

Brief contents

1	Environmental psychology: History, scope and methods	1
PART I ENVIRONMENTAL INFLUENCES ON HUMAN BEHAVIOUR AND WELL-BEING		13
2	Environmental risk perception	15
3	Environmental stress	27
4	Scenic beauty: Visual landscape assessment and human landscape perception	37
5	Health benefits of nature	47
6	Restorative environments	57
7	Ambivalence towards nature and natural landscapes	67
8	Human dimensions of wildlife	77
9	Appraisals of built environments and approaches to building design that promote well-being and healthy behaviour	87
10	Urban environmental quality	97
11	Environment and quality of life	107
12	How cues in the environment affect normative behaviour	119
PART II FACTORS INFLUENCING ENVIRONMENTAL BEHAVIOUR		129
13	Measuring environmental behaviour	131
14	Values and pro-environmental behaviour	141
15	Social norms and pro-environmental behaviour	153
16	Affective and symbolic aspects of environmental behaviour	165
17	Social dilemmas: Motivational, individual and structural aspects influencing cooperation	175
18	Models to explain environmental behaviour	185
19	Yesterday's habits preventing change for tomorrow? The influence of automaticity on environmental behaviour	197
20	Environmental psychology in Latin America	211

PART III ENCOURAGING PRO-ENVIRONMENTAL BEHAVIOUR	221
21 Informational strategies to promote pro-environmental behaviour: Changing knowledge, awareness and attitudes	223
22 Encouraging pro-environmental behaviour with rewards and penalties	233
23 Persuasive technology to promote pro-environmental behaviour	243
24 Acceptability of environmental policies	255
25 Processes of change	267
26 Simulating social environmental systems	281
27 Environmental issues in developing countries	293
28 Conclusion: Summary, trends and future perspectives in environmental psychology	303
References	315
Glossary	355
Index	371

Contents

Brief contents	v
List of contributors	xix
Acknowledgements	xxix
1 Environmental psychology: History, scope and methods	1
<i>Linda Steg, Agnes E. van den Berg, and Judith I. M. de Groot</i>	
1.1 Introduction	2
1.2 History of the Field	2
<i>Towards 'architectural' psychology</i>	3
<i>Towards a green psychology</i>	4
1.3 Current Scope and Characteristics of the Field	4
<i>Interactive approach</i>	5
<i>Interdisciplinary collaboration</i>	5
<i>Problem-focused approach</i>	5
<i>Diversity of methods</i>	6
1.4 Main Research Methods in Environmental Psychology	6
<i>Questionnaire studies</i>	7
<i>Laboratory experiments</i>	8
<i>Computer simulation studies</i>	8
<i>Field studies</i>	9
<i>Case studies</i>	9
1.5 Overview of the Book	10
Glossary	10
Suggestions for Further Reading	11
Review Questions	11
PART I ENVIRONMENTAL INFLUENCES ON HUMAN BEHAVIOUR AND WELL-BEING	13
2 Environmental risk perception	15
<i>Gisela Böhm and Carmen Tanner</i>	
2.1 Introduction	16
2.2 What Are Environmental Risks?	16
2.3 Subjective Risk Judgements	17
<i>Heuristics and biases in risk judgements</i>	17
<i>Temporal discounting of environmental risks</i>	19
<i>The psychometric paradigm</i>	19

