

Health and environment: A psychological analysis

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Abstract

Anticipated health outcomes are proposed as a useful guide to environmental decision making. While environmental intangibles have been little studied in this way, there have been numerous studies documenting the impact of psychological variables on health. These psychological variables, in turn, can be shown to be impacted by environmental decisions. The environmental implications of these psychology and health studies may not, however, be immediately obvious. Making the link seems best achieved as a two step process. First, the psychology and health data must be placed in a conceptual framework, then the analysis, in terms of environmental implications, follows far more directly.

Three constructs are proposed as the basis of the required conceptual framework. Conceptual Clarity deals with information and how well it is understood. Human Effectiveness brings together various factors that influence an individual's ability to analyze situations, comprehend issues, and plan in a reasonable fashion. Willingness to Take Action is an expression of an individual's rejection of helplessness in favor of instrumental action. All of these constructs have been shown to impact health outcomes.

This framework underscores the significance of a number of themes that are familiar to planners, yet often ignored. For example, Legibility and Coherence are essential components of environments that are supportive of humans as they attempt to meet their needs and carry out their purposes. Nature, too, was once more revered than it is now; however, considerable research indicates that natural environments are particularly effective in restoring people's capacity to function effectively. There are both theoretical and empirical grounds for believing that enhanced health and well-being will result from paying greater attention to concepts such as these in design, planning and management.

Introduction

Planning is intended to be a process of organizing human activities in the best interests of human welfare. Lofty and noble as this goal is, its realization depends on the thorny problem of conceptualizing human welfare. That is the central issue addressed in this paper. Our approach is based on viewing human welfare as an active process; not something one gives the public, but rather something one can help make possible. In developing this approach, we focus on mental and physical health before broadening our concern to topics more traditionally of concern to planners. This makes it possible to bring to bear an extensive psychological literature for developing a broad con-

ceptualization of human welfare. Then, in the final section of the paper, we remind the designer and planner of some familiar themes that can be dusted off and returned to good standing as vital elements of an environment that fosters both better health and enhanced human welfare in general.

The paper begins, then, with three pivotal concepts that have been shown to be related to health and well-being. The first of these, Human Effectiveness, refers to the capacity to perceive and think reasonably and effectively. Cognitive Clarity, the second construct, is the psychological correlate of the knowledge appropriate to a given situation. It refers to the awareness of alternatives and the absence of confusion. The third psychological construct, Willingness to Take Action, represents the opposite of helplessness. There is a research lit-

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erature related to each of these concepts that helps to make the case for their importance and their role in promoting health. Fascinating as some of these studies are, they have not been brought together in a conceptually useful framework, and only rarely have they been tied to issues in planning.

Human Effectiveness

The first of these constructs, Human Effectiveness, refers to an essential human capability, namely the capacity to employ one's mental faculties effectively. It includes the capacity to focus, to organize, to make sense out of one's situation. Contemplation and reflection, as well as making plans and decisions about important life issues, are all expressions of this construct.

The centrality of comprehension, of making sense of one's experience and the world around one, is a basic human concern. This is illustrated by the continuing power of myth and fable, as well as by the pivotal role of this issue in religion and culture (Laszlo, 1977). The strength of this concern is strikingly evident in the health context, where maintaining a coherent framework is in some instances achieved through distortions of reality. Despite their lack of complete accuracy, these heroic efforts, sometimes referred to as 'positive denial' and 'healthy illusions,' lead to positive health outcomes (Lazarus, 1979; Taylor, 1989).

The antecedents of Human Effectiveness

There are three antecedents to Human Effectiveness so central that they might be considered a part of a larger 'Effectiveness Cluster'. These are Positive Approach, Connectedness, and Attention Restoration. Each contributes in important ways to the competent and adaptive state of mind that we have called Human Effectiveness. Each contributes to health outcomes in its own right.

Positive Approach reflects a hopeful stance,

and shows itself in terms of positive emotions and optimistic expectations. At least three components are subsumed by this concept: (a) current affective tone; (b) the positive or negative glasses through which the future is viewed; (c) the individual's self-esteem. Each of these components bears a demonstrable relationship to good health. The thwarting of one or more is associated with morbidity and mortality. There is considerable agreement in the research literature that negative thoughts and feelings are associated with poor health (Friedman and Booth-Kewley, 1987). Comparably, positive thoughts and positive feelings appear to enhance physical well-being (e.g. Lazarus, 1979; Taylor, 1989).

