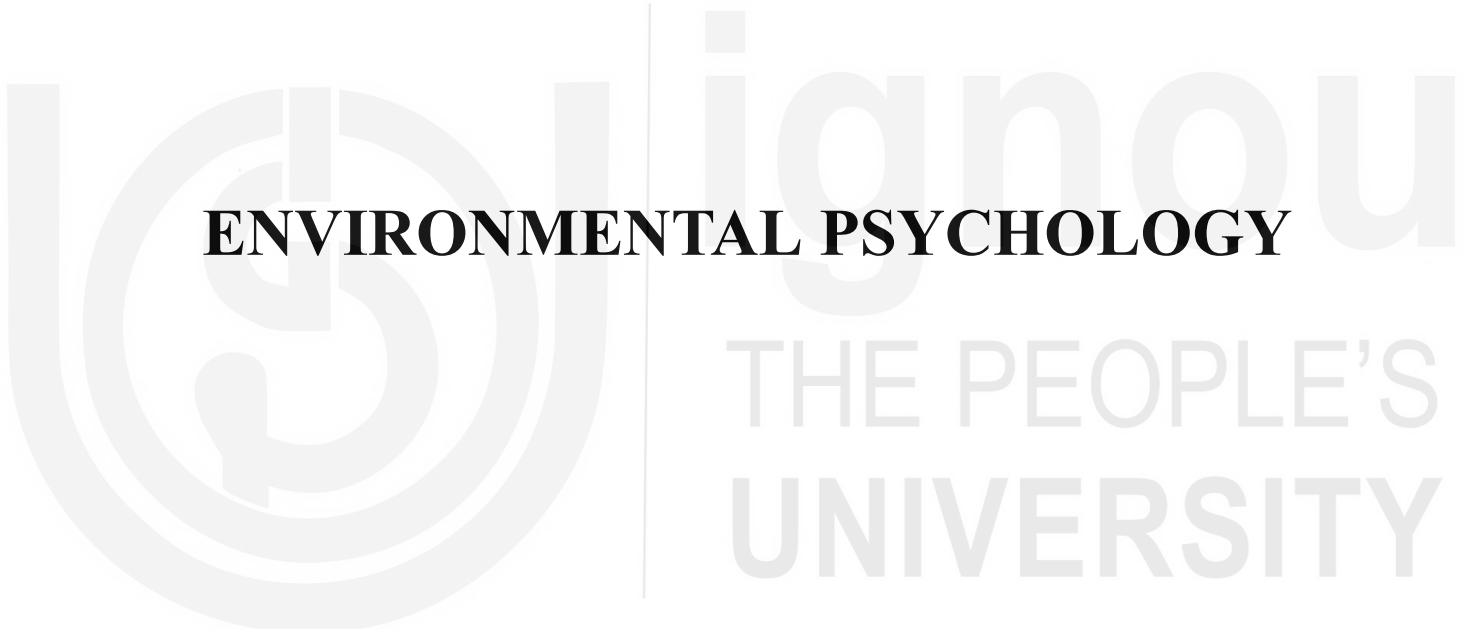




ENVIRONMENTAL PSYCHOLOGY

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School of Social Sciences
Indira Gandhi National Open University
New Delhi

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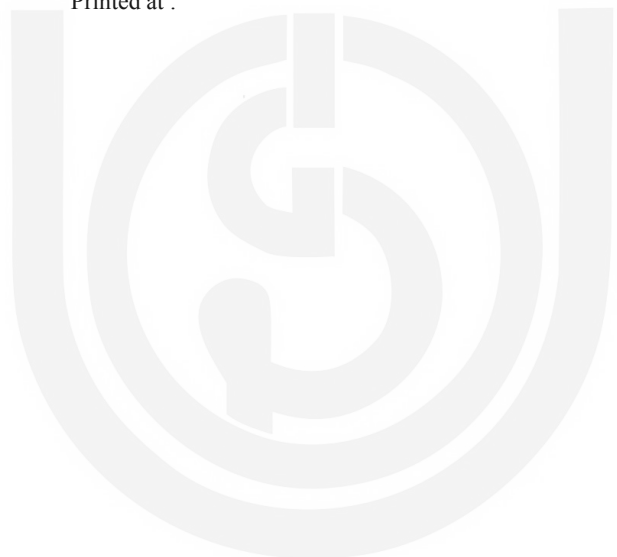
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Environment Psychology: How to proceed in the course?

The course on *Environmental Psychology* (BPCE 143) is one of the Discipline Specific Electives (DSE) offered in the Fifth Semester of the Psychology Honours Programme (BAPCH) of IGNOU. The course is of 06 Credits. The course is divided into four blocks. Each of these blocks represents a specific theme which is discussed in three to four units. The units are arranged in a logical sequence so as to cover the main aspects of each theme. Each unit contains a brief introduction in the beginning and a list of references and further reading, as well as, additional online resources in the end. The list of online resources has been mentioned for additional information on various topics. You are advised to read Course Introduction carefully, in order to know about the rationale and content of the course you have offered to read.

You have in your hands, all the four blocks and eleven units of this course. Before proceeding to read the units, you are advised to go through instructions about how to read the course material. Given below is the explanation of the organization and sequencing of the unit. We will tell you what is contained in various sections of a unit, and you should go about completing different tasks involved while reading the course material.

Organization and Sequencing of a Unit

The unit starts with,

- 1.0 Learning Objectives
- 1.1 Introduction
- 1.2 Section (Theme of the section)
 - 1.2.1 Subsection of 1
 -

Check your progress

- 1.3 Section (Theme of the section)
 - 1.3.1 Subsection of 2
 -

Check your progress

The numbering and length of each section and subsections may vary from one unit to the other unit, depending upon the depth of information in each unit. The last three sections in each unit with the following headings are also numbered. They are as follows,

- Review Questions
- References and Further Reading
- Additional Online Resources

As the scheme suggests, each unit is divided into sections for easy reading and better comprehension. Each section is indicated by **BOLD CAPITALS** and each sub-section by a **relatively smaller but bold typeface**. Divisions within the sub-sections are in **relatively smaller bold typeface** so as to make it easy for you to understand.

Let us now discuss the **pedagogical features of a unit** as given in the self-learning material.

We begin each unit with the section **Learning Objectives**. It tells you briefly what we expect from you once you complete working on the unit. In the section **Introduction**, we specify, the relationship of the present unit to the previous unit (if any), theme of the present unit, and the order of presentation of all the sections in the unit from Introduction to Summary. The section of each unit under the heading **Summary**, encapsulates the whole unit for the purpose of ready reference and recapitulation.

Sometimes certain topics may deal with abstract ideas and related concepts. Thus, it becomes necessary to explain these related concepts in a separate enclosure, which is called **Box**, in our units. This is added information which is necessary to comprehend the main text. These boxes may include (i) explanatory notes regarding concepts, (ii) information about main works of scientists/psychologists who have contributed to a particular topic, (iii) certain case-studies that are related to the concepts being discussed, (iv) reflective exercises, etc.

There are several **illustrations** in each unit in the form of pictures, figures, diagrams and images. The main purpose of these illustrations is to make the study comprehensive and interesting. We have given self-check exercises under the caption **Check Your Progress** in between or at the end of main sections. To answer the Check Your Progress questions, you should, (i) write your answers using the space given below each question; (b) label the diagrams in the space provided (if asked). You will be tempted to have a glance of the main text as soon as you come across an exercise. But we do hope that you will resist this temptation and turn to the main text only after completing the answers. You should read each unit and note the important points in the margin provided in the course material. This will help in your study. It will also help you to answer the self-check exercises and the assignment questions, as well as help in revising your course before appearing for your Term End Examination.

Each unit has **Keywords** at the end of the unit, to explain the basic ideas, technical terms and difficult words. We have given a list of **References and Further Reading** at the end of each unit. This is a list of books and articles used by the course writers to prepare the units. This reflects that your course material is based on a wide spectrum of literature available on a particular theme, related to your course. This also informs you of the wide literature available in the particular area of study. If interested in widening your knowledge, you may look for the mentioned references. Each reference mentions the name of the author, year of publication, title of the book/article, name of publisher and place of publication. The readings will help you to increase your level of understanding of a particular theme in each unit, though it is not a compulsory.

We have given a list of **Additional Online Resources** on various topics. Apart from the text material, if you are interested in learning more about the topic, then you may access the website as mentioned, for a particular topic.

Besides Check Your Progress, we have given **Review Questions** after Keywords section in each unit. You may practice these questions which will help you in answering assignments and Term End Examination Question Paper, though the pattern and style of questions asked may be different.

Some Units have been selected for the **audio and video** programmes to supplement the printed material. This will help you to understand the units with greater clarity. Apart from this, you may also access IGNOU's FM radio channel, *Gyanvani* (105.6 FM) which is available across many cities in India, for regular programmes, related to themes on Psychology. You can listen to the live discussions by faculty and experts on the topic of

the day and interact with them through telephone, email, and through chat mode. You may also watch *Gyandarshan* TV channel (free to air educational channel), for programmes related to topics on Psychology. The schedule of Gyanvani and Gyandarshan is displayed on www.ignou.ac.in. The radio and TV channels may also be accessed on *Gyandhara*, webcast facility for Gyanvani and Gyandarshan, provided by the University.

There are a set of **assignments** for the whole course uploaded on www.ignou.ac.in>downloads>assignments>BA CBCS New>Discipline Specific Elective. You need to check the course code and title of the course carefully, before downloading the assignment. These are Tutor Marked Assignments, which are to be submitted to the respective Study Centre after completion. These assignments will be evaluated by academic counsellor from your Study Centre. Ensure that you complete all your assignments because the grades that you get in each of these assignments are included in the final evaluation of your degree (30%). Before answering the assignments, read all the units carefully. While working on the assignments, kindly ensure the following points,

- 1) Clearly write your enrollment number
- 2) Answer them in your handwriting and in your own words
- 3) Write clearly and neatly so that it is easy to read your answers
- 4) Leave margins on one side of your answer-sheets so that evaluator may write his/ her comments on your performance
- 5) You will submit the assignments at your Study Centre on or before the date mentioned as per the admission cycle. Kindly check the dates from www.ignou.ac.in or your Regional Centre website.

After reading and understanding the course material, as well as referring to the audio and video programmes, you will be writing the **Term End Examination** (TEE) for the course. TEE carries 70% weightage in the evaluation scheme. Consider the following points while answering for TEE.

- 1) Questions should be replied in one's own words and should be focused.
- 2) Answer questions keeping in mind the word limit.

The syllabus of course material BPCE 143 is designed by an Expert Committee (see page 2 of this course) and prepared by **Course Preparation Team** which comprises the author(s) of units, content editor(s), language editor, and the course coordinator. The expert committee selected the themes and sub-themes of the blocks and units, keeping in view the prescribed syllabi of UGC (CBCS model). The authors of units have provided their expertise in elaborating them in the form of the main text of each unit. The content editor has carefully examined the course contents and has made an attempt to make the material clear and comprehensible.

For any query or feedback related to the course, you may contact the Course Coordinator at,

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COURSE INTRODUCTION : ENVIRONMENTAL PSYCHOLOGY

Environmental Psychology is a new subfield of Psychology which delves into the interplay of environment-human interactions, with a multidisciplinary approach. It includes all kinds of environments like natural environment, built environment, informational environment, learning environment and social settings. Over the last four decades, Environmental Psychology has examined human behaviour from a sustainability perspective.

How does our environment affect us? How do we affect our environment? These are the two most pressing questions for environmental psychologists who have applied various psychological theories and principles towards sustainability-related behaviours. This becomes more pertinent in the present times because of the problems arising due to climate change.

The 2030 agenda for Sustainable Development adopted by the UN Member States in 2015 aims for sustainability and raising the quality of life of every individual. The American Psychological Association, Division 34 is *Society for Environmental, Population and Conservation Psychology*. The division is dedicated to the research of improving the interactions of the people with the world around them.

The present course will help you to develop an understanding of the subfield of environmental psychology. An attempt has been made to explain themes like ecological consequences of human actions, climate change and mental health, place attachment and place identity, environmental risks and hazards, cognitive mapping and wayfinding, and the use of space with reference to crowding, privacy, territoriality and personal space.

BLOCK INTRODUCTION

There are four blocks and eleven units that have been thematically arranged in the course.

The theme of **Block 1** is **An Introduction to Environmental Psychology**. There are two Units that focus on this theme. **Unit 1 Environmental Psychology Overview** will introduce to the definition, scope and salient features of environmental psychology. Recent trends, future directions, and methods employed in conducting research in the area have been discussed. It will also familiarize you with the status of environmental psychology in India. Unit 2 **Human and Environmental Transactions** will enable you to understand human -environmental transactions and its theoretical perspectives. Place attachment, place identity along with personal space, territoriality and crowding are explained.