2.4	Risk, Values and Morality	20
	<i>Values</i>	20
	<i>Morality and ethics</i>	21
2.5	Emotional Reactions to Environmental Risks	21
2.6	Summary	23
	Glossary	24
	Suggestions for Further Reading	25
	Review Questions	25
3	Environmental stress	27
	<i>Elena Bilotta and Gary W. Evans</i>	
3.1	Introduction	28
3.2	Conceptualisations of Stress	28
3.3	Effects of Environmental Stress	29
	<i>Noise</i>	29
	<i>Crowding</i>	31
	<i>Poor housing quality</i>	31
	<i>Poor neighbourhood quality</i>	32
	<i>Traffic congestion</i>	33
3.4	Summary	33
	Glossary	34
	Suggestions for Further Reading	35
	Review Questions	35
4	Scenic beauty: Visual landscape assessment and human landscape perception	37
	<i>Mari Sundli Tveit, Åsa Ode Sang, and Caroline M. Hägerhäll</i>	
4.1	Introduction	38
4.2	Visual Quality Assessment	38
4.3	Theories Explaining Landscape Preferences as Innate or Learnt	39
4.4	Measuring and Mapping Scenic Beauty	42
4.5	Methodological Developments	43
4.6	Summary	44
	Glossary	44
	Suggestions for Further Reading	45
	Review Questions	46
5	Health benefits of nature	47
	<i>Agnes E. van den Berg, Yannick Joye, and Sjerp de Vries</i>	
5.1	Introduction	48
5.2	What Is Health and How Can It Be Measured?	49
5.3	What Is Nature and How Can It Be Measured?	50
5.4	Linking Nature to Health	50
5.5	Green Space and Public Health	51
5.6	Mechanisms Linking Nature to Health	52
5.7	Summary	54

Glossary	55
Suggestions for Further Reading	56
Review Questions	56
6 Restorative environments	57
<i>Yannick Joye and Agnes E. van den Berg</i>	
6.1 Introduction	58
6.2 Restorative Environments Research	58
<i>Stress recovery theory</i>	59
<i>Attention restoration theory</i>	60
6.3 The Evolutionary Origins of Restorative Nature Experiences	61
6.4 Recent Theoretical and Empirical Developments	62
<i>Perceptual fluency account</i>	62
<i>Connectedness to nature</i>	62
<i>Micro-restorative experiences and instorative effects</i>	63
6.5 Applications and Implications	64
6.6 Summary	65
Glossary	65
Suggestions for Further Reading	66
Review Questions	66
7 Ambivalence towards nature and natural landscapes	67
<i>Agnes E. van den Berg and Cecil C. Konijnendijk</i>	
7.1 Introduction	68
7.2 Historical Overview	68
7.3 Emotional Impacts and Meanings of Natural Environment Experience	69
7.4 Views of Nature and Landscape Preferences	71
7.5 Theoretical Perspective	72
7.6 Practical Implications	74
7.7 Summary	74
Glossary	75
Suggestions for Further Reading	75
Review Questions	76
8 Human dimensions of wildlife	77
<i>Maarten H. Jacobs, Jerry J. Vaske, Tara L. Teel, and Michael J. Manfredi</i>	
8.1 Introduction	78
8.2 Early Work: Attitudes towards Wildlife	78
8.3 The Cognitive Hierarchy	79
8.4 Wildlife Value Orientations	81
8.5 Predicting Norms and Attitudes towards Wildlife	83
8.6 Emotions towards Wildlife	83
8.7 Summary	85
Glossary	85
Suggestions for Further Reading	86
Review Questions	86

9	Appraisals of built environments and approaches to building design that promote well-being and healthy behaviour	87
	<i>Robert Gifford and Lindsay J. McCunn</i>	
9.1	Introduction	88
9.2	Aesthetic Appraisals of Architecture	88
	<i>Uniformities in the appraisal of built space</i>	88
	<i>Observer differences</i>	90
	<i>Meaning in architecture</i>	90
9.3	Three Design Approaches that Promote Well-Being and Healthy Behaviour in Buildings	91
	<i>Social design</i>	91
	<i>Biophilic design</i>	93
	<i>Evidence-based design</i>	93
9.4	Summary	94
	Glossary	94
	Suggestions for Further Reading	95
	Review Questions	95
10	Urban environmental quality	97
	<i>Mirilia Bonnes, Massimiliano Scopelliti, Ferdinando Fornara, and Giuseppe Carrus</i>	
10.1	Introduction	98
10.2	Urban Settings as a Source of Stress and Discomfort	99
10.3	Urban Settings as a Source of Restoration and Well-Being	100
10.4	A Multidimensional Approach to Urban Environmental Quality	101
10.5	The Multi-Place Approach	104
10.6	Summary	105
	Glossary	105
	Suggestions for Further Reading	106
	Review Questions	106
11	Environment and quality of life	107
	<i>Goda Perlaviciute and Linda Steg</i>	
11.1	Introduction	108
11.2	QoL: Objective and Subjective Measures	109
11.3	QoL: Unidimensional and Multidimensional Measures	110
11.4	Environment and QoL: Research Overview	111
	<i>Which QoL aspects are most important?</i>	111
	<i>To what extent is QoL sustained in certain situations?</i>	113
	<i>How does QoL differ with varying environmental conditions?</i>	114
	<i>How do environmental transformations influence QoL?</i>	115
11.5	Summary	117
	Glossary	117
	Suggestions for Further Reading	118
	Review Questions	118
12	How cues in the environment affect normative behaviour	119
	<i>Siegwart Lindenberg</i>	
12.1	Introduction	120
12.2	Overarching Goals and Their Relative Strengths	121

