

URBAN FORESTRY AND THE WORKPLACE

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The role of the urban forest in the context of the workplace has been largely neglected in the empirical literature. Yet the majority of daytime hours for many people are spent at work. Two studies reported here show that nearby nature, even when only viewed from the window, has a substantial beneficial effect in the work setting, affecting job satisfaction and well-being.

The importance of the urban forest to people's well-being has been shown in a variety of contexts, generally related to leisure pursuits. That the natural setting plays a significant role in recreational activities has been consistently documented for people of diverse ages, ethnicities, backgrounds, and recreational preferences.

By contrast, the role of the urban forest in the context of the work environment has received little, if any, empirical attention. That is not to say, however, that issues of well-being, in terms of both physical and mental health, have been ignored in the work setting. Quite on the contrary, employers have increasingly acknowledged that productivity is not simply a function of pay rate. Although many factors are recognized among the intangibles that foster well-being, the role of the natural environment seems to be largely ignored.

The purpose of this paper is to bring these two themes together: the role that the nearby natural environment can play in the context of the work setting. In particular, the emphasis here is on the opportunities to see nature, without necessarily being in it. Two studies related to the view from the window constitute initial efforts to explore the potential importance of contact with nature.

Background

Three domains are germane as context for the present studies, though none will receive extensive discussion. The first, a brief review of factors that enhance the well-being of the workforce, shows that considerable cost and effort is expended on employee health. The second involves a brief summary of the literature on the view from the window. Lastly, an overview of why the availability of views of nature might play such an important role is discussed in the section on attentional fatigue.

Enhancing Workplace Well-being

Wellness programs have become commonplace, especially among employers with a relatively large work force. The nature of such health-promoting programs varies widely. They generally emphasize lifestyle changes related to nutrition, weight loss and control, smoking cessation, and

fitness, as well as educational approaches to reduce hypertension, cholesterol, substance abuse, and stress (Adams, 1988; Smith, Haight & Everly, 1986). It is no longer unusual for larger companies to have on-site fitness facilities for use of employees and their families.

Illness-related costs incurred by American industry have been of such magnitude that the expenditure of corporate dollars on efforts to increase wellness have been justified as cost-effective (e.g., Aberth, 1986; Adams, 1988; Caldwell, 1992; Cooper, 1990; Whitmer, 1992). At the same time, however, others express doubt about such claims, arguing that it is difficult to get the evidence, that participation rates are low, and that the promoters of such programs may have an entrepreneurial interest in their success (e.g., Chenoweth, 1990; Chovil & Altekruze, 1986; Shepard, 1989; Sloan & Gruman, 1988).

Whether or not the programs lead to financial savings, a broad range of benefits are attributed to them. These include corporate morale, confidence in the organization, recruiting and retention of personnel, and substantial improvements in the health and well-being of the workforce (Shepard, 1989; Sloan & Gruman, 1988; Smith, 1990; Sperry, 1984).

In addition to wellness programs, numerous other approaches to enhancing working conditions have been receiving considerable attention. The computerization of the office has led to numerous new health-related issues and these, in turn, have led to increased attention to furniture ergonomics. Issues of air quality, noise, and lighting are also among the environmental factors that receive considerable attention in the workplace context (Sperry, 1984).

The costs of employee health and satisfaction thus go far beyond salary and traditional fringe benefits. Competition for employees includes many factors other than pay scale, fringe benefit packages, and availability of fitness facilities. Yet despite the proliferation of the range of intangibles considered in the job context, the domain of the natural environment remains a striking omission.

Windows and Well-being

Consider the choice between two jobs that are basically equivalent. They are of equal and good pay, both provide excellent fitness facilities at the workplace, are generous in access to stress management workshops, and the furnishings are the best available. At one of the jobs the workstation is in a windowless cubicle. The workstation at the other job is in front of a window with trees outside. Would that relatively minor difference between the jobs matter?

The research literature has documented the importance of windows, or the view out, in a variety of settings. Two studies in the prison context (Moore, 1981; West, 1986) have shown that the use of health services is significantly lower on the part of prisoners with views of the larger natural world. In the hospital setting, patients recovering from surgery (Ulrich, 1984) and those in long-term rehabilitation (Verderber, 1986) have been shown to do better if they have a

window and a view.

Studies in the residential setting (Kaplan, 1985; Talbot & Kaplan, 1991) have found greater satisfaction with the neighborhood when people can look out onto more natural, rather than more built, settings.

Comparable research in the work setting seems to be grossly lacking. Farrenkopf and Roth (1980) reported that half their sample of 150 faculty members at two universities had windowed offices and that those with higher academic rank had significantly more windows. Male faculty also had substantially more windows than females (means of 1.4 and .5, respectively). Finnegan and Solomon (1981) found job satisfaction and work attitudes were significantly related to the presence of windows for their sample of 123 office workers and health care providers. Whether the view from the window is of nature or other buildings is not discussed in either study. Clearly there is need for more work in this area. Wouldn't it be interesting to determine whether the offices of executives are more often on higher floors with more distant and encompassing views? Does a workout during the lunch hour make up for the lack of a view from the workstation?

