
Environmental Psychology

(A tool for holistic management)

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Abstract

In today's era when every body is talking about employee satisfaction, retention and total quality management, *Environmental Psychology*, if used appropriately can be considered as strong supporting tool in this direction. Environmental psychology is an applied field, which takes care of human behaviour and its 'psyche' for moulding it in favour of development and holistic management of the organisation. We often see that few places are very much comfortable to us and others are somewhat Threatening. Few places give us a boost and mental peace but few create a downfall in our energy level. Why is it happening? It is all because humans react both consciously and unconsciously to the surroundings in which they live and work. Their environment, whether it is natural or manmade, has a profound effect on feeling, behavior, general health and productivity.

Environmental Psychology is an applied area of psychology, which focuses on investigation of the inter-relationships between the physical environment (physical and man-made) and its impact on human behavior. Though it is a relevant and old discipline still it lacks the appropriate conceptualization in the most of the organizations. The practitioners of management have always neglected use of this important field of psychology. In order to understand this discipline better let us dissociate the term.

ENVIRONMENT: environment is the collection of the *natural environment* comprising of all living and non living things that occur naturally on earth. The *Built environment* refers to the manmade surroundings that provide the setting for human activity, from the largest scale civic surroundings to the smallest personal scale.

PSYCHOLOGY: is an applied field involving the study of mind, brain and behavior, both human and non-human. *Psyche (soul or mind) +logos (speech)*

So **Environmental Psychology** studies the relationship between environment and human behavior as well as how they affect one another. No matter in what form or category people are associated with environment they always tend to seek out places where they can feel full of peace, competence, confidence and happiness, where they can make senses of the environment while also being engaged with it. Environmental psychologist by assessing and analyzing the perceptual cognitive maps can try to find out or try to restructure the surroundings, which can increase the positive effects and decrease the negative ones. Now what are *cognitive maps*? Every human being has images of the natural and built environment, these images or information is being stored in the brain as spatial networks called cognitive maps. These structures link one's recall of experiences with perception of present events, ideas and emotions.

Barker and Wright where they tried to study the ordinary people engage the concept of environmental psychology started in 1950 in the daily affairs of life in relation to natural context. From there till now it was a long journey for this field, one of the researches has shown that there is a clear relationship between how people view the area they work in and there productivity level on the job. One little change, such as bringing art into office can affect employees

quite positively. The focus of this article is to understanding the impact of environmental psychology on work places.

The goal of bringing environmental psychology into workplace is to reduce stress, create better attitude, enhance employee's commitment and promote increased morale. Although there are so many aspects that can be considered for this purpose but the following aspects have been chosen in view of their relative importance:

I: ARCHITECTURE

People spend more than 90% of their lives within the buildings. If these buildings are not designed and constructed appropriately, it can lead to imbalance of environmental demands and human resources, which creates stress (Zimring, 1982). Environmental Psychology has conquered one whole architectural genre, any commercial venue where the power to manipulate the mood and behavior of people whether they are costumers or employees working for you, places like retail stores, stadiums, casinos, malls, offices and now airports also can be designed accordingly to create a positive impact.

Building designs and decors speak surprisingly in minds of people like:

Too much have *COMPLEXITY* (degree of variety and diversity) and *MYSTERY* (promise of further information with continued exploration) makes interiors confusing and unanalyzable. Highly ambiguous spaces, conflicting elements or abrupt shifts in size, color, texture can heighten stress because people cannot make sense out of them (Kalpan & Kalpan, 1982).

MISAFFORDANCE (unable ness to readily discern the functional properties of space or incorrectly gauged building or technological functions) often happens when corners, entryways and stairs are sometimes designed in such a way that little is discernable about impending space until one has crossed the barrier and technology used in buildings of such type with which users are not friendly like lifts, washers, electronic doors etc. At the same time if clues provided to use such things are vague or conflicting then things become worse. In such cases human reactions are likely to encompass frustration,

annoyance and occurrence of even hostility or helplessness. Many accidents in buildings are also attributable to the misaffordance (Heft, 1997, Archea, 1985, Norman, 1989).

Physical constraints, flexibility responsiveness, privacy, spatial syntax, defensiveness space and certain symbolic elements are key design concepts salient to *CONTROL* and prolonged experiences with uncontrollable environmental conditions have also been associated with learned helplessness. Helplessness in turn is clearly related to psychological distress and may be further associated with physical diseases also (Evans & Cohen, 1987; Peteson et al, 1993).