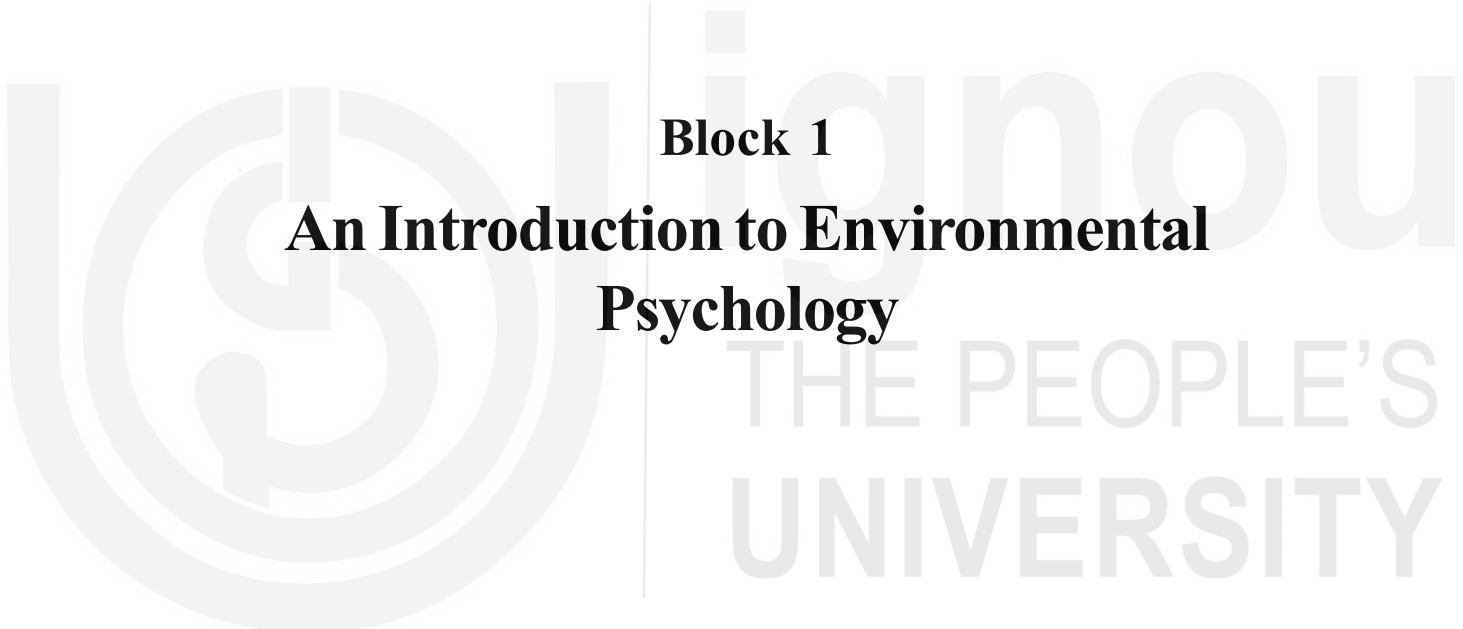
Block 2 has three Units that looks into the **Environment-behaviour Relationship**. **Unit 3** deals with **Theories of Environment-Behaviour Relationship**. The Unit focuses on arousal theories, stimulus load theories, behaviour-constraint theories, adaptation level theories, environmental stress theories, and ecological theories. It will also critically compare the different theories and discuss research in the area of environmental psychology. **Unit 4 Environmental Perception and Cognition** will focus on the characteristics and perspectives of environmental perception. Environmental cognition will be explained through cognitive mapping, its history, methods and errors.

Unit 5 Territoriality, Personal Space, and Community Design specifically talks about the concept, classification, and measurement of territoriality. Factors affecting territoriality are also explained. It also examines community design with reference to neighbourhoods and hospitals. It will also enable you to understand personal space and privacy.

Block 3 constitutes of two Units that give an account of the **Areas of Application of Environmental Psychology**. **Unit 6 Environment and Health** delves into environmental stressors. It focuses on environmental health and the effect of environment and climate change on physical and mental health will also be discussed. **Unit 7 is on Disasters, Toxic Hazards, and Pollution**. The gives an account of characteristics, causes and categories of natural disasters. Effects of technological catastrophes and air pollution on behaviour is highlighted. Roles and functions of disaster management agencies in India are discussed. Finally, the Unit will enable you to develop an understanding of making a resilient community in the wake of a disaster.

Next, the theme of **Block 4** is Environmental Psychology and Sustainable Living and has four Units. **Unit 8** gives an account of **Effects of Urban Life**. The Unit talks about population density and the factors affecting population density. The effect of population density on animals is also discussed. The Unit will help you to analyse the effects of urban life on the city dwellers and the growth of slums. Environmental solutions to urban problems and of sustainability of cities is highlighted. Programmes on slum clearance and to make cities resilient and sustainable are discussed. **Unit 9** focuses on **Architecture, Design and Engineering for Human Behaviour**. It will help you to analyse the role of entry in architecture and the meaning in architecture. Effect of architecture and design on human behaviour will also be examined. **Unit 10** discusses **Global Warming and Climate Change**. It emphasizes on the debates on climate change, key factors in sustainability and talks about carbon footprints. **Unit 9** covers **Climate Change and Pro-environmental Behaviour**. It enables you to develop an understanding on the impact of climate change and mental health. Model by Kollmuss and Agyeman and Theory of Planned Behaviour are discussed with reference to pro-environmental behaviour. The Unit will talk about waste management and the important environmental policies in India.

The content therefore, will help you develop an understanding and appreciate different perspectives of environmental psychology. It will help you in becoming more observant of your surroundings and environment.

The background of the page features a large, light gray watermark of the Open University logo. The logo consists of a stylized 'U' and 'O' forming a circular shape, with the text 'Open University' and 'THE PEOPLE'S UNIVERSITY' integrated into the design.

Block 1

**An Introduction to Environmental
Psychology**

UNIT 1 ENVIRONMENTAL PSYCHOLOGY

OVERVIEW*

Structure

- 1.0 Introduction
- 1.1 What is Environmental Psychology?
- 1.2 Definition and Scope
- 1.3 Salient Features of Environmental Psychology
- 1.4 The Emergence and Growth of Environmental Psychology
- 1.5 Recent Trends and Future Directions in Environmental Psychology
- 1.6 Research Methods in Environmental Psychology
- 1.7 Environmental Psychology and its Relationship with other Disciplines
- 1.8 Environmental Psychology with special reference to the Indian Context
- 1.9 Summary
- 1.10 Keywords
- 1.11 Review Questions
- 1.12 References and Further Reading
- 1.13 Additional Online Resources

Learning Objectives

After having read this Unit, you will be able to:

- Describe the emergence and growth of environmental psychology
- Identify the salient features and characteristics of environmental psychology
- Explain the recent developments and scope in the area of environmental psychology, and
- Discuss environmental psychology from an Indian perspective

1.0 INTRODUCTION

Psychology, as an academic field, has shown tremendous advancement since its inception. The subject of Psychology has many applied branches, some even touching upon various other disciplines like Sociology, Organizations, Biology, and so on. While the various fields of psychology were developing during a period of five decades, the physical settings of the environment were initially overlooked (Tewari & Mathur, 2014). As the awareness grew around the dimensions of the physical space, it became apparent how deeply it impacts a person's behaviour. In this introductory Unit, we will introduce you to the branch of environmental psychology, followed by its salient features, recent trends and scope. A description of main research methods used in environmental psychology will be presented. The Unit ends with status of environmental psychology in India.

*Ishita Chatterjee, Department of Applied Psychology, University of Calcutta, Kolkata.

1.1 WHAT IS ENVIRONMENTAL PSYCHOLOGY?

In the present decade, when the environment is a concern for the human race, studying of environmental psychology is very relevant. The environment includes the surroundings or conditions in which a person, animal, or plant lives or operates. It is the natural world as a whole, or in particular geographical areas, as affected by human activity. The environment provides ideas, meanings, and affects behaviour just as the social settings, or age, or the developmental stage (Bell, Greeve, Fisher, and Baum, 2001).

Proshansky (1976) says that the person's physical world in the form of rooms, buildings, study halls, streets, schoolrooms, bedrooms, hospital wards, day-care centres, subway trains, apartment houses, etc., influence their behaviour too. Environmental psychology, thus, is one of the important branches of psychology that has brought a new perspective to study and understand the complexities of human behaviour and social-physical environments.

Environmental Psychology deals with the environment at two different levels. It is concerned with the environment as well as the context of behaviour. At one level, environmental psychology studies how the environment determines which behaviour is possible and how it is possible. It is concerned with the properties of environment which act as determinants that affect human behaviour and mood. At the next level, environmental psychology is concerned with the consequences of behaviour on the environment or broadly with environmental problems such as pollution, recycling, and ecosystem issues. This is a very different focus, though it follows from a basic premise that behaviour and environment mutually affect each other. Environmental psychologists encompass both how the environment influences people and how people influence the environment. Thus, it is an interactive discipline (Bell, Greeve, Fisher, and Baum, 2001).

Moving further, environmental psychology is the study of people's complicated interactions with their surroundings. It differs from other major areas of psychology in that it is focused on the everyday physical environment. According to Gifford, larger environmental factors, such as social, political, economic, and cultural pressures, are also included in this field. Environmental psychology's biggest strength is its multidisciplinary approach and recognition of the interconnected nature of behaviour and environment. Environmental psychology does not simplify things in an artificial way. Instead, it offers a framework of perspectives, research, and theories to aid in our understanding of how humans and the environment interact. Though there are no black-and-white answers, we may use bits and pieces from the body of work to better design the physical space for human needs. "The fundamental significance of environmental psychology for the design professions lies in its potential capacity to provide a body of knowledge—conceptual and empirical—for understanding the relationships between human behaviour and experience in the built environment,"- Proshansky in his paper, *The Role of Environmental Psychology for the Design Professions*.

In the process of finding possible solutions for environmental problems, psychologists are using a practical approach by gaining information about the relationships between conceptual models of human behaviour. Environmental psychology is not only practically oriented but also incorporates the theoretical approach of traditional psychology. Environmental psychology is thus an applied field that involves research to improve our environmental resource management.

1.2 DEFINITION AND SCOPE

Environmental psychology is an interdisciplinary field that focuses on the transactions between individuals and their surroundings. It examines how the natural environment or built environment shapes the individual. Environmental psychologists emphasize on an individual's transactions with their environment. They examine the human transactions in work space, home, natural environment, and how these are related to one's satisfaction, subjective well-being, productivity and mental health. The term "environment" is defined extensively in this discipline, and it includes natural surroundings, social settings, physical environments, learning environments, and informational environments. The area has been dedicated to the establishment of a discipline that is both value and problem-oriented since its inception, prioritizing research aimed at solving complex environmental problems in the pursuit of individual well-being.

Early definitions of environmental psychology emphasized the relationship between the physical environment and human behaviour. H.M. Proshansky (1967 b) defined environmental psychology as *'the attempt to establish empirical and theoretical relationships between behaviour and experiences of a person and his built environment.'* According to Encyclopedia of Social Psychology, *environmental psychology deals with people's homes, the workplaces and leisure settings, the visual impact of buildings, the negative effects of cities, the restorative role of nature, and environmental attitudes and sustainable behaviour.* Russel and Snodgrass (1987) defined the field as the branch of psychology that is *concerned with providing a systematic account of the relationship between humans and their environment.* In the handbook of environmental psychology, Stokols and Altman (1987) defined it as the *study of human behaviour and well-being in relation to the socio-physical environment.*

These definitions often point to the relationship between the environment and behaviour but do not really emphasize the bi-directional nature of the environment-behaviour relationships since the environment affects the behaviour and behaviour also affects the environment. Also, these definitions are not able to describe the non-built environment and its impact on the relationship between behaviour and the environment as a whole.

Recent definitions adopt more inclusive, holistic, and transactional approach on human-environment relationship. Gifford defines environmental psychology as "a study of transactions between individuals and their physical settings in these transactions individuals change their environment, and their behaviours and experiences are changed by their environments" (Gifford et. al, 2010). According to him, environmental psychologists work at three levels of analysis:

- a) Fundamental psychological processes like the perception of the environment, spatial cognition, and its effects on our personality.
- b) The management of social space: personal space, territoriality, crowding, privacy, and the physical settings, aspect of complex everyday behaviours such as working, learning, living in a residency, and community.
- c) Human interactions with nature and role of psychology in climate change (Gifford et. al, 2010)

1.3 SALIENT FEATURES

Environmental psychology studies the interactions between people and the physical environment as well as the built environment. Environmental psychologists rather than defining discipline have been in charge of describing some of its main features:

1. A holistic molar perspective: The researcher examines behaviour in its context or surroundings and tries to delve into complex psychological processes and environmental factors.
2. An applied problem-solving perspective: here the research is designed to discuss the basic principles of behaviour and find solutions to social problems involving a physical environment.
3. A broad and eclectic methodology: environmental psychology uses laboratory experiments, field experiments, surveys research, observations, on diverse environments, and diverse methodology to study problems.
4. A wide range of levels of analysis: It employs micro and macro-level approaches to study human problems concerning everyday life problems. It applies a 360-degree approach.
5. Environmental psychology is a multi-disciplinary subject that has adapted theoretical ideas not only from core psychology but also other social sciences in developing its theories.