Connectedness entails social isolation versus connection with others. The connectedness versus isolation dimension, here construed in the broadest sense, concerns relationships not only with friends, relatives, and neighbors, but also with other living things (e.g. pets) or even to a larger system of things such as wilderness or even nature as a whole. It refers to relationships in groups where an individual can feel needed. It includes a relationship to people in an abstract sense — as a scientist works to help humanity at large. It refers to the linkage to culturally created belief systems, and through them to a larger universe (Antonovsky, 1987). Perhaps it is ironic that one of the best ways to achieve Connectedness is by belonging to a small group. Students in a small high school were more apt to be involved in activities than those in a large school (Barker and Gump, 1964). They felt more needed, probably because indeed they were. We would further expect students in small schools to be healthier than their counterparts in larger schools because they feel more connected.

Attention Restoration is, at least in the modern world, a vital component of Human Effectiveness. From the perspective of Attention Restoration Theory (Kaplan and Kaplan, 1989; Kaplan et al., 1993), dealing with confusion and chaos, focusing despite distraction,

and in general, prolonged mental effort leads to Directed Attention Fatigue (DAF). Although not identified by that name, the experience of DAF is a familiar one. Any one who has worked intensely on a project and subsequently found themselves in a state of mental exhaustion has experienced DAF. The typical state of mind of students at the end of a semester is another familiar example. It should be noted that even a thoroughly enjoyable project, if sufficiently intense and prolonged, is likely to lead to DAF. While stressful circumstances can lead to DAF, stress is by no means a necessary antecedent.

Many projects lead to only mild cases of DAF. In its more severe manifestations, however, its impact on quality of life and capacity to function can be disastrous. Symptoms can include distractibility, impatience, irritability, and an inclination to take unnecessary risks. In addition, there is typically an impaired capacity to reason and to plan.

According to Attention Restoration Theory, recovery from DAF is most effectively achieved in what are called 'restorative environments'. Any environment that gives a sense of being away, has substantial extent, is sufficiently fascinating, and is compatible with the purposes and inclinations of the individual, can be restorative. In general, natural environments have shown themselves to be particularly restorative (Kaplan and Kaplan, 1989).

The most direct evidence for this hypothesis comes from the work of Cimprich (1990), who studied recovering cancer patients. Members of the intervention group, who engaged in at least three restorative activities of at least 20 min per week, showed superior recovery relative to a control group.

Cognitive Clarity

This construct refers to a state of mind in which an individual has the knowledge of alternatives and the mental focus necessary to know what to do. Lacking Cognitive Clarity can

be intensely uncomfortable; people dislike being confused and will avoid circumstances marked by confusion in the past. This tends to narrow their range of opportunities, as well as reducing their contact with opportunities to learn and to extend their horizons. Another important consequence of a failure of Clarity is the tendency to avoid decisions about which one is unclear (Kaplan, 1991). Thus, Cognitive Clarity (or its absence) plays a central role in an individual's Willingness to Take Action, a theme we discuss in the next section.

The significance of Cognitive Clarity in terms of health has been impressively demonstrated in studies of how people cope with undesirable life experiences (Silver and Wortman, 1980). Putting their experience into some sort of understandable form is a matter of highest priority for victims of trauma. Those who blame themselves for their misfortune may recover more rapidly and fully — a striking illustration of the adaptive advantage of achieving an understandable (although not necessarily correct) interpretation of a difficult to manage experience.

Willingness to Take Action

This construct, as its name implies, suggests the opposite of passivity, of simply accepting the circumstances in which one finds oneself. Willingness to Take Action has an important instrumental role in health. It is essential in obtaining the necessary information and care to deal with matters of illness and the prevention of illness. However, its role is even greater than that would imply. Willingness to Take Action is the opposite of helplessness, and helplessness, in turn, has a major effective impact on an individual's life. Helplessness, in fact, is emotionally corrosive; it has repeatedly been shown to be a negative factor in health (Visintainer et al., 1982; Laudenslager et al., 1983; Bandura, 1987).