The extent to which spaces are interconnected via doorways and passages, furniture arrangements can directly affect social interaction potential which in turn has a great impact on total productivity and degree of comfort of people (Zeisal, 1981; Sommer, 1969). If we talk about furniture arrangements it can be clubbed into two types:

- a) *Sociopetal furniture arrangements*: this encourages interaction by moveable components, provision of comfortable interpersonal distances, ease of eye contact, and physical comfort during conversation.
- b) *Sociofugal arrangements*: are inflexible and that orient people in space so that eye contact is difficult or interpersonal distances that are inappropriately close or far have opposite effect, discouraging social interaction.

Good surveillance opportunities, clearly delineated and visibly marked boundaries, semipublic spaces and smaller, subunit of large living complexes can all enhance feeling of *TERRITORIALITY* which enables to regulate use and occupancy of spaces, enhances the expression of personal or group identity and ultimately increases the level of satisfaction (Brown, 1987; Taylor, 1988).

Generally confusion about use and dislike about décor and designs arise when the user and designer's respective mental model do not coincide. It's better to think from the user's point of view and then try to match it with latest technologies or designs. Other than that *LEGIBILITY* in interiors can be enhanced

by regular geometric building shapes, good signage and providing visual cues about progression towards goal points (Wiesman, 1982; Garling et al, 1986). Appropriate mixture of Intensity, Variety, Complexity, Mystery and Novelty can create wonders to human psychology.

II: LIGHTING AND WINDOWS:

Research on the influence of lighting on performance has emphasized the intensity or brightness of light and visibility of details. Improvement in lighting showed an increase in satisfaction with the environment. People feel satisfied at 37 foot candles intensity (400 lux), very satisfactory at 74 foot candles (800 lux) and start complaining at 102 foot candles intensity because excessive light create glare which in turn causes annoyance in eyes, discomfort, or loss in visual performance which ultimately becomes a cause of dissatisfaction. Moreover sharp intensity or bright light could distract the attention of eyes ultimately concentration level becomes low and hence productivity level become down.

Louder talking in bright light could reflect arousal, but it could reflect a feeling of intimacy in dim light as well as a lowering of voices to discuss. Relatively personal topics. Results of laboratory experiments shows that, light intensity follows the principle of diminishing returns i.e. added illumination did produce improvement in performance, which become smaller with each increment in lighting. Results also demonstrate the importance of age on the effect of illumination is low for people aged 16 to 30 years and pronounced for people aged 46 to 60. Performance by older worker falls short of younger worker at lower levels of lighting, but approximately equaled it in brighter light. Another study found a significant preference and higher level of satisfaction towards non-uniform lighting at the periphery of the room (Boyce, 1973).

WINDOWS

Besides providing varied lighting in accordance with the movement of Sun, windows provide a view outside and sometimes ventilation as well. A research project at Manchester had revealed that because of the reasons like natural light, the appearance of the room, the warmth and the

therapeutic effects of sunlight, almost 78% people have a powerful preference for desks near windows. Among these, if we compare gender wise preference female employees expressed a stronger preference for sunshine than males. People need a varied visual environment and if possible continuous variation otherwise the resulting privation of senses will materialize as boredom, fatigue, lack of concentration and even reduction of intellectual capacity. This is the reason 98% of the offices had window in at least one wall.

Researches suggest that employees react negatively to windowless places primarily because of lack of a view outside and then for the reason because they believe that daylight are better than artificial light (Collins, 1975). Employees describe their feelings this way – “cooped up”, isolated, claustrophobia, feeling of being depressed, tense, desire for a view or desire to look outside and a desire to “know whether conditions”. Preference for a window is unrelated to size or color of the office, the level of illumination or the distance to the nearest window. It can be said that the smaller and more restricted a windowless space is, the task given will be perceived as more repetitive and monotonous by the employees. It reduced the freedom of movement and interaction its inhabitants have. The more unpleasant and oppressive it will be, it is ultimately going to increase the level of absenteeism, reduction in quality and quantity of work and industrial unrest also in long run.

As we can see till now we believed that “The brighter the better” but unfortunately this is not true always, as may cause glare and discomfort. In solution to this we can opt for few remedies like we can provide separately controlled lighting for each work position so that every occupant can select the intensity of the light with his/her preference that is not always feasible. As another more feasible option we can use Task Lighting or Adjustable Desk Lamp which can allow the intensity of the light to be altered to match the workers need. Windows are needed in offices but if due to certain reasons one can't make use of them in that case as an alternative the provision of an “Internal View”, overlooking an open office or an enclosed courtyard or even an indoor area such as shopping Mall etc. can be used.

