to anthropological, geographical, and sociological perspectives within the field. Moreover, all of the articles are written from a North American vantage point and, as such, do not convey the international and cross-cultural diversity of research concerns within the field as a whole (cf. Canter and Craik, 1981; Garling, 1982; Hagino and Ittelson, 1980; Kaminski, 1978; Niit et al., 1981).

The composition of this volume was determined through a multistage review process limited only by the number (approximately 30) and diversity of papers submitted for the issue, the opinions of at least three reviewers per manuscript, and the length and scheduling requirements associated with the development of a journal issue. Additional theoretical papers that were accepted for publication in this issue, but could not be included due to scheduling and space constraints, will appear in subsequent issues of *Environment and Behavior*. These later articles will address additional substantive topics, and disciplinary and cultural perspectives within the environment and behavior field.

Having mentioned some of the compositional limitations of the volume, I now want to highlight what I believe are its strengths and contributions. The present set of articles is valuable in at least two important respects. First, each article breaks new conceptual ground within a particular sub-area of the environment and behavior field. Among the topics addressed by these articles are personality and environment, environmental cognition, environmental stress, human response to natural and technological disasters, and environmental programming and assessment. Second, the five articles taken together offer a partial but provocative glimpse of certain general theoretical trends within the field as a whole, and a basis for charting new directions of future conceptual and empirical work. These contributions of the articles are examined more closely in the following sections.

UNIQUE CONTRIBUTIONS OF THE ARTICLES IN THIS VOLUME

The first article by Little offers a fundamentally new unit of analysis for research on environment and behavior, namely, the "personal project." Personal projects are activities conducted within specific settings and time intervals, directed toward the accomplishment of one's important goals and plans. Earlier studies of personality and environment were guided primarily by the "trait" perspective—the view that individuals are characterized by stable and enduring dispositions (i.e., response tendencies) toward physical and social environments. Consistent with this view, some researchers measured individuals' preferences for urban versus rural, modern versus old, and complex versus simple surroundings (e.g., McKechnie, 1977; Taylor and Konrad, 1980; Zuckerman, 1979). Others, in an effort to document the interactive relations between dispositions, situational factors, and behavior, examined the ways in which personal traits mediate behavioral and physiological responses to

various environmental conditions (e.g., Glass, 1977; Magnusson, 1981; Mehrabian and Russell, 1974). In contrast to this earlier research, Little's conception of personal projects shifts the focus of personality assessment from the study of environmental dispositions and trait-by-situation interactions toward the analysis of cognitive, motivational, and behavioral processes by which people plan and conduct their day-to-day activities.

One implication of Little's analysis is that the effectiveness with which people plan, implement, and manage their multiple projects may be closely related to their emotional and physical well-being. For instance, ineffective pacing of different activities might promote experiences of stimulation overload and stress, "coronary-prone" behavior, and interpersonal conflict. Little's conceptualization of personal projects could prompt extensions or more basic reformulations of these and related person-environment phenomena.

Little portrays individuals, first and foremost, as the inventors and implementors of diverse projects. Kaplan, in the second article, asks the question, "What kinds of environments are most compatible with people's efforts to plan and coordinate their activities and to pursue their fundamental goals and aspirations?" Many environmental researchers might answer this question by invoking the concept of personal control. Accordingly, environments that afford the greatest amount of personal control would be viewed as most supportive of the individual's activities and well-being. Yet Kaplan challenges the presumed equivalence of personal control and environmental supportiveness. He points out that events within many environments are ultimately beyond the individual's personal control, yet the situation can be highly compatible with one's goals and activities. In these instances, the individual's sense that "things are under control" may be more crucial than the belief that "things are under my *personal* control." Furthermore, Kaplan argues that it is unrealistic and impractical

to assume that we can or should design environments that are maximally controllable by their occupants and users, especially considering current economic population pressures, resource scarcities, and the growing interdependence among people.