While taking action has enormous psychological and instrumental significance, it would

be a mistake to overestimate its effectiveness. One can change, manage, or modify settings in order to make good things more likely to happen, but one can rarely force them to happen. Peterson et al. (1989), for example, showed that optimistic individuals were more likely than their pessimistic counterparts to take active steps in order to feel better in the wake of colds or the flu. They rested, ingested fluids, and visited doctors. However, none of these active steps had a demonstrable effect on their immediate well-being. They recovered just as quickly or slowly as did pessimistic individuals who in no way attempted to hasten the process. We presume that in the long run and on average, health-promoting behaviors such as those undertaken by optimists, do prove healthful (Belloc and Breslow, 1972; Belloc, 1973). The point there is that they contain no guarantees.

While the Willingness to Take Action factor is in many respects similar to the personal control concept (Peterson and Stunkard, 1989), and subsumes much of this literature, the notion of 'control' seems too restrictive. Certainly, instrumental activities stand in sharp contrast to passivity or helplessness, but they may not literally control desirable outcomes. Indeed, the frequent use of the term 'control' in the psychological literature can be misleading. Often 'prediction' or 'participation' or even 'in control' would be more appropriate descriptions. For a more extensive discussion of these distinctions, see Kaplan and Kaplan (1982).

The constructs as part of a larger system

Each of the three psychological constructs is supported by different data that relate to health outcomes. While it is useful to present these constructs as conceptually distinct, there are important links among them (Fig. 1). Clarity's impact on Effectiveness can be readily seen when considering the effect of confusion, the opposite of Clarity, which is costly with re-

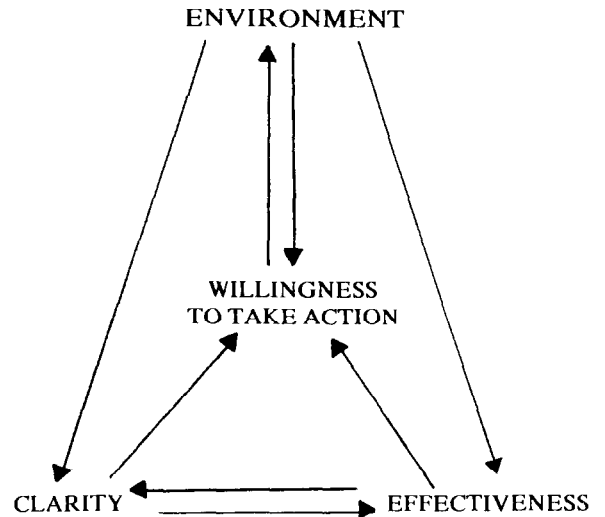


Fig. 1. System of health-related psychological constructs and their inter-relations with the environment.

spect to the very mental resources entailed in Effectiveness. However, the higher one's Effectiveness, the more readily one can achieve Clarity, even in what might otherwise be a confusing situation.

Both Cognitive Clarity and Effectiveness influence Willingness to Take Action. The greater one's level of effectiveness and the more clear one is with respect to what one is doing, the more willing one is to take action. While Willingness to Take Action does not have a direct impact on either Effectiveness or Cognitive Clarity, its role is not secondary. On the contrary, it is through Willingness to Take Action that the individual influences the environment. Making changes in one's environment, or leaving for a different environment, both depend on this construct. The next section will focus on the ways in which the environment, in turn, affects each of the three constructs.

The link to environment

The purpose of this paper is not to introduce new techniques or concepts in design and planning, but to fortify some old ones. By sharpening the focus on human benefits, the analy-

sis in terms of fostering health can remind the practitioner of the importance of familiar but often neglected themes. It can also provide a basis for justification of this emphasis if such is called for.

The familiar themes we are referring to are those that have been raised by designers and planners such as Frederick Law Olmsted, Christopher Alexander, and Kevin Lynch, all insightful thinkers sensitive to humans and their peculiar requirements. These themes have also been central concerns of the environment and behavior movement. Implicit in this work is a tendency to view humans not as rational maximizers, but as creatures very much dependent on their environment, as capable of decent and effective behavior when the environment is appropriate to their requirements. There is a concern, in other words, to understand what sort of environment would be supportive of people, what sort of environment would allow the needs of people to be met and their purposes to be carried out.

Supportive environments

The idea of an environment supportive of people provides a useful framework for reminding practitioners of some of these familiar but neglected themes. While it is possible to identify a number of different components of supportiveness (S. Kaplan, 1983), for present purposes we propose to focus on just two components, Legibility and Coherence.