Bell et. al has precisely stated that “environmental psychology is characterized by the following:

1. Study of the environment- behaviour, relationships as a unit
2. Study of interrelationships of environment and behaviour.
3. A relative lack of distinction between applied and theoretical research.
4. An interdisciplinary and international appeal.
5. An eclectic methodology (a rich mixture of methods).

Characteristic Features of Environmental Psychology

The four key features that characterize the field of environmental psychology are briefly described below (Steg and Groot, 2019):

- **Interactive Approach** Environmental psychology is mainly interested in the interactions between people and their built and natural environment, it also takes into account the way the environment influences behaviour as well as which factors have an impact on human behaviour that can be helpful in improving the quality of the environment.
- **Interdisciplinary Approach** Environmental psychologists often work in interdisciplinary settings and collaborate with other experts from other disciplines as this can help them in having a more holistic approach. Each and every discipline brings in a different point of view to the given phenomenon, when all perspectives are integrated, it helps in providing a comprehensive scenario to solve the problem at hand and answer questions accordingly.

Environmental psychologists often work with architects, geography experts, cognitive psychologists, and social psychologists.

- **Problem-focused Approach** Environmental psychology intends to solve real-life problems and often carries out studies in a manner that can be helpful in solving a problem but it also works relentlessly to study the various phenomenon, test theories, and understand and explain various aspects of human behaviour in the context of their environment and their interaction with the environment. The approach can be centered on the immediate surrounding of an individual and can be extended to a global level as well to deal with issues like global warming, climate change, ecological restoration, etc.
- **Diversity of Methods Approach** Environmental psychology also utilizes qualitative and quantitative research methodologies as used in other disciplines of psychology. The distinctive feature of this field, in particular, is the way it uses various methods that are very diverse in nature and work through the problem or research work. The optimal method is often chosen by weighing the strengths and weaknesses of a particular type of method and then taking internal and external validity into consideration.

Box 1.1 Founding Fathers of Environmental Psychology

Brunswik and Lewin are known to be the founding fathers of environmental psychology. They have laid the groundwork for environmental psychology as a discipline.

Egon Brunswik (1903–1955) was one of the first psychologists to suggest that the features of the organism's environment should be given equal weight in psychology as the properties of the organism itself. He felt that outside of people's awareness, the physical world has an impact on psychological processes. He was a big proponent of research that included all parts of the person's surroundings, rather than the fragmented and artificial environments that were more common in psychological studies at the time.

Kurt Lewin (1890–1947) believed that research should be motivated by real-world societal problems. He coined the term “social action research,” which refers to a non-reductionist, problem-focused approach to research that puts ideas into reality, emphasizing the need of finding new ways to conduct research to solve social problems (Benjamin 2007). Furthermore, Lewin, like Brunswik, saw the environment as a significant driver of behaviour. He claimed that behaviour is influenced by both the individual and the environment (Lewin 1951). Although Lewin primarily concentrated on social or interpersonal factors rather than the physical environment (Wohlwill 1970), he influenced a number of students to continue and build on his theories. Barker and Bronfenbrenner, both considered forerunners of environmental psychology, were among these students.

1.4 THE EMERGENCE AND GROWTH OF ENVIRONMENTAL PSYCHOLOGY

Environmental psychology is a relatively new field of psychology. Since the 1960s, four stages of its emergence have been established, in general—*Seeds of Environmental Psychology*; *American transition*; *Architectural Psychology*; and *Environmental Psychology for its sustainability* (Tiwari & Mathur, 2014). The origins of this field of

psychology can be traced back to the German authors who put forth the word and spoke about this discipline of psychology. The American transition was a phase of time during which environmental psychology was seldom mentioned but its theoretical foundations were laid. Then it was the time of Architectural Psychology which later paved the way for environmental psychology focused upon sustainability.

The origin of environmental psychology can be traced back to Hellpach, one of the first scholars who introduced the term “environmental psychology” in the first half of the 20th century. He studied the effects of various stimuli such as colours, forms, etc. Hellpach (1911) studied how different environmental stimuli, such as form and colour, the moon and sun, and extreme conditions impact humans and their lives. Further, he went on to study the urban phenomenon, such as overstimulation, crowding, and differentiating between different types of environments in his work and studies, including natural, social, and historical-cultural environments (Pol, 2006). Researches in environmental psychology were first outlined by Craik (1968) based on the dominant strategy of personality measurement. In this era, the work of Proshansky was significant. The growth of environmental psychology, as well as its current approach, is documented in a series of reviews published in the Annual Reviews of Psychology (Sundstrom et. al, 1996).

When people became more aware of environmental problems in the late 1960s, the second period of rapid expansion in environmental psychology began. As a result, studies on sustainability issues, i.e., studies on explaining and modifying environmental behaviour to produce a healthy and sustainable environment, have been conducted. The early research in this field concentrated on air pollution (De Groot 1967; Lindvall 1970), urban noise (Griffiths and Langdon 1968), and environmental quality assessment (Griffiths and Langdon 1968). (Appleyard and Craik 1974; Craik and McKechnie 1974). From the 1970s onwards, the scope of the research expanded to include concerns such as energy supply and demand (Zube et al. 1975), as well as risk perceptions and risk assessment in relation to (energy) technology (Fischhoff et al. 1978). The earliest studies on efforts to promote conservation behaviour, such as links between consumer attitudes and behaviour, were undertaken in the 1980s (Cone and Hayes 1980; Stern and Gardner 1981).

Next came Gestalt's contribution, it was Koffka who differentiated between geographical and behavioural environments. The geographical environment refers to the perceived environment. This school mainly emphasized upon environmental perception and cognition. Brunswick and Lewin's study on human and natural environment interactions are trendsetters for future research and are also regarded to be the 'founding fathers' of environmental psychology (Gifford, 2007). Even though both of them haven't done significant empirical work that could be classified today as environmental psychology but, their ideas, such as the interaction between the physical environment and psychological processes and studying the human behaviours in the actual settings rather than artificial settings were pioneering and influential for many future studies that studied the interactions between humans and environment.

Park, Wirth, and Milgram studied the influence of physical environment on behaviours and it was labelled as 'Architectural Psychology.' The constructed physical environment (architecture, technology, and engineering) and how it affected human behaviour and well-being were given a lot of attention in the early days of environmental psychology (Bonnes and Bonaiuto, 2002). The political and social circumstances of the time

influenced this attention on the built environment. The modern design attempted to answer post-war concerns such as adequate housing (Pol 2006). Most of the environmental psychological research looked at how to best design homes, offices, and hospitals for their intended users, as well as how environmental stresses (such as excessive temperatures, humidity, and crowding) affect human performance and well-being (Wohlwill 1970). Environmental psychology was established as a field of research to create structures that would promote behavioural functions.

The post-world war scenario emphasized the fact to build better homes, workplaces, schools, hospitals, etc. It also was a period that attempted to reduce environmental stressors and optimize performance and well-being. This period from the end of World War II to the early 1960s belonged to Chicago school whose works were more towards the amalgamation of experimental and academic American tradition. In the 1970s, environmental psychology was concerned with establishing empirical and theoretical relationships between the behaviour and experience of the individual and his built environment. The analysis was for understanding human behaviour and experiences in terms of social processes and social organizations concerning the physical settings that provide the context for such behaviour and experiences. (Proshansky, 1976)

By the 21st century, environmental psychology became concerned with addressing human problems, environmental psychology became more enriched, it included holistic sustainability, and also included ecological studies. Three journals disseminating knowledge in the field of environmental psychology are:

1. *Journal of Environmental Psychology* which represents the psychological perspective of research.
2. *Environment and Behaviour* which is an interdisciplinary journal.
3. *Journal of Architectural and Planning* research emphasizes architectural designing and its related fields.

The *Handbook of Environmental Psychology* was published under the editorship of Daniel Stokols and Irwin Altman. This is one of the pioneers and significant books on environmental psychology (1987). The Handbook of Environmental Psychology presents a balanced and complete introduction of this rapidly growing topic, including the latest research and concepts in the field straight from the world's best scientists and practitioners. This revolutionary resource presents you with a pluralistic perspective to the area as an interdisciplinary effort with ties to other disciplines, bringing together contributions from an international team of leading academics representing a variety of fields. The Handbook of Environmental Psychology is structured into five organized and accessible parts to provide a full understanding of the ideas, research, and applications at the forefront of environmental psychology today. It addresses a variety of themes and practical contexts. Part I concentrates on refining ideas, while Part II connects the subject to other disciplines, Part III on methodologies, Part IV on applications, and Part V on the field's future. The Handbook of Environmental Psychology is a must-read for anybody dealing directly with the attitudes, beliefs, and actions that are ruining our environment and putting our lives in peril. It defines the ongoing revolution in thinking about how the environment and psychology interact.

Check Your Progress 1

1. Who was the first scholar to introduce the term “environmental psychology”?
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2. List the founding fathers of environmental psychology.
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3. Name the three journals that are focused on sharing the knowledge related to environmental psychology.
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4. Define environmental psychology.
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1.5 RECENT TRENDS AND FUTURE DIRECTIONS IN ENVIRONMENTAL PSYCHOLOGY

Environmental issues such as climate change, pollution, and deforestation have been recognized as serious difficulties impacting people’s health, economic prospects, and food and water supplies since the beginning of the twenty-first century (IPCC 2013). It is also widely acknowledged that human behaviour is a major contributor to these environmental issues. Finding strategies to influence people’s behaviour to reverse environmental problems while preserving human well-being and quality of life is an ongoing and developing concern of environmental psychology. To this goal, a comprehensive concept of sustainability has been widely adopted, which incorporates environmental, social, and economic factors (World Commission on Environment and Development 1987). This broad concept of sustainability has grown in importance as a guiding and unifying element for environmental psychology research (Giuliani and Scopelliti, 2009). Indeed, it has been suggested that, over the past decades, the field of environmental psychology has gradually evolved into a ‘psychology of sustainability’ (Gifford 2007).

Environment influences human behaviour and well-being. Environmental psychology thus studies the environmental risk perceptions and environmental stress. It also studies the positive influence of the natural environment on humans. Researches have been in this field to create a sustainable environment that supports human well-being and increases the quality of life.

Environmental psychology also studied factors influencing environmental behaviour like values, social norms, affect, and conflicts between individual and collective interests. An integrative and multi-disciplinary approach is undertaken by environmental psychologists. The best example to depict this is the *Chipko movement*. A social

event happened in the western Himalayan region in the 1970s, when a small-scale social invention (the Chipko movement) to rescue the forests spread far and wide. This is regarded as a significant rethinking of the significance of man's relationship with nature. 'Grassroots activists like those seen in India's Chipko Movement have suggested a new alternative ecological approach in which insight into ecosystem interrelationships is gained through folk knowledge rather than scientific observation,' argues Hannigan, a social scientist (Hannigan 1995: 119). Although Chipko's success story has many social dimensions and interpretations, its articulation as a native cognitive model is an insider's socio-cultural fabrication of the wisdom of those involved in the movement (Pirta, 2007). They emulated Gandhi's nonviolent protest, drew on Hindu wisdom, made naturalistic observations, and synthesized data from a variety of sources. However, the leadership and organization of these community natural resource management initiatives are crucial for their success (Kellert et al. 2000).

The other topics of research by environmental psychologists include encouraging pro-environmental behaviour concerning informational strategies, reinforcements, punishments, and persuasive technology and strategies for behaviour change. It also tried to develop various models that integrate interactions between man and environment. The future directions include challenges for environmental psychologists towards a greater engagement that are studied embracing sustainability as a central focus of research delivering many valuable insights and tools for promoting sustainability at local and global levels.

Environmental psychologists are struggling to save the planet from environmental and social degradation and increase the well-being of the inhabitants. The further action of environmental psychologists is to increase the political relevance and applicability of their work. Finally, the initiative should be taken at the interface of science, politics, and society such as the establishment of international forums and bringing together knowledge and behavioural determinants of global environmental problems (Ehrlich and Kennedy, 2005) Such initiatives can take a significant role in engaging citizens, policymakers, globally to explore the moral elements and the consequences of choices about environmental psychologists can engage and contribute to interdisciplinary and trans-governmental solutions that make a difference from present to future generations.