Thus, for both theoretical and practical reasons, Kaplan emphasizes the distinctions between *controllable*, *supportive*, and *restorative* environments, and he offers a set of strategies for enhancing the supportiveness of settings, particularly in those instances in which many aspects of the environment are beyond the personal control of its occupants. One of the proposed strategies is to reduce sources of distraction in the setting that interfere with cognitive processes of contemplation, introspection, and planning. Also, rather than attempting to enhance the personal controllability of all environments, Kaplan suggests the more practicable strategy of preserving or creating a more limited number of restorative settings—highly supportive environments that promote a sense of coherence, fascination, and the feeling of “being away” from one’s typical surroundings and routine.

By focusing on the mental and behavioral processes that are fostered by supportive environments, Kaplan extends earlier “supply and demand” models of person-environment fit (cf. French et al., 1974), which had emphasized the match between a particular personal need (e.g., an employee’s desire for a challenging job) and a corresponding environmental condition (e.g., the actual complexity of one’s job). At the same time, Kaplan offers a provocative critique and extension of the personal-control perspective on environmental design.

Little and Kaplan highlight the active and contemplative qualities of people and the environmental arrangements that support them. By contrast, the next two articles in this issue emphasize the behavioral and health costs of chronic exposure to nonsupportive, stressful situations. Baum, Fleming, and Davidson propose an important distinction

between two kinds of stressful events, namely, *natural disasters* and *technological catastrophes*. While much earlier research construed these events as functionally equivalent, Baum et al. offer evidence suggesting that their effects on emotional and physical well-being are quite different. Specifically, because technological catastrophes are associated not only with a *lack* of control but also with a *loss* of control over the human-made environment, their adverse effects on well-being are likely to be more severe and persistent than those resulting from exposure to natural disasters. Moreover, because many technological catastrophes, such as nuclear accidents and toxic spills, lack a clearly defined "low point" (at which the worst is presumed to be over), they are more likely than natural calamities to become a chronic source of distraction and threat to community members. So, although natural and technological disasters are both relatively uncontrollable, they differ on several other psychological dimensions (e.g., chronicity and ambiguity). Baum et al. point out that these dissimilarities between the two categories of events pose important implications for public policy. For instance, the kinds of health problems anticipated for these events are different; consequently, strategies for delivering public health services following natural and technological disasters should be differentiated as well.

The technological breakdowns described by Baum et al. exemplify what Campbell refers to as "ambient stressors." Ambient stressors are unpleasant environmental conditions (such as polluted air and waterways, traffic congestion and noise) that are pervasive throughout the community, of chronic duration, and relatively unyielding to individuals' efforts to modify or eliminate them. Campbell's analysis offers a valuable extension of earlier stress research, which has focused predominantly on acute environmental stressors (e.g., laboratory studies of high intensity noise and crowding) and on short-term coping processes, such as benign reappraisal of the situation or

instrumental efforts to eliminate or escape the stressor. By contrast, Campbell emphasizes chronic environmental stressors and offers a useful distinction between two categories of these stressors, namely, *daily hassles* (as conceptualized by Lazarus and Cohen, 1977) and *ambient stressors*. As compared with daily hassles, ambient stressors are more continuous in duration and less modifiable through individuals' coping efforts.

The unpleasantness, duration, and intractability of ambient stressors create unique adaptive challenges for the individuals exposed to them. Campbell suggests that ambient stressors are resistant to immediate instrumental or palliative coping strategies. Rather than reappraising the situation as benign, persons exposed to ambient stressors may search for compensatory benefits in their current life situation that make unpleasant environmental conditions more tolerable. For example, an individual may choose to tolerate long-distance commuting in order to maintain a desirable job and residential location. Thus, negative attitudes toward commuting constraints are maintained, yet are counterbalanced by compensatory benefits. Campbell's notion of "counterbalancing reappraisal" is a valuable contribution to the stress literature, for it emphasizes the individual's overall life situation as the context in which long-term coping and adaptive processes unfold and can be best understood.

The first four articles in this issue deal with psychological and behavioral concepts (e.g., personal projects, supportive environments, and ambient stressors) that have direct implications for environmental design and evaluation. In the final article, Weisman asks why it is that behavioral concepts and data are so infrequently and ineffectively utilized in the design and evaluation of environments. He examines several roots of this "application problem" including the typical split between researcher and practitioner roles, between knowledge and action, and between positivist research and alternative epistemologies. More impor-

tantly, researchers and designers lack an overarching, unifying perspective that, ideally, would serve to connect the typically separated phases of the research-design cycle—namely, behavioral studies, environmental programming, design, and postoccupancy evaluation.