Legibility

People depend on information to make sense of their environment, to make appropriate decisions, and to pursue their purposes. One form of information is the landmarks and other structural elements in the environment that permit people to find their way, to remain oriented to their physical setting without undue effort. Wayfinding is, fortunately, a topic well represented in the environment and behavior literature. We now know enough to enhance the

legibility of the built environment considerably, given that the importance of this concern is kept in mind (Evans, 1980; Golledge, 1987).

People also need to be able to find their way in the social and institutional structures they have to deal with, where the availability of information is often limited. Opportunities to facilitate navigation through such structures abound. Parr (1978) argued persuasively for a city structured in such a way as to provide its citizens, and especially its children, with opportunities to observe and comprehend how the work of the city is done. Wurman (1978) pointed out how central information is to functioning in the city, and often how difficult it is to obtain.

Coherence

While having the information that one needs is essential, by itself this is not enough. If it is a constant struggle to find it, or if one is repeatedly pulled away by more striking but useless information, one's effectiveness is undermined. Advertising is notorious for its insistent use of our attention against ourselves, for its cacophony of unhelpful but irresistible messages (Midgley, 1978). Visual blight, although not intentionally undermining, has a similar effect.

The classic study of Appleyard and Lintell (1972) demonstrated the impact of distraction (in this case, traffic) on the community fabric. Comparably, Cohen et al. (1980) found that grade school children exposed daily to aircraft noise were impaired in problem solving, attention, and persistence on a task. They also found that the longer the child had been going to school under these distracting conditions, the greater the impairment.

While coherence is a familiar design principle, it is often restricted to the scale of a single building or park. Several European countries have found ingenious ways to extend coherence to a larger scale. In Verschoten, Netherlands, this is achieved through town planning regulations (Prak, 1977). In the canton of

Vaud in Switzerland, community design review boards achieve a similar end through rather different means (Bufford, 1976).

Restorative environments

Supportive environments are important, but by themselves they are not enough. Despite the existence of settings that are favorable to human health and functioning, untoward events will continue to occur. Disease, accident, and loss will continue to take a heavy toll on the human spirit. Less dramatic circumstances such as confusion, distraction, and overwork, will also take their toll. All of these forces impact on Human Effectiveness, leaving the individual less capable of sustaining Clarity and of taking effective action. A possible consequence of such events is a downward spiral, a loss of equilibrium that may not be easy to correct. Restorative environments can play a useful role in helping to mitigate such a costly and damaging outcome.

In principle, there are many kinds of restorative environments. In fact, the overwhelming conclusion of the research carried out to date points to the pivotal role of natural environments in restorative experiences (Kaplan and Kaplan, 1989; Cimprich, 1990; Canin, 1991). The natural environment involved can range from the grand and remote to the modest and local. There are times when a street tree, vacant lot or vest pocket park can play a role as important as that of dramatic, distant settings that a given individual visits only rarely (R. Kaplan, 1983). Here too, the emphasis is not how to incorporate nature, but the importance of doing it. Planners are familiar with the many tools for preserving land and bringing the public to it, among them transferable development rights, land trusts and land banks, and rail to trail conversions. Far greater sensitivity to the importance and potential of the urban forest has been displayed by the Forest Service and other agencies in recent years. Industrial sites are beginning to incorporate wildlife hab-

itat. Wasted nooks and crannies abound in the urban setting. These could be converted to islands of natural beauty, although designers and planners have not been quick to recognize this as a priority.

One of the more painful themes in the human quest for restorative environments is the pattern initiated by the migration to agricultural land or to quaint rural villages. Repeatedly the development that follows these migrations has led to the loss of a once restorative setting. As a local citizen once observed, "These people are destroying what they came for." Such misfortunes are avoidable, Sullivan (1991), for example, has demonstrated how both agricultural landscapes and resident preferences can be preserved through design and planning ingenuity.

Conclusion

So called 'rational decision making' that focuses on the maximization of apparent gain has been shown repeatedly to lead to unfortunate consequences (Daly and Cobb, 1989; Kaplan, 1993). From the short range gains that have produced long range costs, to the critique of the American landscape as "God's Own Junkyard" (Blake, 1964), the rationality model has encouraged exploitation of the land while at the same time discouraging sensitivity to human needs. It is now becoming clear that among the costs of this superficially responsive approach to decision making are impacts on community, on Effectiveness, and on a multitude of other valued aspects of human life. Human health can now be added to this list. Perhaps this addition will attract the necessary attention and needed legal clout to enable designers and planners to do what many of them have long suspected was better for the environment and its inhabitants.

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