Environmental psychologists thus, should explore studying and researching on communities that are residing in areas that are tremendously growing and dislocated by the government for various projects and industrial developments

1.6 MAJOR RESEARCH METHODS IN ENVIRONMENTAL PSYCHOLOGY

The main research methods used in environmental psychology-related research are questionnaire studies, laboratory experiments, simulation experimental methods, field study methods, and case studies. All the major research methods are discussed below briefly:

- a. **Questionnaire Studies** – These studies intend to provide a description of behaviours and also gather information about people's opinions, attitudes, beliefs, and perceptions about various issues. These are also used in order to establish relationships between two or more variables. These became popular in environmental psychology for various reasons, such as these tend to have

higher external validity, manipulation of environmental circumstances is a little easier, and these methods often incur lower monetary cost than the other methods.

- b. **Laboratory Experimental Methods** – These include studies conducted under artificial and controlled environmental conditions. Laboratory experiments are often helpful in establishing and understanding the causal relationships between variables. These methods are characterized by two main features: random assignment or randomization and manipulation. When the independent variable (IV) is only manipulated while keeping the other variables controlled or constant, any changes in the responses between the conditions will be attributed to the manipulation of the independent variable. Randomization refers to the technique used by researchers in which all the participants of the experiment have an equal chance of getting assigned to each experimental condition. Random assignment mainly decreases the chance that differences between the different experimental groups are caused by confounding individual factors like personality, socio-demographics, etc. These methods are often low in external validity and the result can not be easily generalized to real-world settings.
- c. **Computer Simulation Studies** - Real people or authentic environmental stimuli are sometimes impossible to use in the study. Studies involving thousands of people to learn about complicated systems or studies on how people judge future environmental scenarios are two examples. For this reason, environmental psychologists are increasingly turning to environmental simulations. Environments and/or humans are reproduced as exactly and realistically as feasible in this style of research. Immersive virtual environments created with computers to give participants a realistic impression of what it would be like to experience specific environments or events (De Kort et al. 2003), 3D visualization of data in Geographical Information Systems, or agent-based models of land use or resource use are examples of simulations. In general, simulations allow you to maintain some control over the environment, boosting internal validity while not jeopardizing external validity.
- d. **Field Studies** – Many environmental psychologists use field investigations and experiments to obtain high external validity without sacrificing too much internal validity. Field experiments have a high level of external validity because they are conducted in real-life settings. Internal validity, on the other hand, is relatively high because the experimenter attempts to control the situation by systematically manipulating independent variables (e.g., placing or removing a bin from the environment) and/or by randomly assigning participants to different study conditions (e.g., environments with and without bins). Internal validity is ensured when researchers can be relatively certain that any variations between conditions are due to the manipulations (rather than, for example, personality differences). However, because field studies take place in real-world situations, it's impossible to account for confounding factors like changing weather or unexpected interruptions. Furthermore, random assignment is not achievable in many instances.
- e. **Case Studies** - A case study is an in depth study of a specific situation. it's a way used when a researcher really wants to narrow down a really broad topic of research into one single case, i.e., a person, setting, situation, or

event. for instance, the broad topic of urban environmental quality could also be studied in one particular neighbourhood where the municipality has recently installed garbage bins to tackle littering. instead of employing a strict protocol and close ended inquiries to study a limited number of variables, case study methods involve an exploratory, qualitative examination of one situation or event: a case. Qualitative research uses words or other non numerical indicators (such as images or drawings) as data. the most purpose of case studies and other sorts of qualitative research is to explore and understand the meaning that individuals or groups ascribe to a phenomenon. during a case study, people or events are studied in their own context, within present settings, such as the home, playing fields, the university, and therefore the street. These settings are ‘open systems’ where conditions are continuously suffering from interactions with the social, physical, historical, and cultural context to offer rise to a process of ongoing change, including ethnography, grounded theory, and phenomenology (Wolcott 2001). Although there will not be one objective truth of the interpretation of the phenomenon (Willig 2001).

Table 1.1 Summary of methods of research in environmental psychology illustrated in Environmental Psychology (2019) Edited by Steg and Groot. Second Edition.

<i>Setting</i>	<i>Method</i>	<i>Strengths</i>	<i>Weaknesses</i>	<i>Use</i>
Environment independent setting	Questionnaire studies	High external validity Cost-effective method for reaching large populations	No manipulation of variables Hard to make causal inferences	Describing perceptions, beliefs, and behaviour Studying relationships among variables
Artificial setting	Laboratory experiments	High internal validity Control of variables	Low external validity Artificiality	Testing theories or hypotheses Identifying causal relationships
	Simulation studies	Good balance between external/ internal validity Realistic visualization	Requires advanced skills and equipment Often perceived as ‘fictitious’	Study complex human–environment dynamics Visualize and evaluate future developments
	Field studies	Good balance between external/ internal validity Replicable	Limited experimental control Time-consuming data collection	Studying current behaviour Evaluating interventions
Real setting	Case studies	High external validity Rich data	Low internal validity Time demanding Limited generalizability	Descriptions Explorations Developing hypotheses

Check Your Progress 2

1. What are the major characteristics of environmental psychology listed by Bell et. al.?

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2. What are the major methods of research used in environmental psychology?\

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1.7 ENVIRONMENT PSYCHOLOGY AND ITS RELATIONSHIP WITH OTHER DISCIPLINES

Let us explore the relationship of environmental psychology with other disciplines.

1. Environmental Psychology and General Psychology

Environmental Psychology stresses upon the studies related to the influence of physical environmental factors like noise, crowding, heat, etc., on human behaviour, health, and feelings. General psychology is a much broader branch of psychology that intends to explore various principles that can be generally applied to humans that is strikingly different from the other specialized sub-fields of psychology who are more into finding the way in which people differ on the grounds of various factors.

2. Environmental Psychology and Biological Sciences

The Research Commission of the American Institute of Architects (AIA) submitted a proposal to the National Science Foundation (NSF) in 1956 to hold a conference on the relationship between the physical, biological, and social sciences with regard to the problems of creating optimal environments for human activities. The conference was held in 1959 at the University of Michigan, and the main topic was the relationship between the physical, biological, and social sciences with regard to the problems of creating optimal environments for human activities. Prior to this, a preliminary seminar on the topic was held at the AIA convention in Cleveland in 1958, with architects, civil engineers, urban planners, psychologists, and sociologists among the attendees. The sciences of the physical, geographical environment and those of the ecological naturalistic environment, both of which showed a growing “human” or “anthropic” factor by the end of the 1960s, are examples of disciplines outside of psychology that contributed significantly to the emergence of environmental psychology. Each person’s perceptions are distinct, personal, and unique. Perception is the process through which a person assigns significance to their current external situation based on their behavioural centre.

As a result, there is a strong link between environmental psychology and other sciences in many ways. It is easy to notice in one’s daily life.

3. Environmental Psychology and Human Engineering

Human engineering is a multidisciplinary field that includes contributions from psychology, engineering, industrial design, and anthropometry, among others. It is concerned with the characteristics of human capability. In human engineering, the human factor is a physical attribute of an individual that is unique to that individual and determines human environment equilibriums. Human factors encompass all aspects of how humans interact with the world around them with the goal of enhancing operational performance, safety, and other issues. Human engineering

contributes to improving the environment for humans in one way. As a result, it helps with the workings of environmental psychology.

4. Environmental Psychology and Applied Psychology

Applied Environmental psychology attempts to improve environmental management for a higher quality of life and psychological development. It researches effective ways to protect the natural environment, better ways to develop towns and communities, and strategies to raise environmental consciousness among the general public. In town planning, psychology has a lot of applications. While planning the growth of towns, studies on how communities work, people's psychological requirements, and their likes and dislikes should be taken into account. Since the environment moulds and limits behaviour, careful planning is required to achieve optimal happiness, efficiency, and growth.

5. Environmental Psychology and Community Psychology

The influence of the social environment is the emphasis of community psychology, whereas the influence of the physical environment is the subject of environmental psychology. The study of social processes in physical contexts, as well as the psychology of social settings such as the home, workplace, and school, falls under the umbrella of community and environmental psychology. Bronfenbrenner's (1989) ecological approach to human development has contributed to a better understanding of how the qualities of one type of environment, such as a family, are influenced by other aspects in participants' life, such as occupational and educational settings.

6. Environmental Psychology and Architectural Psychology

In many ways, there is a link between environmental psychology and architectural psychology. The study by Ittelson and Proshansky's group in the United States looked at the link between architectural design and the behaviour of psychiatric patients. At the same time, other psychologists and psychiatrists in the United States and other nations were working on comparable research projects. Aside from that, Sommer created the notions of human "territoriality" and "personal space," which would go on to have a huge impact on psychology in general, environmental psychology in particular, and architectural design.

Box 1.2 What is Architectural Psychology?

It is the branch of psychology discussing considerable impact of the built environment on human experience and behavior, and also a better understanding of the human-designed and influenced world.

Systematic research on ordinary physical settings and psychological processes gradually increased in the late 1940s and 1950s, with some pioneering studies on human factors in work performance (Mayo 1933), home lighting (Chapman and Thomas 1944), and child behaviour in natural settings (Barker and Wright 1955). As a result, it took until the late 1950s and early 1960s for human-environment interactions to be recognised as a comprehensive discipline. Because the majority of the studies looked at how diverse settings influence people's perceptions and behaviours, they were labelled as 'Architectural Psychology' studies to distinguish them from other types of psychology (Canter 1970; Pol 2007; Winkel et al. 2009).

The constructed physical environment (architecture, technology, and engineering) and how it affected human behaviour and well-being were given a lot of attention in the early days of environmental psychology (Bonnes and Bonaiuto 2002). The political and social circumstances of the time influenced this attention on the built environment. Modern design attempted to answer to post-war concerns such as adequate housing (Pol 2006). Many environmental psychological research looked at how to best design homes, offices, and hospitals for their intended users, as well as how environmental stresses (such as excessive temperatures, humidity, and crowding) affect human performance and well-being (Wohlwill 1970). Environmental psychology was established as a field of research to create structures that would promote behavioural functions.

1.8 ENVIRONMENTAL PSYCHOLOGY WITH SPECIAL REFERENCE TO THE INDIAN CONTEXT

Flora's magic of colour and camouflage is appreciated by everyone. The creepers and plants convert the concrete structures' dismal silence into scenes of beautiful feasts. Landscaping provides a welcome respite from congested streets. The diversity of flowers that are blooming all around are just breath-taking. Flowers are popularly used to decorate people's bodies, buildings, and backyards. People are awestruck by a lush green forest teeming with animal life. It awakens people to the wonder of creation. Environmental psychology is concerned with the interaction of persons with their surroundings. It's gaining traction as the human footprint on the natural world grows larger. The repercussions of human footprints make us aware of our obligation to nature. However, humanity has a long history of environmental concern, which is a component of our religious heritage. This worry has been expressed in modern science, particularly in the field of ecology. In fact, ecological psychology has a longer history than the global term 'environmental psychology'. Environmental assessment, environmental perception, cognitive representation of the large-scale environment, personality and the environment, environmental decision making, public attitudes toward the environment, sensory environment quality, ecological psychology, and the analysis of behaviour setting, human spatial behaviour, behavioural effects of density, etc., were all covered in the first review of environmental psychology (Fraik 1973). The word "environmental psychology" was useful as an inclusive and theoretically neutral term at the time, according to the reviewer. A specialized branch of psychology, such as ecological psychology (Barker 1965), is likely to be researched by a group of researchers within this large field. Ittelson et al. (1974), in a seminal paper, defined environmental psychology as the dynamic interaction between man and his surroundings (Indigenous approach to environmental psychology, Pirta, 2011).

Environmental psychology studies the effects of the environment on behaviour, as well as the consequences of behaviour on the environment. Environmental psychologists typically take a multidisciplinary approach to their work. However, the solution is dependent on the problem. For example, the Gestalt technique is more suited to researching environmental perception (Ittelson et al. 1974). Conservation psychologists working in the field of biodiversity preservation, on the other hand, must collaborate with scientists. On the other hand, the global and local challenges of sustainable water and other natural resources necessitate historical, social, political, and ecological understanding, as well as good science and cooperative entrepreneurship (Ostrum 1999; Rogers 2008).

Environmental psychology studies in India started approximately three and a half decades ago treating the environment as a separate entity and exploring the unidirectional relationship between the physical environment and behavioural outcome, social outcomes, psychologists adopted a social system perspective to analyze social problems and environmental issues (Padaki&Vyasulu, 1981).