III: Temperature and Air:

The research evidence suggests that individuals vary in their responses to indoor climatic conditions. Small departures from the range of comforts can apparently create dissatisfaction.

Discomfort from heat or cold is not only due to high or low temperatures. Infact adjustment to heat is a function of three variables: -

1. Air Temperature
2. Humidity
3. Air Flows

High Temperature High Humidity and a lack of airflow are most uncomfortable in combination to anybody.

People reportedly show wide differences in Thermal comfort under similar climatic conditions, when an average person is comfortable, a substantial fraction of people may experience a room as too warm or too cold. So impact of particular environment probably depends on the effectiveness of Homeostatic responses of individuals, level of physical activity, the amount and type of clothing and to some extent how long the individual has been exposed to it but researchers have attempted to discover the extremes of the optimal range of temperature – the point at which people begin to get comfortable or begin to perform poorly which again vary from place to place and adaptation of people with varied climatic conditions in terms of there exposure.

Fine & Kobrick Compare the performance of individuals working on problem solving task under different heat stress conditions. The treatment group work at 95°F (35°C) and 88% humidity, the controlled group worked at 70°F (21°C) and 25% humidity. *Performance of both was monitored for 7 hours as a result they found that the number of errors made by treatment group were considerably greater and extent of the difference became greater overtime.*

A study was conducted in USA in which pschycologists have noticed that up to a point-about the mid 80's F rising temperature results in increase in aggression in human behavior and when temperature rose above this point, however aggression declines this can be because the persons involved become more concerned with minimizing their

own discomfort than with behaving aggressively against others who had previously annoyed them. As temperature rose, so too did the incident of violent crime in many large cities, moreover there was no indication of down turn in crime at very high temperature. On the one hand, it appears that aggression does increase as temperature rise to very high level of 90's F. Effects of this were even observed on base ball fields more players were hit by pitched balls on hot days than on cool once. Heat stress can greatly decrease the productivity of specially those who are doing strenuous work. Workers lose stamina because there bodies are taxed by the combination of heat and physical/mental exertion, increase of heat after some time may induce lethargy or even heat exhaustion- muscular weakness, nausea, dizziness and fainting, stemming from physiological causes.

Not only the heat but prolonged exposure of cold also leads to constriction of blood vessels, which reduces blood flows to skin surface and reduce skin temperature. Under such conditions exposed skin and extremities become numb with results low concentration towards work with resulting threat of injury, lower and detoriated performance.

Type of air quality in work places also creates a difference results from BOSTI study revealed that people whose offices become smokier or smelly creates a significant drop in their satisfaction with the physical environment. Any gas, dust, mist, vapor or fibre present in the air besides its natural constituents does have well documented effects on health and psychology of a person and ultimately performance and motivation level of them.

Ideal Climatic conditions for the average employee in the office or factory probably consist of an ambient temperature around 70° F (21° C) moderate humidity, moderate air movements, air which is free of polluting elements as far as possible. As a solution organization can make use of centralized AC, curtains on windows, de-humidifiers; use of industrial fans and chimneys. For cold weather small space heaters/ blowers, special clothing and footwear can be provided to workers.

IV: Noise

Noise is usually defined as unwanted sound.

Some aspects of performance are more affected by noise than others. NOWEIR in his study had examined the effects of noise on various intensities (80/99 dB) on employees of three textile mills and he found that employees with high noise exposure (above 90 dB) had more disciplinary action for material damage, absenteeism and less productivity than employees with less noise exposure.

Noise has generally been regarded as a source of annoyance and environmental stress. Purely physical features of it especially its loudness are related to psychological arousal or stress (Cohen, 1980) it has been considered as among top three most important physical elements which disturbs and make employees uncomfortable (Louis Harris and associated 1978). Generally people find their own sounds or sounds from there own perceived beneficial sources more tolerable than someone else's noise (Broadbent, Poulton 1970) Noise adversely affects performance on some tasks but not on others. Additionally some people are more sensitive to it than others. Unpredictable noise (sounds that occur suddenly, without warning, at irregular intervals of time) and high task complexity resulted in increase in calculations, tracking and monitoring, slower learning of material and poorer recall and memorization (Sundstorm 1986) Effects of unpredictable noise are more severe than are those of predictable noise. Continuous Exposure to predictable noise creates arousal; it may augment the performance of complex task. However if people can become accustomed to regular noise, its effects may only be temporary.