12.3	Environmental Cues That Directly Strengthen the Normative Goal	123
12.4	Environmental Cues That Directly Weaken the Normative Goal	124
12.5	Indirect Weakening of the Normative Goal by Environmental Cues That Strengthen the Gain Goal	125
12.6	Indirect Weakening of the Normative Goal by Environmental Cues That Strengthen the Hedonic Goal	126
12.7	Summary	127
	Glossary	127
	Suggestions for Further Reading	128
	Review Questions	128
PART II FACTORS INFLUENCING ENVIRONMENTAL BEHAVIOUR		129
13	Measuring environmental behaviour	131
	<i>Birgitta Gatersleben</i>	
13.1	Introduction	132
13.2	What to Measure? Behaviour or Impact	132
	<i>Environmental behaviour</i>	132
	<i>Environmental impact</i>	133
13.3	How Should Environmental Behaviour be Measured?	136
13.4	Multi- and Unidimensional Conceptualisation of Environmental Behaviour	137
	<i>Multidimensional conceptions of environmental behaviour</i>	137
	<i>A unidimensional conception of environmental behaviour</i>	137
13.5	Summary	139
	Glossary	139
	Suggestions for Further Reading	140
	Review Questions	140
14	Values and pro-environmental behaviour	141
	<i>Judith I. M. de Groot and John Thøgersen</i>	
14.1	Introduction	142
14.2	Values	142
14.3	Value Theories	143
	<i>Social value orientations</i>	143
	<i>Schwartz's value theory</i>	144
	<i>Emergence of biospheric values</i>	146
14.4	How Values Affect Environmental Behaviour	147
14.5	Related Concepts	148
14.6	Practical Relevance of Value Research	150
14.7	Summary	150
	Glossary	151
	Suggestions for Further Reading	152
	Review Questions	152
15	Social norms and pro-environmental behaviour	153
	<i>Kees Keizer and P. Wesley Schultz</i>	
15.1	Introduction	154
15.2	What is a Social Norm?	154
15.3	How Influential are Norms on Behaviour?	155

15.4	Why do People Conform to Norms?	156
15.5	When do Norms Influence Behaviour?	156
	<i>Saliency</i>	156
	<i>Group size</i>	157
	<i>Reference groups</i>	158
	<i>Personal norms</i>	158
	<i>Norm conflict and the importance of aligned messages</i>	159
15.6	Summary	162
	Glossary	162
	Suggestions for Further Reading	163
	Review Questions	163
16	Affective and symbolic aspects of environmental behaviour	165
	<i>Birgitta Gatersleben and Linda Steg</i>	
16.1	Introduction	166
16.2	What Do We Mean by Instrumental, Affective and Symbolic Aspects?	166
16.3	Symbolic Motives	170
	<i>Self-identity</i>	170
	<i>Status</i>	170
16.4	Affective Motives	171
16.5	Summary	173
	Glossary	173
	Suggestions for Further Reading	174
	Review Questions	174
17	Social dilemmas: Motivational, individual and structural aspects influencing cooperation	175
	<i>Chris von Borgstede, Lars-Olof Johansson, and Andreas Nilsson</i>	
17.1	Introduction	176
17.2	Defining Social Dilemmas	176
17.3	Types of Social Dilemma	177
	<i>Large-scale dilemmas</i>	177
	<i>Resource dilemmas</i>	177
	<i>Public good dilemmas</i>	178
17.4	Motives in Social Dilemmas	178
	<i>Greed</i>	178
	<i>Efficiency</i>	179
	<i>Fairness</i>	180
17.5	Factors Promoting Cooperation	180
	<i>Group size</i>	181
	<i>Communication</i>	181
	<i>Response efficacy</i>	181
	<i>Environmental uncertainty</i>	182
	<i>Social uncertainty</i>	182
	<i>Norms in large-scale dilemmas</i>	182
17.6	Summary	183

