

Chapter 9. Environmental Psychology

- As Environmental Health (6) on 11 Nov. 2021
- Key Concepts
 - Environmental psychology marshals both theory and empirical evidence to understand human-environment relations.
 - Environmental psychologists recognize that behavior, like physical health, is affected by the immediate social and physical environment as well as by the broader sociocultural context in which daily life unfolds.
 - Environmental psychology focuses on a broad variety of environmental exposures and circumstances, such as features that encourage (or discourage) socializing, wayfinding cues, crowding, noise, light and color, and housing quality. Only some of these fall within the scope of traditional environmental health sciences, so the two fields are highly complementary.
 - Environmental psychology focuses on a broad variety of outcomes, including health, social interactions, stress, and happiness. Again, only some of these fall within the scope of traditional environmental health sciences, so the two fields are highly complementary.
 - Environmental psychology offers valuable insights into promoting attitudes and behaviors that are health promoting and environmentally friendly.

Environmental Psychology and Toxicology

- Both focus on the influence of physical environment on human health and well-being
 - Minamata bay's methylmercury contamination by Chisso Corp. caused bioaccumulation of methylmercury in fish and shellfish, which resulted in mercury poisoning among people with neurological syndrome (Minamata disease)
 - Prolonged exposure to excessive noise (90 dB for 8 hrs or 105 dB for 1 hr) causes hearing loss.

Field definition of environmental psychology

- Assuming that a dynamic and reciprocal relationship exists between individual and groups and the environment where they live
- Sociophysical contexts affect the behavior and health: eg. the kind of dwelling, social and physical aspects of neighborhood (social capital).
 - "Sociophysical environment" means interdependent social and physical dimensions of settings jointly influencing an individual's psychological and physical well-being
- "Environment and behavior studies (EBS)" is alternative term.
- Direct/Indirect effects should be considered

Typical approaches of environmental psychology

- Concerned with the behavioral, emotional, and health outcomes of people's transactions with everyday environments
- Naturalistic field studies, emphasizing multidisciplinary perspective (incl. psychology, environmental design, geography, sociology, **human ecology**, natural resource management, government, public health)
- Behavior and health outcomes in relation to objective and subjective meanings
- User-oriented studies
- Events naturally occur, conditions may change during the course of the events
- Holistic and longitudinal approach
 - **Sharing the focus with human ecology!!**
(Only the nominal difference?)

Five underlying processes of environmental psychology (1) Physical layout

- Rearranging furniture → certain seating configurations facilitate social interaction (sociopetal), others impede it (sociofugal – eg, straight rows of seating) In church or library, designer uses sociofugal setting, but in cafes or meeting rooms, sociopetal setting is favorable.
- Social capital: community cohesion, informal social control, neighborhood interaction → supports physical and psychological well-being and buffers some of the adverse effects of risks
- Proxemics: the study of how people use space to communicate nonverbally
- Personal space: the area or bubble around our body to maintain between ourselves and others → Hall ET (1966) "The hidden dimension", Garden City: NY, Doubleday.
https://www.academia.edu/43785083/The_Hidden_Dimension_Edward_Hall
 - Closely related with "social distance", which depends on cultural norm. In Asian culture, personal space is wider than Western culture, and thus natural social distance seems wider than Western culture. This difference may affect the difference of COVID-19 spread in Asia and in Europe/USA.
- Defensible space – Crime prevention through environmental design – Layout of interior and exterior of the complex contributes to resident's lack of territoriality (sense of spatial ownership and its nonverbal expression)
 - (cf) Broken window hypothesis: Once a place is slightly degraded, people will regard litter and disrepair as the norm and will further degrade the area
 - Principles: Enhance a sense of territoriality, Use environmental design elements to create a continuum of spaces from public to semipublic to semiprivate to private, Limit the scale of buildings to 3-5 floors, Increase visual surveillance, Foster an ambience of caring

Five underlying processes of environmental psychology (2) Stress and coping

- Stress: Occurring when environmental demands exceed personal coping resources, transactional process between person and environment.
- Within body, stress response includes hypothalamic-pituitary-adrenal (HPA) axis, elevated sympathetic nervous system activity, behavioral response (anxiety, perceived distress, diminished ability to sustain task performance at high level)
- Examples of environmental stress
 - Crowding → Difficulty to complete complex tasks, Difficulty to maintain positive social relationships
 - Noise exposure → Lower auditory discrimination → Lower reading acquisition
 - Housing in bad neighborhood conditions

Measuring stress

- * bio-monitoring of salivary amylase, cortisol, chromoglanin-A, etc.
- * heart rate variability
- * questionnaire

Measuring stress-coping

- * questionnaire

Five underlying processes of environmental psychology (3) Diet and physical activity

- Obesity pandemic is related with dietary change and physical inactivity
- Child care outdoor learning environments
 - Behavior settings: Physical and social contexts where behavior occurs
 - Affordances: Possible uses or functions that the arrangement of physical features in the environment conveys to the user
- Commuting environment and physical activity – Active transport (walking or biking) contributes increased activity
- Neighborhood food environment
 - Presence of supermarkets increases intake of fruits and vegetables
- School cafeteria as food environments

Five underlying processes of environmental psychology (4) Pro-environment behavior

- Growing concerns about finite natural resources, environmental degradation, impact of climate change on human health → Interest in how to encourage people to engage in pro-environment behaviors
- Various behaviors can help to alleviate environmental problems
- Strategies to induce pro-environment behavior
 - Changing personal and social norms
 - Altering environmental cues or on the nature of reinforcements (reward and punishment)
- No one strategy is singularly effective