This perspective equated social problems with environmental problems and used a framework for analyzing social problems rather than environmental issues. Various reviews and surveys of psychology and social science during the 1980s and 1990s, find a limited of studies dealing exclusively with physical environment behaviour relations. Contemporary research on environmental psychology in India carried out with Euro-American psychological framework has focused on the human response to various environmental stressors such as crowding, noise, pollution, poverty, disaster, encroachment of territory and personal space, etc. and has ignored other aspects of the environmental problems and issue (Jain and Palsane, 2004).

Research in environmental psychology in India has been dominated mainly in the area of crowding and growing populations. The development of environmental psychology in India refers to considering the problem and the work of social scientists, some research including territoriality (Asthana & Sexena, 1989), crowding (Jain, 1987), and deprivation (Misra, 2001). They all used ecological perspectives to study psychological adaptations. Cross-cultural techniques were used to examine the cognitive behaviour of three tribal groups in the states of Bihar – Birhour, Asir, and Oraon. The other aspect of ecological environmental research in India have been reviewed by Jain and Palsane (2004), Pandey (1998), and Pirta (2007, 2009a).

In the 21st century, people were mainly concerned with the problems of nature like global warming, ozone depletion, acid rain, and other pollutions. Psychologists are facing challenges and are trying to engage constructively in engaging in the developmental processes and framing of social policies that are pro-environmental and hints towards sustainable development. This approach has been highlighted by Mehta (2001), Pirta (2007, 2009b), and Tripathi (2003) in the Indian context.

The future directions for research in the Indian context may include culture-specific methods that may be more appropriate for understanding environmental behaviour relations in the Indian socio-cultural and environmental context. To develop cultural-inclusive environmental psychology in India, there is a need to analyse the environment-behaviour relationship from a broader perspective which may be envisaged within the eco-cultural framework (Barry, 1977) because the person is perceived as an inextricable part of the human being as an integral part of the universe. As eco-cultural framework incorporates both socio-cultural and physical components of the environment in shaping human behaviours, it can provide culture-specific ways and means to deal with the present environmental crisis (Singh, 2008).

Box 1.3 INTERESTING APPLICATION OF ENVIRONMENTAL PSYCHOLOGY KNOWLEDGE IN INTERIOR ARCHITECTURE by Nelleke Lagerwerff from GISPEN

(<https://www.gispn.com/en/blog/environmental-psychology/>)

Healthcare furnishing draws its ideas from the field environmental psychology as hospitals are places which are visited by people often when they are under higher levels of stress and this is the major reason for designing the areas in a way that

provides a comfortable stay or wait while also being functional. Environmental psychology takes into consideration everything that happens in the hospital, its rooms, signage, routing to the buildings, entrance, ceilings, acoustics, colours, sounds, colour of lights, view, natural lighting, type and shape of tables, artwork in the area, etc. Using plants and natural lights can help to ensure people experience nature by being near plants and also have proper seating arrangements. Gispén creates unique healthcare projects and take into account everyone's needs, wants, and challenges to be able to design a unique and tailor-made project that caters to everyone's needs and work out for everyone. We are also seeing an increase in the demand of such projects in office design projects.

Check Your Progress 3

1. Explain the relationship between environmental psychology and architectural psychology.

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2. Discuss the status of environmental psychology in India.\

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1.9 SUMMARY

To sum up what we have learnt in this unit, here is a quick recap:

- Environmental psychology is a specialised branch of psychology that studies the interactions between people and the physical environment as well as the built environment.
- The way environmental psychology deals with the environment at two different levels: possible behaviours and consequences of behaviour on the environment.
- The emergence and origins of environmental psychology and the growth of environmental psychology developed to be a separate discipline.
- Egon Brunswik and Kurt Lewin are the founding fathers of environmental psychology and whose foundation work for future research work in the field.
- The influence of constructed physical environment on human behaviour and well-being is known as architectural psychology.
- The different ways that environmental psychology has been defined by various researchers like Proshansky, Gifford, etc.
- The major methods of research used in the field of environmental psychology are questionnaires, laboratory, computer simulation, field, and case-study.

- Research in environmental psychology in the Indian context, have focused on crowding and growing population, territoriality, and deprivation. Culture-specific methods are required for understanding environmental behaviour relations.

1.10 REVIEW QUESTIONS

1. Define environmental psychology. What are the salient features of environmental psychology?
2. What do you mean by architectural psychology?
3. Which methods are mainly used to carry out research work in the field of environmental psychology?
4. Describe the questionnaire studies methods used in environmental psychology.
5. How is environmental psychology related to architectural psychology?

1.11 REFERENCES AND FURTHER READING

Bahuguna, S. (1987), 'Chipko: The People's Movement with a Hope for the Survival of Humankind', in *The Chipko Message*, Tehri-Garhwal.

Bell, P.A., Greene, T.C., Fisher, J.D. and Baum, A. (2001). *Environmental Psychology* (Fifth Edition), Harcourt College Publishers.

Bonnes; M. Secchiaroli, G. (1995). *Environmental Psychology - A Psycho-Social Introduction*, Sage Publication. London.

Cassidy, T. (1997). *Environmental Psychology*, Psychology Press.

Malhotra (2007), *Environmental Psychology: Principles and Practices*, Sumit Enterprises, New Delhi.

Nagar, D. (2006). *Environmental Psychology*, Concept Publishing Company.

Padaki, V., & Vyasulu, V. (1981). *Towards environmental psychology*. In Udai Preek (Ed.), *A survey of research in psychology, 1971-76 (Part II, pp. 618-645)*. Bombay: Popular Prakashan.

Pirta, R. S. 2011. *Indigenous approach to environmental psychology*. In G. Misra (Ed.), *Handbook of Psychology in India* (pp. 313-326). Delhi: Oxford.

Singh, T (2008) *Towards culture-inclusive environmental psychology in India*. IAPS Bulletin.

Tewari & Mathur (2014), *Environmental Psychology*, Pointer Publishers, New Delhi.

1.12 ADDITIONAL ONLINE RESOURCES

- Introduction to Environmental Psychology by Professor Daniel Stokols <https://www.youtube.com/watch?v=wHUS5T6uYT4&list=PLA2E69FC89640C272>

- Applying principle of Env Psychology to the analysis and resolution of community problems by Daniel Stokols
<https://www.youtube.com/watch?v=gz0gDjpClgY&list=PLA2E69FC89640C272&index=2>
- How Architecture affects the way you feel <https://www.youtube.com/watch?v=yWuqO1iY1z4>
- Applied Environmental Psychology by Dima Najib TEDx event <https://www.youtube.com/watch?v=JFA5n4JQO2k>
- <https://www.lifeperson.com/environmental-psychology-characteristics-and-principal-theories>
- Environmental Psychology
[giffordstegreser2011.pdf\(rug.nl\)](http://giffordstegreser2011.pdf(rug.nl))



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UNIT 2 HUMAN AND ENVIRONMENTAL TRANSACTIONS*

Structure

- 2.0 Introduction
- 2.1 Human Nature and Environmental Protection
- 2.2 Personal space, territoriality, and crowding
 - 2.2.1 Personal Space
 - 2.2.1.1 Measurement Techniques for Personal Space
 - 2.2.1.2 Studies on Personal Space
 - 2.2.1.3 Application of Personal Space Research
 - 2.2.2 Territoriality
 - 2.2.2.1 Factors influencing Territoriality
 - 2.2.2.2 Types of Territoriality
 - 2.2.2.3 Functions of different of Types of Territory
 - 2.2.2.4 Functions of Territorial Behaviour
 - 2.2.2.5 Territoriality and Aggression
 - 2.2.3 Crowding
 - 2.2.3.1 Crowding: Nature and Characteristics
 - 2.2.3.2 Individual Differences in reaction to Crowding
 - 2.2.3.3 Cultural factors in Crowding
 - 2.2.3.4 Psychological Effects of Crowding
 - 2.2.3.5 Crowding and personal space in India
- 2.3 Place Attachment
 - 2.3.1 Factors influencing Place Attachment
 - 2.3.2 Psychological Dimensions of Place Attachment
 - 2.3.3 Measurements of Place Attachment
- 2.4 Place Identity and Place Dependence
- 2.5 Theoretical models of human-environment interaction
 - 2.5.1 Overload Models
 - 2.5.2 Behavioral Constraint Models
 - 2.5.3 Ecological Adaptation Models
- 2.6 Summary
- 2.7 Keywords
- 2.8 Review Questions
- 2.9 References and Further Reading
- 2.10 Additional Online Resources

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Learning Objectives

After having read this Unit, you will be able to:

- Explain the relationship between human nature and environmental protection
- Elucidate the concepts of territoriality, personal space and crowding
- Discuss place attachment and identity
- Identify the factors and psychological dimensions of place attachment
- Explain the different models of human-environment interaction

2.0 INTRODUCTION

Human environment interaction can be described as the connections between human beings and the entire ecological unit. The human social systems and the environment are intricate, adaptive systems. They are intricate since ecological units and human social systems have a lot of elements and correlations between them. Adaptiveness is the feedback system that supports survival in continuously changing surroundings.

Human environment interaction is the way people adapt and modify the environment. There are three types of human-environment interaction:

1. the way people depend on the environment for food, water, timber, natural gas, etc.,
2. the way people adapt the environment to fulfil their own needs
3. the way people modify the environment positively or negatively like building dams, etc.

Environmental psychology deals with the mutual transactions taking place between individuals and their natural and built environments. This discipline investigates the behaviours that reduce or enhance sustainable, pro-climate, and nature-friendly choices, the cause and correlates of those behaviours, and suggests interventions to foster healthy pro-environmental behavior. It also studies interactions in which nature provides relaxation or causes distress, and exchanges that are more mutual and interdependent, such as the development of place attachment and identity, and the effects of and arising from common everyday physical settings such as home, workspaces, academic institutions, and public places. With readily accessible internet data, people are spending more time in virtual environments, and thus online human-environment transactions are receiving increased attention in research. Human existence is dependent on one environment or another, and the transactions between them have critical consequences for the people and their natural and built environments. In this unit, we expand our understanding by learning about the concepts of personal space, territoriality, crowding, place attachment and place identity. The unit also engages with the various models from certain theoretical standpoints on human-environment interaction.

2.1 HUMAN NATURE AND ENVIRONMENTAL PROTECTION

Human nature refers to the fundamental disposition and traits of humans, such as their inherent ways of thinking, feeling, and doing. The environment is influenced by human

nature. Environmental protection is the activity of individuals, organizations, and governments protecting the natural environment. The primary goal of environmental preservation is to preserve natural resources and the existing natural environment, as well as to repair and reverse any damage that has occurred. As a result of population growth, overconsumption, urbanization, and industrial growth, the environment is being degraded sometimes the damage is permanent and irreversible. This has been recognized and is a threat to human existence. Thus, different governmental bodies and even non-governmental bodies are coming up with the slogan to save the environment and stop environmental degradation. Since the 1960s, environmental movements have created more awareness of the multiple environmental problems and the strategies that have been taken towards saving the world.

Over the last four decades, more and more research has been focused on determining whether there is a correlation between the changing human–nature relationship, its impact on people’s health, and how it plays a role in protecting the environment. However, determining if there is a correlation necessitates interdisciplinary research into its scope and underlying mechanisms. It is believed that taking an interdisciplinary approach can help researchers better comprehend the complexity of achieving optimal health at the human–environmental interface.

Human nature is majorly influenced by cultural factors that play a crucial role in affecting one’s personality, nature, and traits. Our culture and values play a pivotal role in practices that are directed towards ecosystem protection, biodiversity conservation, and environmental protection. Human societies’ perceptions of their surroundings are substantially shaped by their own cultures and cultural practices. Modern ecosystem management has traditionally been guided by a scientific or conservation philosophy. This has occasionally resulted in a confrontation between culture and conservation, but more recently, there has been a significant acknowledgment that sustainable ecosystem management requires a greater understanding and integration of community-nature linkages. The harsh reality is that most cultures perceive and manage ecosystems through a lens dictated by long-held cultural ideas that have lasted millennia. The challenge for ecosystem management is that in a changing global environment, some of these long-held traditions can degrade the ecosystem, while others can play a critical role in supporting biodiversity conservation as well as assisting society in dealing with the effects of climate change.

Culture can be defined as “a set of distinguishing spiritual, material, intellectual, and emotional characteristics of a civilization or a social group, which includes, in addition to art and literature, lifestyles, ways of living together, value systems, tradition, and beliefs” (UNESCO, 2002). Furthermore, “Cultural systems of meaning alter people’s interpretations of climate change and offer a historical and sociocultural context in which consequences are felt and responses are generated” (Commission on Ecosystem Management, IUCN). For example, the Indian culture takes pride in its strong cultural heritage and biodiversity. Majority of people residing in India follow the religion of Hinduism where they worship the wind, land, wildlife, trees, plants, sun, moon, water, etc. These strong religious values and the culture often emphasizes on the importance of taking care of one’s environment and protecting the environment. The religions scriptures and ancient literature depict the importance of environment. Dose, the Indian culture reflects the traditions, beliefs, and conservation of our environment.