Glossary	183
Suggestions for Further Reading	184
Review Questions	184
18 Models to explain environmental behaviour	185
<i>Linda Steg and Annika Nordlund</i>	
18.1 Introduction	186
18.2 Theory of Planned Behaviour	186
18.3 The Norm Activation Model	189
18.4 The Value–Belief–Norm Theory of Environmentalism	191
18.5 Goal Framing Theory	192
18.6 Summary	193
Glossary	194
Suggestions for Further Reading	195
Review Questions	195
19 Yesterday’s habits preventing change for tomorrow? The influence of automaticity on environmental behaviour	197
<i>Christian A. Klöckner and Bas Verplanken</i>	
19.1 Introduction	198
19.2 Theoretical Background: How Habits Are Acquired	198
19.3 Narrowing Down Decision Making: How Habits Affect Information Use	201
19.4 Measuring Habits: A Challenge for Research	203
19.5 Breaking Bad Habits, Creating Good Habits: Interventions That Change Routine Behaviour	206
19.6 Summary	207
Glossary	208
Suggestions for Further Reading	209
Review Questions	209
20 Environmental psychology in Latin America	211
<i>Javier Urbina-Soria and Emilio Moyano-Díaz</i>	
20.1 Introduction	212
20.2 Latin American Background	212
20.3 Environmental Psychology Research in Latin America	213
20.4 Summary of Earlier Reviews on Environmental Psychology in Latin America	214
20.5 Recent Developments in Environmental Psychology in Latin America	215
20.6 Key Issues for the Development of Research in Latin America	217
<i>International research</i>	217
<i>Research approach</i>	218
<i>Research samples</i>	218
<i>Training of environmental psychologists</i>	218
<i>Differences in values, culture and language</i>	218
20.7 Summary	219

Glossary	219
Suggestions for Further Reading	220
Review Questions	220
PART III ENCOURAGING PRO-ENVIRONMENTAL BEHAVIOUR	221
21 Informational strategies to promote pro-environmental behaviour: Changing knowledge, awareness and attitudes	223
<i>Wokje Abrahamse and Ellen Matthies</i>	
21.1 Introduction	224
21.2 Interventions: From Research to Implementation	224
21.3 Informational Strategies	225
<i>Provision of information</i>	225
<i>Goal setting</i>	226
<i>Commitment</i>	227
<i>Prompting</i>	228
<i>Feedback</i>	228
21.4 Intervention Research: Some General Issues	229
21.5 Summary	230
Glossary	230
Suggestions for Further Reading	231
Review Questions	231
22 Encouraging pro-environmental behaviour with rewards and penalties	233
<i>Jan Willem Bolderdijk, Philip K. Lehman, and E. Scott Geller</i>	
22.1 Introduction	234
22.2 Analysis of Consequences	234
22.3 Natural versus Extra Consequences	236
22.4 When is it Appropriate to Apply Extra Consequences?	237
22.5 How Should Extra Consequences be Announced and Delivered?	238
<i>Negative versus positive consequences</i>	239
<i>Monetary versus non-monetary consequences</i>	239
22.6 Summary	241
Glossary	241
Suggestions for Further Reading	242
Review Questions	242
23 Persuasive technology to promote pro-environmental behaviour	243
<i>Cees Midden and Jaap Ham</i>	
23.1 Introduction	244
23.2 Technology and Behaviour	244
23.3 Persuasive Technology	245
23.4 Approaches to Applying Persuasive Technology	246
23.5 Social Influence through Smart Systems	247
<i>The role of embodiment and speech</i>	248
<i>Reactance</i>	248