Attentional Fatigue

Some jobs are boring, some are stressful, some are demanding, some are even enjoyable. In all cases, however, there is the likelihood of sustained effort, of focusing attention on the tasks that constitute one's work. For many individuals whose jobs are largely sedentary, the fatigue that mounts in the course of the workday is the result of such continuous demands on their attention. It is a *mental* fatigue. It expresses itself in a variety of ways ranging from making small errors to major mistakes, from being annoyed with fellow workers to being irritable and socially irresponsible. In other words, the decline of attentional capacity reduces both one's competence and one's cooperativeness.

The need for longer breaks, the welcome of the end of the workday or shift, the TGIF greetings, all reflect the anticipated contrast between the demands of the work setting and the different conditions outside of work. In addition to these more substantial units of time that permit longer restorative opportunities, much shorter respites may also offset the mental fatigue. Thus the immediate setting of one's work can be a source "microrestorative" opportunities.

Based on our previous work and the restorative framework we have proposed (Kaplan & Kaplan, 1989), it seemed reasonable to expect that contact with nature at the workplace would have beneficial consequences. "Nature" in this context might involve the availability of a view of trees and shrubs, or even grass; it might involve indoor plants, one's own or those provided by the employer; it might even involve nature imagery, photos, posters, or craft objects. The focus of the studies discussed here is on the opportunities to see the natural world from one's work site and how these might express themselves with respect to employees' reported well-being.

Study One

Our initial effort (Kaplan, Talbot & Kaplan, 1988) involved one large corporation and two public agencies, including a total of 168 employees. The majority of the participants were desk workers, with 55 having no view to the outside or views which included no natural elements and 60 who could see natural elements from their work place. There were 48 participants whose jobs were mostly outdoors in natural settings (e.g., parks and recreation maintenance). Participation in the study was voluntary and anonymous with survey forms available to those who wished to respond. There is thus no way to determine a response rate nor can we assume a random sample.

The cover page of the six-page survey instrument, titled "Job Pressures Research Project," explained that the study is "an attempt to understand both the pressures people face and how they deal with them." Most of the questions entailed five-point rating scales (not at all ... a great deal). The survey asked about perceived job stresses, perceived effectiveness of various restorative opportunities, life satisfaction, physical health, and about some job setting characteristics.

Results

The participants whose work was mostly outdoors had clearly different responses from those with desk jobs. They indicated that their job was significantly less demanding, and they felt less pressured, less frustrated, and less harried. Since the nature of their jobs is distinctly different, it is impossible to determine whether these reported differences are directly attributable to being outdoors, in the natural environment, or a function of other job characteristics.

The comparison between the participants with relatively similar jobs (i.e., desk jobs), but whose access to nature in their view differed, is perhaps more useful. Here the results indicated fewer reported ailments for the individuals whose view included nature [$t(100)=1.99, p<.05$]. Those with nature in the view checked an average of 2.45 ailments (from a list of 11) as ones they have had in the last six months. For the employees without access to nature in their view the mean was 3.02.

The survey for the two public agencies included, at their request, a single item related to overall job satisfaction. The comparison based on availability of nature in the view for individuals with desk jobs at these two agencies showed a significant difference on this item [$t(34)=2.07, p<.05$], with satisfaction higher for those who could see nature elements.

Study Two

The 615 participants in the second study all had relatively sedentary jobs, though these represented a wide spectrum in terms of job classification and pay grade. The sample consisted mostly of women (92%) and ranged widely in terms of age and how long they had worked for the current employer.

The survey was sent to a random sample of 1,000, using the organization's internal mailing system. As a result no return address could be used on the envelopes and undeliverable surveys could not be returned. Given the normal turnover of employees, it is reasonable to estimate that as many as 10% of the surveys did not reach the addressed person. Thus the exact return rate cannot be calculated.

The cover letter began with "Hassles are a part of life." It indicated that the project is about "daily hassles and their costs, as well as exploring ways that help people recover from their effects. In particular, the study involves seeing whether plants and nature can be helpful in this process." Participants were assured of anonymity and complete confidentiality. Return envelopes were provided so that no one in the organization had access to responses, although the Personnel Department had approved of the study and cooperated in providing access to employees.

The five-page survey included questions on health, psychological functioning, life satisfaction, job environment, satisfaction with job and its setting, recreational activities and home setting, as well as demographic questions.

With respect to the central question here, the view from work, participants were asked about the difficulty of seeing outside and their likelihood of doing so. In addition, a checklist was provided of potential features that could be seen out the window. These were categorized subsequently as "built" (street, parking lot, other buildings) or "natural" (trees/bushes, grass, flowers). There were also questions on the satisfaction with the view from the workplace and satisfaction with the opportunity to look out and on whether the view was restorative.