Five underlying processes of environmental psychology (5) Light and color

- Aesthetic preference
 - People universally prefer natural light, most people dislike fluorescent light
 - For color, preferences of people vary more, but with some evidence of preference for the blue-green
 - For facial color, people universally prefer redder skin hues (probably looks healthy)
 - For object color, blue attracts attention, but cross-culturally diversified
- Health and behavior
 - Light affects comfort, health, well-being
 - Eye strain results from fluorescent lights' flickering at a slow rate, glare is a reliable cause of physical discomfort
 - Text legibility is a function of luminance (brightness), contrast, font size and the age of the viewer
 - Insufficient daylight causes feelings of negative affect, low energy, anxiety, worry: Seasonal affective disorder (SAD)
 - The effects of colors are less known
 - Red increases brain activity
 - Blue facilitates performance on tasks requiring cognitive flexibility
 - For colorblind people, some kinds of color combination are difficult to distinguish. Thus, Color Universal Design (CUD) is proposed (https://www2.cudo.jp/wp/?page_id=1936), which is developed in Japan (See, <https://jfly.uni-koeln.de/color/> for additional information).

Possible interventions by environmental psychology

- Environmental psychology reduces crime: Creation of mini-neighborhoods in Five Oaks
- Environmental psychology reduces infections in hospitals: Design and hospital hand washing
- Environmental psychology saves energy

Related issues

- Universal design and barrier-free design
 - Important research topic in ergonomics
 - Fail-safe / Fool-proof consider the human nature of unintentionally making mistakes
 - It considers human diversity
- "Affordance" concept by Gibson JJ (1979) *The ecological approach to visual perception*. Houghton, Mifflin and Company.
 - Defined as "The affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill"
 - Related with cognitive ability
 - Scarantino A (2003) "Affordance explained" *Philosophy of Sciences*, 70: 949-61. <https://www.journals.uchicago.edu/doi/full/10.1086/377380>
 - Heft H (1989). Affordances and the body: An intentional analysis of Gibson's ecological approach to visual perception. *Journal for the Theory of Social Behaviour*, 19: 1–30. <https://doi.org/10.1111/j.1468-5914.1989.tb00133.x>

Levels of environmental analysis in sociophysical context

- **Elemental:** natural scents and natural objects (eg, water, air, soil)
- **Individual:** an individual's (1) body and physical, perceptual and cognitive abilities, (2) intellectual abilities, personal beliefs, values, attitudes, emotions, memories and experiences (eg, clothing choices, eating choices)
- **Stimuli:** recognizable features of an environment that cause a personal perception or physical and/or psychological reaction (eg, natural sounds like bird songs, natural surfaces such as wood or rock, natural colors and textures, views of nature through windows)
- **Situation:** sequences of individual or group activities and events occurring at a particular time and place (eg, outdoor meetings, meals, entertainment, gardening)
- **Settings:** socially structured and geographically bounded locations where certain kinds of activities and events regularly recur (eg, college classroom, recreation)
- **Life domain:** spheres of a person's life that encompass multiple situations and settings; occupations or location (eg. home, workplace, school, ...)
- **Societal:** overarching systems of beliefs and values, social and cultural norms, and social, political, and economic institutions that integrate life domains for large groups of people (eg, natural preserves, wilderness areas)

Four different "world views" (Altman and Rogoff, 1987)

- **Trait** worldview tries to understand and predict the enduring, consistent features of physical settings and people as individual factors
- **Interactional** worldview posits stable relationships among traits and proposes basic "laws" that describe these relationships
- **Organismic** worldview tries to understand larger, more complete, more complex aggregates of factors, acknowledging that these factors may change or evolve over time
- **Transactional** worldview proposes that the factors that affect behavioral phenomena are part of a constant, dynamic, reciprocal milieu

Hurricane "Katrina" example

- Three parts of the event
 - awareness and preparation
 - immediate response ~ focusing on the use of common setting features as "affordances" (possibilities for action that are latent in an environment)
 - aftermath
 - Environmental psychology's comprehensive approach
 - sense of place
 - place attachment
 - contextual transformation (sudden and dramatic context changes, resulting in fundamental behavior modification)
- * Please consider any other example you are familiar with.

Three principles of contextual analysis

- 1. The relationship between environment and health is influenced by interdependencies among immediate situations, immediate settings, and more remote environmental conditions
- 2. The different environments in which an individual participants exert a cumulative, synergistic effect on his or her health
- 3. Health is the result of an interaction among the objective features of the environments in which individuals participate, individual's perceptions of those features, and individuals' personal attributes

Neighborhood – basis of social capital

- Functions of both real and virtual neighborhood

- Affiliation
- Identity
- Social support
- Community
- Information
- Daily life
- Recreation

Neighborhood cooperates to
prepare Christmas in Solomon
Islands

Autumnal festival in Nagano

- Problems

- Conflict of real/virtual
- Stimulation overload
- Attentional fatigue
- Digital divide

(cited from:
<https://www.realtor.com/advice/move/what-does-neighborhood-mean-anyway/>
)

Behavioral impacts of displacement due to climate change

- Global: Massive population dislocation
- National: Changes to and disruption in food production and distribution
- Regional: Increased cardiovascular and respiratory disease
- Community: Functional disruption leading to scarcity of necessary resources (portable water, electricity, gas, sanitation), damage to and inaccessibility of health care facilities
- Neighborhood: Inability of neighborhood to recover, neighborhood decay, disruption of social networks
- Residential (family): Family separation, conflict, deprivation, long-term negative economic impact, educational disruption
- Individual: Dramatic increase in environmental (psychological) stress, malnutrition, loss of income, poverty, inadequate medical care