23.6	Providing Persuasive Experiences	249
23.7	Persuasive Technology as a Tool to Promote Behaviour Change	249
	<i>Ambient persuasion</i>	249
	<i>Group interventions</i>	251
23.8	Summary	252
	Glossary	253
	Suggestions for Further Reading	253
	Review Questions	254
24	Acceptability of environmental policies	255
	<i>Geertje Schuitema and Cecilia Jakobsson Bergstad</i>	
24.1	Introduction	256
24.2	Acceptability as a Social Dilemma	256
24.3	Theoretical Framework to Explain the Acceptability of Policy Measures	257
	<i>Individual policy outcomes</i>	258
	<i>Collective policy outcomes</i>	258
	<i>Fair distribution of policy outcomes</i>	260
24.4	Procedural Fairness and Acceptability of Environmental Policies	262
24.5	How Can Public Support Increase Over Time? An Illustration	263
24.6	Summary	265
	Glossary	265
	Suggestions for Further Reading	266
	Review Questions	266
25	Processes of change	267
	<i>Sebastian Bamberg</i>	
25.1	Introduction	268
25.2	Lewin's Field Theory	268
	<i>Lewin's theory of change</i>	269
25.3	Behaviour Change: A Self-Regulation Process Steered by Feedback Loops	269
	<i>Goals as the reference value of a feedback loop</i>	270
	<i>Hierarchical organisation of goals and feedback loops</i>	270
	<i>The role of self-focus</i>	271
25.4	Behaviour Change: It Takes Time To Overcome Resistance To Change	271
25.5	The Stage Model of Self-Regulated Behaviour Change	273
25.6	Implications for Interventions	275
25.7	Summary	275
	Glossary	277
	Suggestions for Further Reading	278
	Review Questions	279
26	Simulating social environmental systems	281
	<i>Wander Jager and Nick Gotts</i>	
26.1	Introduction	282
26.2	Social Complexity	282

26.3	Social Simulation as a Methodology	283
26.4	Social Simulation of Environmental Behaviour	284
	<i>Using theory in simulation models: Formalising processes of attitude change</i>	284
	<i>Using theory and data in models: Diffusion of environmental innovations</i>	285
26.5	Integrating Social Simulation into Environmental Modelling	286
	<i>The Lakeland study</i>	286
	<i>Companion modelling: A study of rice production and labour migrations in north-east Thailand</i>	287
	<i>Integrating multiple models of a socio-environmental system: Water use in the Danube basin</i>	288
26.6	Key Steps In Building Agent-Based Models	289
	<i>Development of models</i>	289
	<i>Using models</i>	289
26.7	Summary	290
	Glossary	290
	Suggestions for Further Reading	291
	Review Questions	291
27	Environmental issues in developing countries	293
	<i>Hans-Joachim Mosler and Silvie Kraemer-Palacios</i>	
27.1	Introduction	294
27.2	Predicting Behaviour and Behaviour Change	295
	<i>Waste control behaviour</i>	295
	<i>Water use</i>	296
	<i>Energy consumption</i>	297
	<i>Transportation</i>	298
27.3	Environmental Concern and Public Health Problems	298
	<i>Environmental concern</i>	298
	<i>Health, poverty and the environment</i>	299
27.4	Living Environments	299
	<i>Slums and public housing</i>	299
	<i>Public spaces in developing countries</i>	300
	<i>Rural communities</i>	300
27.5	Summary	301
	Glossary	301
	Suggestions for Further Reading	302
	Review Questions	302
28	Conclusion: Summary, trends and future perspectives in environmental psychology	303
	<i>Agnes E. van den Berg and Linda Steg</i>	
28.1	Summary and Key Findings	304
	<i>Part I: Environmental influences on human behaviour and well-being</i>	304
	<i>Part II: Factors influencing environmental behaviour</i>	305
	<i>Part III: Encouraging pro-environmental behaviour</i>	305
28.2	General Trends and Developments	306
	<i>Positive interactions between humans and environments</i>	306

<i>Integrative approaches</i>	307
<i>From one psychology to multiple psychologies</i>	308
28.3 Challenges for Future Research	309
<i>Further integration</i>	309
<i>Further development of theories and methods</i>	310
<i>Further engagement</i>	311
Glossary	312
Suggestions for Further Reading	313
Review Questions	313
References	315
Glossary	355
Index	371