Human activities impact the environment on a large scale and in various ways like overpopulation leads to exploitation of limited natural resources, pollution destroying the quality of air and environment, deforestation leading to soil erosion and depletion of the green areas, etc.

2.2 PERSONAL SPACE, TERRITORIALITY, AND CROWDING

Environmental psychologists and social psychologists have given impetus to the concepts of privacy, territoriality and crowding. These concepts play a major role in the study of environment-behaviour relationship.

2.2.1 Personal Space

Personal space is the immediate surrounding of someone, encroachment of which can make one feel threatened or uncomfortable. Katz (1937) used the term “personal space” for the first time while Hall (1966) was the first to coin the term ‘proxemics’ which is more or less similar to personal space. Sommer (1969) defines personal space as “an area with invisible boundaries surrounding a person’s body into which intruders may not come”. In his famous book entitled *The Hidden Dimension*, Hall (1969) defines personal space as a small protective sphere or bubble that an organism maintains between themselves and others.

In short, personal space is conceived as an envelope surrounding a person. The invasion of personal space by unwanted others leads to a general tendency of withdrawal and discomfort. Personal space is not fixed and stable but it changes considerably depending upon the context interacting persons and circumstances. It is directly linked to communicational channels thus it is the dynamic and active concept of human spatial behavior (Nagar, 2006).

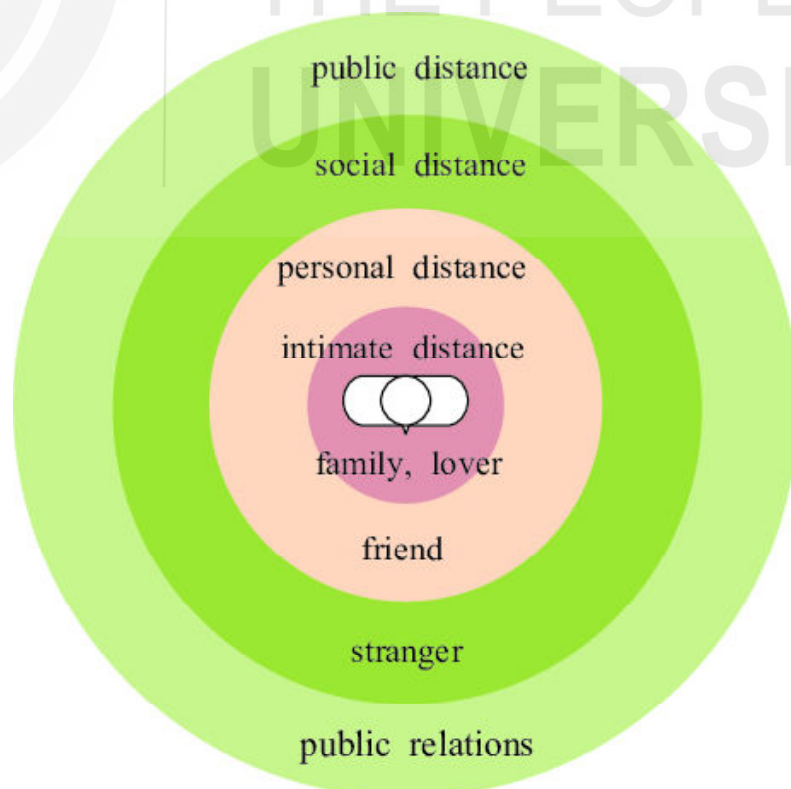


Figure 2.1 An illustration of the classification of different zones in personal space

Source: E.Hall, T.Hidaka tr., N.Sato tr., *The hidden dimension*, Tokyo, 1986

Hall proposes the use of 4 personal zones in social interaction (refer Figure 2.1) between individuals and a brief description of these zones is given below:

- i. **Intimate distance** – the interpersonal distance ranges from 0-18 inches. At this distance, strong sensory inputs like smell, body, heat, sound, and feeling of breath combined to create inescapable involvement between interacting parties.
- ii. **Personal distance** – the distance between the interacting parties ranges from 1.5 to 4 feet. This distance is used for most interactions between other people friends, and classmates mainly have fallen within this range.
- iii. **Social distance** – this distance ranges from 4-12 feet and is characterized by Hall as business distance. The transactions are formal between people who are not well acquainted usually adhere to this distance.
- iv. **Public distance** – This distance zone extends beyond 12 feet and usually, this is maintained between the speakers and the public.

2.2.1.1 Measurement Techniques of Personal space

Although there are various ways and techniques that can be used to study and measure personal space but there are a few that are most widely known and used to measure this dimension. There are three general methods listed by Altman (1978) to measure personal space, these are as follows:

- i. **Simulation Method** It is a method where hypotheses are tested for observed problems and corrective measures can be experimented with before they are implemented in the real setting. It was first developed by Kuethe (1962) in their study on social skills. Participants were asked to place miniature figures representing the self and others on board. Considerable consistency and organization in the individual arrangement of figures were reported. The methodology used by Kuethe stimulated several simulation techniques to measure personal space (Nagar, 2006).
- ii. **Laboratory Method** This is one of the most used methods to measure personal space, and the process most used is the stop-distance procedure. The participants are asked to approach at a point when they feel discomfort; this procedure is repeated for different angles of approach. The interpersonal distance between the participants is the measure of personal space. The stop-distance method and unobtrusive techniques are most suited for experimental and naturalistic studies (Hayduk, 1978).
- iii. **Field-naturalistic or Observation Methods**

The naturalistic method involved the unobtrusive observation of participants in actual interactions. A personal space study in a naturalistic setting was conducted by Gifford (1987). It is one of the effective methods for studying human-environment interaction. Cases on real-world phenomenon can be build upon which is not possible in other indirect methods. However, observation should be systematic and unobtrusive as much as possible.

2.2.1.2 Studies on Personal Space

The major review on personal space is divided into three categories:

- i. **Studies on Personal Factors** Bhattacharya and Ghosh (2014) of the University of Calcutta conducted a study to assess the requirement of personal space by people between the ages of 21-30 years considering the gender differences and interaction with the same and opposite sex. It was found that personal space varies with the difference of gender considering the context of interaction with known person same-sex and known person opposite sex. The female group was found to be more aware of personal space rather than the male group. Of all the demographical characteristics – age and sex are two variables that are found to be very potent in determining personal space. Personality correlations of various kinds like dominance, warmth, extroversion/introversion were found to be associated with personal space (Wiggins, 1979).
- ii. **Studies on Cultural Factors/ Influence** Hall (1959) pointed out that space utilization varies across cultures and is directed towards supporting spatial zones. The research of Hall provides a comprehensive descriptive analysis of various cultural factors in the use of space in the perspective of culture.
- iii. **Studies on Situational Factors** Many factors on personal space revolve around social aspects than the characteristics of physical settings. It has been found when the attraction between individuals is strong and friendly, the personal space can be reduced whereas when the bond is weak and unfriendly, space seems to expand. Altman (1987) did several studies on interpersonal relationships and personal space to confirm that when positive relationships are involved small personal space zones are preferred relative to those who are only acquaintances.

2.2.1.3 Applications of Personal Space Research

The research on personal space has provided sufficient evidence that an individuals' spatial needs can vary from person to person and from situation to situation. This can be used in cases of interior designing of the built environment and also helping people in creating their personal spaces with others keeping their preference of personal space in consideration. It can be applied to designing of homes, offices, schools, public spaces, etc.

Check Your Progress 1

1. Who was the first person to use the term 'personal space'?
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.....
2. What are the four zones that were proposed by Hall in relation to social interaction?
.....
.....
3. Which three methods are used to measure personal space?
.....
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2.2.2 Territoriality

The concept of territoriality was originally used to understand animal behavior. According to Fisher, Bell, and Baum (1984), “human territoriality can be viewed as a set of behaviors and cognitions, that an individual or group exhibits based on perceived ownership of physical space.” According to Rousseau (1950), a civilized society emerged when someone marked off a portion of land and claimed it as his ‘own,’ while others accepted it. This was also the start of our desire for our own land and territory. Territory can be defined as a stationary area which is visibly marked or restricted, defended, and used by someone. It is basically a piece of physical space that one owns on permanent basis as well as temporary basis.

Although, the concept of territoriality was originally used to study and understand animal behaviour but it is not restricted to only animals. Humans are also similar to animals when it comes to territorial behaviour or territoriality in their nature. Humans put up name plates outside their houses, build boundary walls, fences, etc. These all serve as a marking or assertion that this is their territory. Territorial behavior serves individual needs and motives which include controlling, personalizing, and defending an area (Nagar, 2004)

Territorial behavior refers to the way people use their space, communicate their ownership on their occupied areas. Territoriality is a set of attitudes and behaviors maintained by a person or a group that is based on the perception, attempted, or actual control of a physical location, item, or idea, and can include things like habitual occupation, defense, personalizing, and territory making.

Territory and personal space seem to be similar concepts but the major difference lies in the nature of these two. Personal space is more of an invisible and imaginary space or boundary that is subjective to every individual whereas territory is a visibly marked boundary.

2.2.2.1 Factors influencing Territoriality

Some factors that influence territoriality are discussed below:

1. **Gender** Gifford (1987), in his study on dormitories and beaches, demonstrated that when compared to females, males prefer larger territories. He attributed this preference of territory to be the result of socialization. These preferences for territoriality can be due to a result of internalization from a young age and being imbibed as gender roles set by the society and societal expectations.
2. **Role of Culture** Smith (1981) studied the behavior of people across different countries and the observed variations in the amount of territory across cultures. The study was conducted on French, Americans, and Germans. He concluded that even though there were similarities across these three nations but there were differences too like Germans had larger territories across cultures. Germans requiring larger territory than others can be attributed to their culture. Territory varies with population density and culture. This could also be due to the way a culture brings up an individual. It was also noted that across all the nations, males required more territory and groups of people required lesser territory than a couple or individual.
3. **Situational Factors** Territoriality varies from situation to situation. In a crowded bus or a market, the territory will be different, while in a library or at home the

territory demarcation will be different. When we discuss territory, it is also important to take the context, situation, etc., into consideration.

4. **Emotional Conflicts and Type of Territory** It is reasonable to assume that maximum disputes are likely to occur in regard to primary or secondary territory. However, this may not be the case always. In general, people accept our delineated areas or territories and rarely enter them. It is common for public territory to be taken or occupied but we cannot do anything about it because it does not belong to us. A stranger cannot organize an event in other person's garden but a stranger can easily take your preferred seat in the bus. But you just simply cannot create a fight over a seat always. This is why it is believed that acceptance of other people's territoriality is viewed as a beginning of a civilized society.

2.2.2.2 Types of territories

Many psychologists have researched the concept of territoriality. The widely accepted types of territory are given by Altman and Chemers (1980) and they are as follows:

- i) **Primary territory** This type of territory is of prime significance in our lives. It refers to a place that we believe to be our own on a relatively permanent basis. We have complete control over it. It is a place with a psychological attachment. An example for primary territory may be a study room, bedroom, etc.
- ii) **Secondary territory** This territory is comparatively less important than the primary territory. It is only temporary. There is lesser amount of personalization in this type of territory as compared to primary territory. For example, classroom seat in school. Personalization is less compared to the primary territory.
- iii) **Public territory** These are more objective and do not belong to any individual rather anyone and everyone can access this type of territory. Hence, the psychological feelings of ownership are less.

Apart from these three basic types of territory described above, we can categorize territories in our own way as well with respect to our ideas, objects we own, our bodies and our interactions.

2.2.2.3 Functions of different types of territory

Dittmar noted that territory not only serves a materialistic cost but also shapes our self-awareness. Porteous (1976) states that there are three satisfaction that we derive from such psychological ownership. They are:

- Control over space
- Personalization of space as an assertion of identity
- Stimulation which the space gives constantly when we are using that space modifying it and defining it

Primary territory serves the purpose of having a space to ourselves and being able to personalize it in our own way and be able to express ourselves. It also helps in providing a private space to enjoy solitude and intimate times.

Secondary territory serves the purpose of providing us with the sense of belongingness and safety as others who use the same space are viewed as people whom we can trust and feel safe.

Public territory serves the purpose of helping an individual to organize their space and mark a particular area temporarily. It is often the territory that has a potential scope of conflicts and criminal activities since these are not owned by anyone.

2.2.2.4 Functions of Territorial Behavior

There are various functions that are served by territorial behaviour in humans but one of the major functions of territorial behaviour in humans is organizing (Taylor & Stough 1978; Edney, 1975).

Table 2.1 Outline regarding organizing functions of human territories in everyday life given by Taylor in 1987 (Illustrated in *Environmental Psychology*, Nagar, D. 2006).