In an effort to develop a more integrated approach to environmental research and design, Weisman draws upon Kurt Lewin's (1946) conception of "action research." Action research is a scientifically based process for solving community problems, involving an eclectic blend of diverse and, sometimes, unconventional methodologies, a large measure of citizen input concerning their environmental preferences and values, and several cycles of data collection and active intervention. Weisman contends that the tenets of action research are highly amenable to the integration of behavioral science, environmental programming, design, and evaluation. His article is useful, not only in emphasizing the importance of linking these previously isolated activities, but also in identifying specific programmatic guidelines for achieving a more coherent and effective field of environmental design research.

CURRENT THEMES AND DIRECTIONS OF ENVIRONMENT AND BEHAVIOR RESEARCH

Although the articles in this volume encompass a small number of substantive topics, they converge on some common themes and point toward certain general theoretical directions of the environment and behavior field. First, the five articles deal with relatively molar units of environment and behavior. In contrast to much earlier research that focused on people's short-term reactions to isolated conditions of the environment (e.g., architectural features, density, noise), the present analyses deal with spatially and temporally extended patterns of person-environment transaction. For instance, earlier research on personality and

environment concentrated heavily on the traits or enduring characteristics of individuals. Little's analysis of personal projects, however, treats individuals' dispositions (e.g., to pursue certain goals and activities) not as isolated and stable entities, but rather as part of a complex composite of activities, places, and time. Similarly, Kaplan's analysis of person-environment compatibility examines the dynamic interplay between different kinds of environments (e.g., uncontrollable, supportive, restorative settings) and crucial cognitive and behavioral processes that are encouraged or constrained by those environments. And Baum et al.'s and Campbell's analyses of people's efforts to cope with chronic environmental stressors move beyond the temporally restricted focus of earlier research on individuals' reactions to acute, short-term demands. Thus, the theoretical terms introduced in this volume are of relatively broad scope, in that they emphasize the complex interdependencies between people, environments, activities, and time, rather than focusing on any one of these components in isolation from the others.

The broad scope and transactional nature of the present analyses account for a second commonality among them, namely, their integration of concepts and methods from multiple research paradigms. This eclectic orientation is in sharp contrast to the "paradigm-specific" research of the 1970s, which focused on cognitive, behavioral, or evaluative dimensions of person-environment transaction while neglecting the linkages among these diverse processes (see Craik, 1977; Stokols, 1978). The current trend toward paradigm-merging is reflected in Little's integration of personality research with the concerns of environmental cognition, behavioral mapping, time-budget analysis, and stress. Similarly, Kaplan's analysis of environmental supportiveness combines several research paradigms, including environmental cognition, stress, and urban planning. Both Little and Kaplan ascribe equal importance to the analysis of human activity and the individual's cognitive representa-

tion of the environment in their respective theories. Furthermore, Weisman calls for more concerted efforts to integrate separate disciplinary perspectives as a prerequisite for establishing an action-oriented approach to environmental research and design.

A third common feature of the articles in this volume is their emphasis on taxonomic, descriptive theory. The major purpose of the authors is not to provide parsimonious, deductive theories of highly circumscribed phenomena (e.g., independent-dependent variable relationships), but rather to develop new concepts and methods for investigating previously neglected facets of person-environment transaction. Accordingly, Little introduces the concept of the personal project and offers a descriptive analysis of the various phases of project development and implementation. Kaplan draws distinctions between controllable, supportive, and restorative environments and discusses their different implications for behavior and well-being. Similarly, Baum et al. examine the distinguishing features of natural and technological disasters and discuss the policy implications of their proposed distinction. Campbell differentiates between acute stressors, daily hassles, and ambient stressors, and highlights the unique adaptive challenges resulting from chronic exposure to environmental problems. Finally, Weisman describes the barriers to effective integration that operate at each step of the research, programming, and design evaluation cycle.