Employees exposed to intense noise over longer periods of time usually loss a portion of their hearing. If noise is of a particular frequency, partial or complete hearing loss to tones of that frequency is quite possible. Extremes of noise can create cardiac problems, fatigue, absenteeism, psychological distress, loose of ability concentration, decreased job satisfaction and performance (Kyter 1944, Louis Haris and associates 1978, 1988, Ceusdan etal 1977, MacDonald 1989).

Things, which can be considered to minimize the problem by using sound-absorbent surfaces, including acoustical ceilings, carpeting, fabric-covered panels, and draperies. Or noises can be masked by ventilation system or by music, or by electronic systems

that emit masking sounds, providing headphones or earplugs to employees.

IV: MUSIC

The role of music in the work place has shifted from singing by workers, to live music played during work, to recorded music designed to create "music conditioning". Managers have expressed the belief that music can boost morale and relieve monotony. Rhythm of music create a spirit of cheerfulness (The Industrial Recreation Association) induced people involuntarily to work in time and with faster speed with remarkable reduction in level of usual fatigue (Munstrberg, 1915), break the feeling of monotony, increase the level of production (Benson, 1945).

Many people often think that music is disturbing element because it can create overload and diverts the attention of listeners from its usual work, which creates decline in productivity. Apart from this every individual have its own music likes and dislikes. A few do not at all like music for longer durations because they feel annoyed, in that way it can create adverse effects. But by taking certain precautions problem can be solved:

1: by making such arrangements that allow some people to work in quite while others hear music
2: Music should not be monotonous (changes of pace) if played for too long.

3: Musical Programmes, which contains intermittent speech, should avoid like radio broadcasts because these can be more distracting.

VI: COLOR

The effect that color has on human emotions can be found varies according to age, experiences and associations. To provide an acceptable recommendation for positive colors to be used in work and home environments, researchers have studied the biological perception of color, the relationships between color and emotion and the different colors, which can be used to increase productivity, and performance levels. In addition, therapists have used color incorporated with other factors in the diagnosis and treatment of patients, children and people with behavioural problems. (Saunders 1998).

The younger age groups had a much higher correlation between colors with emotions, while the older age groups had a lower correlation. This is consistent with the theory that as individuals get older their preferences change based on experiences. (Terwogt and Hoeksma 1995). Nevertheless, psychiatrists, color therapists and ergonomists have tried to determine the most positively associated colors that work for the majority of human subjects from Western society. Rosselson (2001) tried to put together a useful guide of colors and emotions, which they generate for the layperson based on a collection of findings she found. Generally, she wrote that it was found that *RED* stimulated the nervous system and was also found to increase the breathing rate and boost skin and blood cell regeneration and is recommended to use red when an individual wants to increase energy. *ORANGE* is said to boost appetite and stimulate communication. Orange is recommended for use in social living spaces and dining rooms. Studies using *YELLOW* were said that it increased mental stimulation and boosted alertness and IQ levels and it is recommended to use yellow in an environment in which creativity needs to be enhanced. *GREEN* has been found to reduce stress and it also found to be the easiest color on the eyes as its wavelength is the only one, which comes into focus when human eyes are at rest. *BLUE* has been used in studies to relax muscles, lower blood pressure and was found to calm hyperactive children. Purple comes from the blue part of the spectrum and is said to provide some relaxation to subjects, in addition purple is associated often with spirituality and has a soothing effect and should be used when a subject wants to relax and perhaps sleep. *PINK* also has a calming effect on subjects and is used in some state prisons in rooms to calm aggressive prisoners (Rosselson 2001).

Conclusion

Environmental psychology deals with interrelationship between people and environment around them. Effectively designed things have therapeutic effect in reducing cognitive fatigue and other sources of stress. Restorative elements of designs like architecture of building, furniture arrangements, lighting, color used and other internal factors like noise, temperature, air quality, music, etc can function as coping resources that can help the building occupants to alter the balance between

environmental demands and personal resources which as a result increase performance and productivity, morale, satisfaction and cheerfulness of employee and can reduce diseases absenteeism, stress, fatigue and monotony up to an extent. However several other factors do also count.

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