For people in...	Organizing Functions of Territory
Public Places	Organizes space, provides an interpersonal distancing mechanism
Primary territories (e.g., bedroom)	Organizes space by giving the place a sense of solitude, allows intimacy, and expression of personal identity.
Small face-to-face groups (e.g., family)	Clarify the social ecology of the group and facilitates group functioning, may provide home court advantage
Neighborhood and communities	Promotes an in-group who belong and can be trusted, differentiates them from out-group. In some urban areas, territorial control makes a space safe to use.

2.2.2.5 Territoriality and Aggression

Aggression originates from the Latin word *aggressio* which means to attack. Aggression can also be referred to as a hostile, forceful behaviour or action that can be expressed physically, symbolically, or verbally. Humans often use aggression to defend themselves. Studying the invasion of territoriality and aggression is a tricky work as it is quite difficult to find ways that can be ethically valid but research has shown that these two are related. The more well established is one's territory, the stronger would be their response if someone invades their territory.

Aggressive behavior can also be attributed to the type of infringement. Gifford (1997) differentiated between three types of infringement:

1. Invasion of territory has been reacted with vengeance and war.
2. Violation of territory can lead to anger, aggression, and depression. The reaction to such types of violation is temporary and milder than invasion
3. Contamination of personal space leads to irritation, frustration, and verbal feuds.

An individual's reaction to these different types of infringements can also depend upon various other factors like the person who carried out the infringement, the type of territory that was infringed, etc.

Check Your Progress 2

1. Which are the three basic types of territory?

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2. Mention the three factors that influence territoriality and territorial behaviour.

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3. What is the other name that is used to refer laboratory measures of territoriality?

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2.2.3 Crowding

Crowding and overcrowding are used interchangeably. The term ‘crowd’ refers to too many people at the same time in the same place. To understand the meaning of crowding, it needs to be separated from the concept of physical density. The physical density of a place refers to the number of people within the available place, if the number of people per unit is more, there will be more physical density and vice versa (Tiwari & Mathur, 2014). But crowding is not always experienced in the high-density situation. Physical density is an objective concept, crowding is a subjective feeling of cramped or lack of enough space. One may feel crowding in a situation where others are perfectly comfortable. However, physical density remains the same for all. Crowding is not only related to spatial factors but related to personal and social factors that also play a crucial role. Stokols (1976) states that “density is viewed as a necessary antecedent rather than a sufficient condition for crowding.” The concept of meaning of crowding varies between countries, regions, continents, and also depends on the social, cultural, geographical, and political factors (Clauson-Kaas, 1996). Research in crowding has been conducted at two levels. One is at the household level (measured in person per area of living space) and the second is area level (people per area of land).

Gove and Hughes (1983) distinguish between objective and subjective crowding. The former is the quantitative measurement of the number of persons per room in the household. The latter refers to one’s perception of not having enough space in the home. Objective crowding affects negatively the parent-child relationship and other social relationships. The basic assumption in subjective crowding is the lack of privacy which interferes with one’s mental health and behaviour. It is the felt experience of crowding and has a stronger relationship with mental health than objective crowding. Subjective crowding also has a greater effect on the mental health of women (Gove and Hughes, 1983).

Rubeck and Pandey (1991) also differentiate between social density and spatial density. Social density refers to the number of people interacting in the household and the spatial density refers to the floor space per person. The nature of interaction has a direct impact on one’s health, both mental and physical.

2.2.3.1 Crowding: Nature and Characteristics

Proshansky, Ittelson & Rivlin (1970) stated that crowding is not simply a matter of density of people in a given space. The experience of being crowded depends to some

extent on the people crowding him, the activities going on, and the previous experiences involving some people in a similar situation. According to Desor (1972), being crowded means receiving excessive stimulation from social sources. Epstein and Baum (1978) defined crowding as an imbalance between people and available space.

The characteristics of crowding are as follows:

1. Crowding as a stressor situation and experience of crowding as a syndrome: Crowding causes stress, and the stress can be at the physical, psychological, and social levels.
2. Non-social vs social crowding: Non-social crowding refers to the feeling cramped due to the purely physical limitation of the space. Non-social crowding is basically about spatial restriction whereas social crowding is about other people in that space and our relationship with them. Thus, factors influencing social crowding are not only physical but psychological too.
3. Crowding vs undercrowding: Crowded spaces have a severe shortage of space. Undercrowded space refers to the excessive available space that is not required.
4. Psychological response to crowding: The psychological consequences of crowding are related to two basic assumptions related to crowding:
 - a. It involves the perception of insufficient control over the environment.
 - b. It increases the desire to put more space between oneself and others as a means of avoiding actual or anticipated interferences. This provides insights into the nature and determinants of perceived crowding. In general, overstimulation, behavioral constraints, and resources scarcities define the experience of crowding (Tiwari & Mathur, 2014)

The intensity of crowding depends on many factors:

- i) The kind of people around
- ii) The kind of social interaction with the situation

2.2.3.2 Individual differences to the reaction to crowding

Personality plays a crucial role in influencing how one reacts to crowding. People who are used to crowded settings are more crowding tolerant, on the other hand, people who are used to living in non-crowded places are usually more crowding intolerant. It has been found crowding tolerance and competition tolerance are much higher in the urban population than in rural populations. Again, people with larger personal space usually feel crowded easily while people with smaller personal space are more tolerant to crowding. Friedman in his book, *Crowding and Behaviour*, argued that crowding is neither good nor bad, he proposed the density-intensity theory of crowding where he suggests as density increases, our behavior changes. He also found males usually experience more stress in high density.

2.2.3.3 Cultural factors in Crowding

Cultural factors also play a role in deciding the effects of crowding. Although crowding is felt in all cultures, some cultures do inculcate better tolerance to it than the rest. For e.g., Asian cultures are more collectivistic but some of the Western cultures are more individualistic. Residents of high contact, collectivistic culture groups perceive their homes

as less crowded (Evans, Lepore and Allen, 2000). Research conducted in South East Asia (Ruback and Pandey, 1991; Fuller, et. al. 1993; Evans et al 1993) have concluded that residential density is positively related to psychological distress among people from collectivistic cultures.

2.2.3.4 Psychological Effects of Crowding

There are both direct and indirect psychological effects of crowding. Lack of privacy because of crowding is associated with depression and other mental health problems. Crowding also leads to frustration which may in turn influence behavioural responses and the individual's ability to cope with the situation.

Tiwari & Mathur (2014) summarize the popular conception of effects of crowding that are found in animals and humans under 3 points:

- i) Physical effects—pollution, slums, diseases, illnesses, physiological breakdown, and malfunctions.
- ii) Social effects – higher aggression, crime, war, riots, social withdrawal, or abnormality
- iii) Psychological effects – aggression, withdrawal, lower performances, mental, illness, addiction, relieving quality of life.

Check Your Progress 3

1. Enlist the major characteristics of crowding.

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2. Name the three types of infringement described by Gifford.

.....

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3. Describe the physical effects of crowding that are found in humans.

.....

.....

2.2.3.5 CROWDING AND PERSONAL SPACE IN INDIA

In the Indian context, some research on personal space has been carried out in the University of Calcutta. It was found that people with psychosis larger personal space than people with neurosis and their normal counterparts. The study was conducted on prison inmates. In a crowded situation, the concept of personal space is lost in the Indian culture, and sometimes it is called a cultural habit. At the supermarket people push upright against each other, at the coffeehouse the person behind another person can even smell their hair. In countries like Japan, China and America, people rely more on individualistic values and identities. In India, people tend to have a sense of community.

Bhattacharya and Ghosh (2014) conducted a study on personal space and gender differences, their main aim was to study the personal space required by individuals between ages 21-30 years in the context of interaction with known people same-sex

and known person opposite sex. They administered the General Information Schedule and Interpersonal Comfortable Scale and found that female group required more personal space than that required by the male group especially in the context of interaction with the known person opposite sex. Personal judgments and levels of awareness may help the individuals to measure his/her personal space in the context of interaction with different persons in different situations.

In a study (Stane et al. 1981) conducted to intercorrelate 3 classes of personal space measures: naturalistic measure (persons did not know personal space being measured), two role-played measures (participants approach or were approached by a stimulus person), and Comfortable Interpersonal Distance Scale (CID), a series of 4 paper and pencil measure of personal space. Results showed significant correlations within each class of measurement but negligible correlations between classes. The lack of overlap in assessment techniques calls into question the validity of measures other than those obtained naturalistically.

2.3 PLACE ATTACHMENT

The human-environment relationship is a broad and multidimensional approach. Place attachment is one of the interesting concepts of this field of study that is investigated in many disciplines, and so has been defined in a variety of ways. Place attachment is defined as an evaluative dimension of place, it describes what does the place means to people, rather than how much does it mean. Briefly, place attachment describes how bonding that occurs between people and their meaningful surroundings. A review of the concepts and theories related to this topic helps to form the theoretical framework. Place attachment is influenced by several factors and usually, research in this area integrates the perceptual, psychological, physical, and socio-cultural dimensions of people and place. Considering dimensions of place attachment has always been beneficial for investigating the factors that influence people-place relationships. However, place attachment cooperates a positive role in individuals' lives and their care of the place. People who feel an emotional attachment to a place are more active to preserve the place.

The relationship between people and places are characterized by cognition and affection respectively (Piccoli, 2010). Just like people form emotional bonds with one another, they do so with a place also. Place attachment is the emotional bond between people and place. It arises as a result of the cultivation of meaning and artifacts associated with created spaces. Our city, our home, or even our dining table are examples of place attachment. It is usually due to strong association with that place, the more time we have spent in a particular place, the more attached we are to it. The attachment may be due to feelings, memories, and interpretations evoked by that place. Place identity and place image in general, both are two different things. Image may well differ from person to person but for an individual who is attached to a place, his/her image to the place will always be positive.

2.3.1 FACTORS INFLUENCING PLACE ATTACHMENT

Place attachment is affected by socio-demographic characteristics of people, environmental experiences, including people's type of involvement with the place, and degree of familiarity with place, people's expertise/knowledge about the place, religion, and culture, place satisfaction, and the place itself. Schnell and Gifford (2009) in an

interesting study proposed a three-dimensional structure of place attachment as illustrated in the figure below:

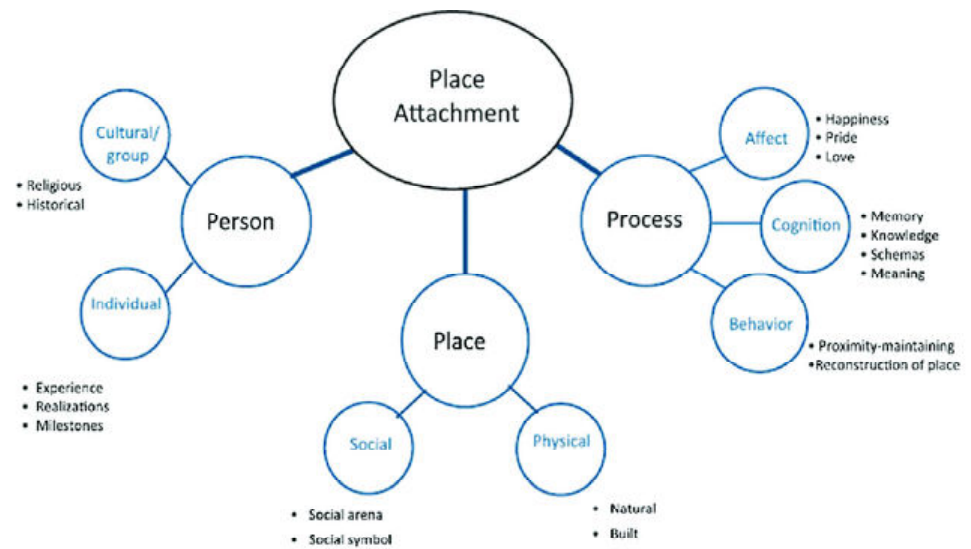


Figure 2.2 The Tripartite Model of Place Attachment

It shows that place attachment is a multi-dimensional concept. It shows that the person, psychological process, and places are dimensions. They explained that person is the first dimension, and said that place attachment can happen both at the individual level and group level based on the framework of the psychological process is the second dimension, which includes the affect, cognition, and behavior as manifested in the attachment. The object of the attachment is the third dimension which includes place characteristics that is the nature of the place.

2.3.2 PSYCHOLOGICAL DIMENSIONS OF PLACE ATTACHMENT

Functional and emotional attachments are two types of place attachment that are identified by Williams et. al (1992). Functional attachment or place dependence states the opportunities that are set for the fulfillment of specific goals or activities (Nazamin, 2012). Emotional or symbolic attachment refers to the identity, importance of what the setting symbolizes. This symbolic meaning is very personal or shared (Nazamin, 2012).