The descriptive and taxonomic concerns addressed in each of the five articles reflect an important trend within the field as a whole—namely, increasing concern for the ecological validity of environment-behavior research (see Petrinovich, 1979; Winkel, forthcoming). Each analysis defines and classifies complex naturalistic events as a basis for gauging the cross-situational generality of theoretical concepts and empirical findings. Thus, Campbell's categorization of environmental stressors suggests that the coping strategies elicited by ambient and acute stressors are qualitatively distinct. And Baum et al. demonstrate the inade-

quacy of earlier research on natural disasters as a basis for predicting people's reactions to technological catastrophes. If the articles in this volume are at all representative of the field as a whole, then future research will continue to confront the complexity of person-environment transaction and to search for ecologically valid concepts and methods for describing that complexity.

In the preceding discussion, I have mentioned four theoretical themes that appear to be shared by the articles in this issue: (1) a concern with molar units of environment and behavior, and with spatially and temporally extended patterns of person-environment transaction; (2) a tendency toward paradigm-merging, or the integration of concepts and methods from multiple research paradigms; (3) an emphasis on taxonomic, descriptive theory as a basis for charting previously neglected facets of person-environment transaction; and (4) increasing concern for the ecological validity of environment and behavior research. All of these themes reflect general strategies of theory development and pertain to the form rather than the substantive focus of current and projected theoretical research. In the remaining discussion, I suggest three substantive issues that are likely to attract increasing theoretical attention among environment and behavior researchers and to influence the form and focus of future conceptual work.

First, the articles in this issue and elsewhere suggest that increasing emphasis will be given to the behavioral and health impacts of technological change (cf. Ittelson, 1980; Kling, 1980). Baum et al. contend that the rapid expansion of human technology is outrunning our capacity to control it. Campbell focuses on certain stressful by-products of technology (e.g., air pollution), and Kaplan emphasizes the psychological benefits of periodic retreats from the distractions of human-made environments to the tranquillity of restorative settings. Other researchers are investigating the psychological and social consequences of "computerization" in the workplace (e.g., Becker, 1981; Kling, 1980). Several additional issues remain to be explored, including

the role of cultural factors in mediating people's reactions to technological change and the developmental consequences of children's increasing exposure to computer technology in residential and educational settings.

A second direction for future theoretical work is the reconsideration and extension of earlier models of environmental controllability and well-being. Much previous research has focused on the benefits of enhanced personal control over the environment and the adverse consequences of exposure to uncontrollable situations. Yet the articles in this volume suggest that the concept of personal control offers an incomplete basis for designing supportive and humane environments (Kaplan), and that the benefits brought about by increased technological control over our surroundings may be short-lived and illusory, and fraught with potential threats to emotional and physical well-being (Baum et al.). Future conceptual and empirical work is likely to yield more differentiated and situation-specific formulations of environmental controllability and to offer more balanced accounts of the psychological costs and benefits associated with exposure to controllable and uncontrollable situations.

A third substantive focus for future research is the subjective representation of past and future environmental experiences by both individuals and groups (cf. Rowles, 1978; Stokols and Jacobi, forthcoming; Wapner, 1981). Several of the articles in this volume portray people as being concerned not only with the "here-and-now" of their immediate surroundings, but also with their past and anticipated environmental experiences. Little, for example, emphasizes the planning phases of project development. Kaplan regards opportunities for contemplation as a basic criterion of supportive environments and defines reflection as "a means of extracting information from the past and anticipating possibilities in the future." Campbell points out that people often tolerate chronic exposure to ambient stressors until they have acquired the resources to escape from them. Thus, she distinguishes between the "motiva-

tion to act now" and the "motivation to act later," and she notes that the postponement of instrumental coping efforts does not necessarily indicate reduced concern about the stressor. Finally, Weisman suggests that by adopting a broader temporal perspective, behavioral scientists and designers might be better able to achieve a more effective integration of their respective research, programming, and design evaluation efforts.

In conclusion, the articles presented in this volume offer several new insights into various facets of environment and behavior and, collectively, suggest certain common themes and emerging directions of the field as a whole. The fresh ideas presented in these articles reveal the vitality of current theoretical approaches to the study of environment and behavior, and they provide a firm foundation for further conceptual and empirical progress.

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