Results

Not surprisingly, the ratings of satisfaction with the view and the opportunity to look out were strongly related to the ease of doing so. But what could be seen out the window made a big difference. There was no difference in "Satisfaction with View" (a scale comprised of 3 items) between respondents who could see more or fewer built elements. Nor did seeing other buildings, streets, or parking lots contribute to the restorativeness of the view. The availability of nature in the view, however, strongly affected these satisfaction and restorative ratings. For example, the mean for the rating of Satisfaction with View for those with no opportunity to see nature was 2.22, while for those with even a minimum amount of nature in their view the mean was 2.91. If the view included two or three of the listed natural elements, the respective means were substantially greater, 3.40 and 3.58, [$F(3,525)=29.07, p<.001$].

The availability of a view and having natural elements in the viewshed similarly influenced other aspects of satisfaction with the work setting, even with respect to conditions that are not directly impacted by having a window nearby. For example, satisfaction with visual privacy from co-workers, having control over the privacy, and a sufficiently quiet setting (a scale named "Privacy") was strongly affected by the

likelihood of looking out. Satisfaction with opportunities to personalize one's work area showed a similar pattern of responses.

The degree to which participants were satisfied with the opportunity to see out, to personalize their work area, and to have privacy were, in turn, important predictors of several aspects of their work and life satisfaction. Focusing on the Satisfaction with view, in particular, Table 1 itemizes some of these significant relationships and provides a few sample items for the multi-item scales. These results point to the range of impacts that a view of nature can affect. Those with a view of nature felt less frustrated and more patient, found their job more challenging, expressed greater enthusiasm for it, and reported higher life satisfaction as well as overall health. Even though the data are all based on self-report, the employee's perception of her own enthusiasm about the job is, after all, a vital aspect of well-being.

Table 1. Relation of Satisfaction with View to outcome measures (including sample items for scales).

Variable (items)	# items	F	df	p
Job Challenge (e.g., amount of work you have to do, how interesting job is, how hard work is, how busy you are usually)	8	20.12	2,607	.001
Frustrated (How frustrated you feel)	1	5.27	2,598	.01
Task Enthusiasm (e.g., enjoy getting really involved in a task, feel invigorated and excited about what you're doing)	7	12.82	2,605	.001
Patient (Being patient with others)	1	7.69	2,605	.001
Life Satisfaction (e.g., my life is interesting and challenging, happy with my daily activities, have lots of opportunities)	5	6.86	2,605	.001
General Health (e.g., +rate health in general, -bad headaches, -feel that you are ill)	9	3.74	2,605	.05

Clearly many other environmental factors can affect people's job satisfaction and work attitudes. The data, however, did not yield equivalently strong outcomes for many other potential sources of satisfaction. Satisfaction with indoor plants, for example, had a far weaker relationship to these outcome variables. By contrast, it is worth noting that the perceived adequacy of the immediate natural environment in the home context was a more powerful predictor, especially of health measures.

While the survey relied heavily on rating scales, many participants added comments. The most common theme for these comments was windows. The lack of windows received much complaint (e.g., "A window would improve all aspects of work and my work situation") and the presence of windows was often noted enthusiastically (e.g., "My window is one of the greatest advantages of the position").

Conclusions and Implications

The results corroborate previous work on the importance of windows. Windows are a source of light, of sunshine, of information about the weather, and about other happenings in the world outside. They provide a suggestion of the extension of where one is in time and space.

The results of both studies, however, suggest that given the availability of a window, it also matters what can be seen. If all that can be seen are built elements, even if they do not obstruct the natural light or reduce access to the world beyond, the psychological benefits are not fostered. On the other hand, the nearby nature that seems to make such a strong difference, need not involve more than a few trees, some landscaping, some signs of vegetation. In fact, the presence of other buildings or parking lots does not seem to be a problem, as long as the natural world is there too. Given these results, it is not surprising that Heerwagen and Orians (1986) found that individuals in windowless offices resorted to decorating their walls with visual materials dominated by nature themes.

Whether one can place a dollar value on the view from work in terms of work productivity is an unanswered question. The same can be said about many other factors that employers have become willing to support. Stress management workshops, good fringe benefit packages, access to fitness facilities, education about nutrition, and programs that address substance abuse all play important roles in the work context without a clear and direct link to productivity.

While these may all contribute to job satisfaction and improve the employees' outlook, there are important differences between the opportunity to view nature and many of the other factors. The immediate setting where one works confronts one continuously. One's ability to maintain a train of thought, to remain composed and civilized in the face of constant interruption and annoyances, may be much more at the mercy of the microenvironment of one's workstation. Opportunities to exercise and to take breaks from one's desk or workstation are doubtless of great importance. It is likely, however, that microrestorative opportunities play a particularly important role in reducing attentional fatigue.

To be able to glance up from one's work and experience bits of nature is likely to be helpful. The results suggest, however, that the nature seen out the window may be even more effective than the nature represented by pictures on the wall or by indoor plants. Why this should be the case cannot be determined from these studies. The implications, however, are relatively straightforward.

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