2.3.3 MEASUREMENTS OF PLACE ATTACHMENT

During the last decade, place attachment has garnered substantial theoretical research. Bonnes and Secchiaroli (1995) suggested that place attachment puts forth a positive emotional bond between the public and the places because of the satisfaction of people with the evaluations and the identification with a specific place. Henceforth, the quality of the place can be measured based upon the evaluation and perception of the place by the users (Lewicka, 2010). These days, scholars from different fields have tried to discover place-based concepts empirically. In this scenario, most of the aforementioned research works have focused on measuring the strength of attachment.

Lalli (1992) differentiated attachment studies on the phenomenological and positivistic methods. Positivistic method of approach can be recognized by researcher-defined variables, traditional hypothesis testing, and quantitative methods. In this case, familiarity with the place, length of association, place dependence, place satisfaction, place identity, sense of belonging, and place affective are the variables that are used to measure place

attachment (Stokols and Shumaker, 1981, Proshansky et al., 1995, Williams and Roggenbuck, 1989, Shamai, 1991, Steadman, 2003, Raymond et al., 2010). Williams and Roggenbuck (1989) created a series of Likert-scaled statements that were specifically designed to use the response format from strongly agree to strongly disagree to measure the theoretical dimensions of place attachment and related constructs such as place dependence and place identity. The measurement is based upon individual experiences and feelings related to the place.

In contrast to positivistic approaches, phenomenological methods focus on the meanings and experiences of place via a descriptive and qualitative discovery of things in their own terms (Manzo, 2003, Jorgensen and Stedman, 2001, Lalli, 1992). In this regard, Manzo (2003) argued the phenomenology in architecture explores the ontological character of humankind and considers ‘being-in-the-world as an indispensable part of continuation.

In recent years, many researchers focused on something more than mere measurement of public attachment by assessing:

1. People’s feelings and components of the place that absorb their attachment (Williams and Stewart, 1988, Steadman, 2003);
2. Influencing factors which could form place attachment, e.g. physical components of the place, socio-cultural relationships within the environment (Kaltenborn, 1997, Steadman, 2003), and environmental behaviours (Walker and Chapman, 2003, Steadman, 2003) or activities (Bricker and Kerstetter, 2000); and
3. The impact of place attachment on people’s environmental satisfaction, attitudes (Bogac, 2009, Lewicka, 2005), intention towards certain places (Steadman, 2003, Walker, and Chapman, 2003,) In this regard, people’s environmental attitude could be evaluated through measuring their reactions in terms of environmental emotion, cognition, and activity (Jorgensen and Stedman, 2001).

2.4 PLACE IDENTITY AND PLACE DEPENDENCE

Place attachment is one dimension of the person–place relationship that can provide information regarding visitors and their connection to particular public lands. Place attachment has been described as “the emotional link formed by an individual to a physical site that has been given meaning through interaction” (Milligan 1998:2). It is generally described as having at least two dimensions: place identity and place dependence.

Place identity refers to the symbolic meaning a particular place has to an individual (Kyle et al. 2005). People’s place identity is individuals’ strong emotional bonds to particular places or environments (Fresque-Baxter and Armitage, 2012; Zimmerbauer et al., 2012; Melnychuk and Gnatiuk, 2018). Place identity according to Proshansky is a dimension of the self-concerning the physical environment. He defines it as the cognitive connection between self and the physical environment. He defines place identity as “those dimensions of self that define the individual’s identity with the physical environment utilizing a complex pattern of conscious and unconscious ideals, beliefs, feelings, values, goals, behavioral tendencies, and skills relevant to this environment”.

Place dependence is conceptualized as the opportunities a setting provides for goal and activity needs (Stokols and Schumaker 1981). Stokols and Shumaker (1981) defined place dependence as the perceived strength of association between a person and specific places. Based on Schreyer et. al. (1981) place dependence refers to connection-based specifically on activities that take place in a setting, reflecting the importance of a place in providing conditions that support and intended use. Smaldone (2005) asserted that place dependence—with a person's consideration of two things—the quality of the current place and quality of other substitute places comparable to the current place. It concerns the functional and utilitarian aspects of the place attachment.

Check Your Progress 4

1. What are the two major dimensions of place attachment?

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2. Explain three-dimensional structure of place attachment.

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3. Define place identity.

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2.5 THEORETICAL MODELS OF HUMAN ENVIRONMENT INTERACTION

Human environment interaction can be described as the connections between human beings and the entire ecological unit. The human social systems and the environment are intricate, adaptive systems. They are intricate since ecological units and human social systems have a lot of elements and correlations between them. Adaptiveness is the feedback system that supports survival in continuously changing surroundings.

2.5.1 Overload Models

Stimulus overload models are rooted in the sociological theories of urban life development by Simmel (1950) and Wirth (1939). According to stimulus overload models, people experience stimulus overload in densely populated cities. The diversity, size, and density of most urban populations result in the exposure of city residence to excessive levels of physical and social stimulation. This surfeit of stimulation as reflected in the congestion, is arousing from overloaded channels of transportation and communication, is linked to several consequences at the community level: a cultural lifestyle of impatience, aloofness, social isolation, and elevated levels of physiological and psychological pathology. Milgram (1970) did an extension of the earlier work, defining overload as a situation in which the amount and rate of environmental inputs impinging on an organism exceed its capacity to cope with them. The central message of Milgram's study is that the individual must enact specific behavioral adaptations under conditions of overload if the individual is to operate effectively and survive.

2.5.2 Behavioral Constraint Models

The behavioral constraint perspective derives largely from Brehm's theory of psychological reactance and Sommer's (1969) conceptualization of personal space. Brehm's theory deals with situations in which an individual realizes that their freedom to perform a particular behavior has been threatened or eliminated. Perceived limitation of behavioral freedom should provoke psychological reactance, a motivational state involving feelings of preemption and infringement and resulting in behavior directed towards the re-establishment of the threatened freedom.

Somewhat related to the construct of reactance is Sommer's notion of personal space, an "invisible emotionally charged zone" surrounding each person into which intruders may not come. Personal space presupposes the existence of individual needs and situational norms which establish the bounds of comfortable interaction distance. To the extent that spatial needs and norms are violated, the reactance-like pattern of emotional distress should arise, followed by behavioral adjustments aimed at preserving one's personal space. According to this model, the experience of crowding develops through an interaction of physical, social, and personal variables, all of which combine to sensitize the individual to the actual potential constraints of limited space.

2.5.3 Ecological Adaptation Models

The ecological model stems from Barker's (1968) application of ecological theory to an analysis of human social behavior. The ecological perspective which focuses on the collective adaptation of the organism to its environment was first articulated in the late 19th century by a biologist who emphasized the interdependence of plants and animal groups occupying the same habitat. Barker's research in the area of ecological psychology represents an extension of ecological principles from the macro or community level of analysis to a consideration of the analysis of the micro, social phenomenon. The shift in emphasis is evident in Barker's concept of behavioral setting, an environment behavioral unit characterized by cyclical patterns of activity which occur within specific time intervals and spatial boundaries. Examples of behavior settings are dormitory lounges, shopping centers, and football games. Within Barker's framework, the ecology of the total community remains an important issue but is approached in terms of the dynamics of multiple behavior settings which together comprise a larger environment.

2.6 SUMMARY

To sum up what we have learnt in this unit, here is a quick recap:

- The human social system and the entire ecological system are correlated. The environment is influenced by human nature which consists of traits and dispositions.
- Personal space is the immediate surrounding of someone, encroachment of which can make one feel threatened or uncomfortable. It can be measured with the help of simulation method, laboratory method, and field naturalistic or observation method.
- Territoriality is a set of behaviors and cognitions, that an individual or group exhibits based on perceived ownership of physical space. Primary, secondary and public territory are the different types of territories.

- Crowding is a subjective feeling of cramped or lack of enough space. It is different from physical density which refers to the number of people within the available place.
- Place attachment describes how bonding that occurs between people and their meaningful surroundings
- Measurement techniques of place attachment for better understanding of the concept and apply that knowledge to other arenas.
- Place identity and place dependence concepts that are quite important in order to understand place attachment as a whole concept. Place identity refers to the symbolic meaning a particular place has to an individual. Place dependence is the perceived strength of association between a person and specific places.
- Overload models, behavioural constraint models, and ecological adaptation models help to understand the interaction that takes place between humans and their environment.

2.7 REVIEW QUESTIONS

1. Briefly describe the four personal zones as posited by E. Hall.
2. Which of the following are the major types of studies conducted to understand personal space?
 - a. Studies of personal factors
 - b. Studies on contextual factors
 - c. Studies on cultural factors
 - d. All of the above
3. Who among the following demonstrated the factors of gender that largely influences how an individual depicts a territorial behaviour?
 - a. Gifford
 - b. Smith
 - c. Blum
 - d. Altman
4. Which of the following are considered to be the major types of territory?
 - a. Primary
 - b. Secondary
 - c. Public
 - d. All of the above
5. What are the major functions of an individual's territory as stated by Porteous?
6. What does a phenomenological approach exactly refer to with respect to measurement of place attachment?

2.8 REFERENCES AND FURTHER READING

- Bell, P.A., Greene, T.C., Fisher, J.D. and Baum, A. (2001). *Environmental Psychology, Fifth Edition*, Harcourt College Publishers.
- Bonnes, M. & Secchiaroli, G. (1995). *Environmental Psychology - A Psycho-Social Introduction*, Sage Publication.
- Cassidy, T. (1997). *Environmental Psychology*, Psychology Press.
- Evans, G., Lepore, S.G. & Allen, K.M. (2000). Cross-Cultural Differences in Tolerance for Crowding: Fact or Fiction? *Journal of Personality and Social Psychology* 79(2):204-10 DOI: 10.1037/0022-3514.79.2.204 https://www.researchgate.net/publication/12371846_Cross-Cultural_Differences_in_Tolerance_for_Crowding_Fact
- Gifford R. (2014). Environmental psychology matters. *Annual review of psychology*, 65, 541–579. <https://doi.org/10.1146/annurev-psych-010213-115048>
- Hayduk L. A. (1978). Personal space: an evaluative and orienting overview. *Psychol. Bull.* 85(1) 117–134. 10.1037/0033-2909.85.1.117
- Hall, E., Hidaka, T. tr., Sato, N. tr., *The hidden dimension*, Tokyo, 1986.
- Harmon, L.K., Zinn, H.C. & Gleason, M. (2006) *Place Identity, Place Dependence, and Place-Based Affect: Examining Their Relationship to Participation in Educational and Interpretive Programs* Isle Royale National Park. The 2005 George Wright Society Conference Proceedings.
- Commission on Ecosystem Management, IUCN. <https://www.iucn.org/commissions/commission-ecosystem-management/our-work/cems-thematic-groups/cultural-practices-and-ecosystem-management>
- Clauson-Kaas, Jes, et al. (1996). Urban health: human settlement indicators of crowding. *Third World Planning Review*, 18 (3), pp.349-63.
- Gove, Walter R. and Hughes, Michael (1983). *Overcrowding in the Household: An Analysis of Determinants and Effects*. Toronto and New York: Academic Press.
- Malhotra, N. K. (2007). *Environmental psychology: Principles and practices*. Sumit Enterprises. New Delhi.
- Nagar, D. (2006). *Environmental Psychology*, Concept Publishing Company. New Delhi.
- Nishihara, R., & Okubo, M. (2015). A study on personal space in virtual space based on personality. *Procedia Manufacturing*, 3, 2183–2190. <https://doi.org/10.1016/j.promfg.2015.07.359>
- Ruback, R.B. and Pandey, J. (1991). Crowding, perceived control, and relative power: an analysis of households in India. *Journal of Applied Social Psychology*, 21, pp. 351-44.
- Stokols, D. (1976). The Experience of Crowding in Primary and Secondary Environments. *Environment and Behaviour*, 8(1). DOI 10.1177/001391657600800104

2.9 ADDITIONAL ONLINE RESOURCES

- Personal space: <https://www.youtube.com/watch?v=pw3FZ3xOBVo>
- Territoriality: <https://www.youtube.com/watch?v=pw3FZ3xOBVo>
- Place identity: <https://www.youtube.com/watch?v=pw3FZ3xOBVo>
- Human-environmentinteraction:
<https://www.youtube.com/watch?v=pw3FZ3xOBVo><https://www.youtube.com/watch?v=pw3FZ3xOBVo>
- Personal Space
https://www.researchgate.net/publication/283960340_A_Study_on_Personal_Space_in_Virtual_Space_based_on_Personality
<https://doi.org/10.1016/j.promfg.2015.07.359>
- Human Environmental Interaction
<https://www.conserve-energy-future.com/human-environmental-interaction-examples.php>
- Effects of Crowding
Effects of Crowding.doc (psychotron.org.uk)

Answers to Review Question

2. d; 3. a; 4. d