Contents

List of illustrations Authors		xiv
		xxi
Preface		xxiii
Acknowledgements		xxiv
	RODUCTION TO COGNITIVE PSYCHOLOGY vid Groome	2
1.1	Cognitive processes	3
	A definition of cognitive psychology	3
	Stages of cognitive processing	3
	Approaches to the study of cognition	4
1.2	Experimental cognitive psychology	6
	The first cognitive psychologists	6
	The rise and fall of behaviourism	6
	Gestalt and schema theories	7
	Top-down and bottom-up processing	9
1.3	Computer models of information processing	10
	Computer analogies and computer modelling of	
	brain functions	10
	Feature detectors	10
	The limited-capacity processor model	12
1.4	Cognitive neuroscience and neuropsychology	12
	The structure and function of the brain	12
	Information storage in the brain	15
1.5	Automatic processing	17
	Automatic versus controlled processing	17
	Conscious awareness	19
1.6	Minds, brains and computers	22
	Integrating the main approaches to cognition	22
	nmary	22
Fur	ther reading	23
2. PEF	RCEPTION	24
Gra	iham Edgar, Helen Edgar and Graham Pike	
2.1	Introduction	25
2.2	Visual perception	25
	Theories of perception – schemas and template	
	matching	25
	The Gestalt approach	27
	Feature-extraction theories	28
	Marr's computational theory	29

	Biederman's recognition-by-components approach	30
	Parallel distributed processing approaches	30
	Visual illusions	31
	The difference between sensation and perception	36
	'Looked but failed to see' (LBFS) accidents	37
	·	40
	The influence of top-down processing: an example	
	The constructivist approach: perception for recognition Evidence for the constructivist approach: masking and	41
	re-entrant processing	43
	The Gibsonian view of perception: perception for action	45
	Evidence for the Gibsonian approach	45
	The structure of the visual system	46
	The dorsal and ventral streams	46
	The interaction of the dorsal and ventral streams:	
	perception for recognition and action	48
2 3	Auditory perception	50
2.3	• • •	51
	Auditory localisation	
	Auditory attention	55
	Interactions and real-world examples	55
	Top-down influences on auditory perception	56
2.4	Haptic perception	58
	More than five senses?	58
	Proprioception, kinesthesis and haptic information	60
	Using illusions to explore haptic information	62
	Applications of haptic information to driving	66
2.5	Conclusion	67
	nmary	68
	ther reading	69
3. ATT	ENTION	70
Eliz	abeth Styles	
	•	
	What is attention?	71
	What is attention for?	72
	Where is the limit? The search for the bottleneck	74
3.4	The problem of breakthrough	75
3.5	Subliminal priming effects	76
3.6	Object selection, inhibition and negative priming	77
	Directing the spotlight of visual attention	78
	Cross-modal cueing of attention	80
	Visual search	82
	Evidence for and against FIT	83
	The importance of task differences	85
	Attention, working memory and distraction	86
	•	
	Attention and cognitive control	87
	Combining tasks	90
_	Practice, automaticity and skill	92
Sumr	•	96
Furth	ner reading	97

	5.3	The working memory model	142
		Working memory	142
	5.4	The phonological loop	143
		Evidence for the phonological loop	143
		The word-length effect	144
		Sub-components of the phonological loop	144
		Non-speech sounds	145
		The phonological loop and language acquisition	146
	5.5	The visuo-spatial sketchpad	146
		Measuring the capacity of the visuo-spatial sketchpad	146
		Evidence for the visuo-spatial sketchpad	147
		Sub-components of the visuo-spatial sketchpad	148
	5.6	The central executive	149
		Investigating the central executive	149
		Impairment of central executive function	149
	5.7	Working memory theory today	150
		The episodic buffer	150
		Unitary theories of memory	151
		Controlled attention theory	151
		Individual differences in WM	151
		Neuro-imaging studies and WM	153
	Sun	nmary	154
		ther reading	155
5.	LON	IG-TERM MEMORY	156
	Daı	rid Groome	
	6 1	The nature and function of memory	157
	0.1	Memory and its importance in everyday life	157
		Encoding, storage and retrieval of memory	157
	62	The first memory experiments	158
	0.2	Ebbinghaus and the forgetting curve	158
		Interference and decay	159
	63	Meaning, knowledge and schemas	160
	0.3	Bartlett's story recall experiments and the schema theory	160
		The effect of meaning and knowledge on memory	162
		Schemas and scripts	164
		Schemas and distortion	164
		Meaning and mnemonics	165
	6.4	Input processing and encoding	166
	0	Levels of processing theory	166
		Orienting tasks	166
		Levels theory revised	168
		Elaborative and maintenance rehearsal	169
		Elaborative encoding and organisation	169
	6.5	Retrieval and retrieval cues	170
	0.0	Recall and recognition	170
		Generate and recognise theory	171
		Cue-dependent forgetting and the encoding	1/1
		specificity principle	171
		- p p p	- / 1

	Transfer-appropriate processing	173
	Context-dependent memory	174
	State-dependent and mood-dependent memory	176
6.6	Memory systems	177
	Episodic and semantic memory	177
	Familiarity and recollection	179
	The R & K ('remember and know') procedure	181
	Implicit and explicit memory	181
	Implicit memory in everyday life	183
	Processes underlying different memory systems	185
6.7	Retrieval practice and retrieval inhibition	185
	Retrieval practice and the testing effect	185
	Decay with disuse	186
	Retrieval-induced forgetting (RIF)	187 188
	RIF in real-life settings Retrieval inhibition, disuse and psychiatric disorders	189
	Directed forgetting	190
	Reconsolidation	191
6.8	Memory in everyday life	192
0.0	Ecological validity	192
	Autobiographical memory	193
	Flashbulb memories	196
	Eyewitness testimony	197
	The cognitive interview	200
Su	nmary	202
Fu	rther reading	203
7. DI	SORDERS OF MEMORY	204
	SORDERS OF MEMORY wid Groome	204
Da		204 205
Da	vid Groome	
Da	wid Groome Amnesia and its causes	205
Da	Amnesia and its causes The effects of amnesia	205 205 205 208
<i>Da</i> 7.1	Amnesia and its causes The effects of amnesia Causes of amnesia Amnesia as an impairment of long-term memory Anterograde and retrograde amnesia	205 205 205 208 210
<i>Da</i> 7.1	Amnesia and its causes The effects of amnesia Causes of amnesia Amnesia as an impairment of long-term memory Anterograde and retrograde amnesia Distinguishing anterograde from retrograde amnesia	205 205 205 208 210 210
<i>Da</i> 7.1	Amnesia and its causes The effects of amnesia Causes of amnesia Amnesia as an impairment of long-term memory Anterograde and retrograde amnesia Distinguishing anterograde from retrograde amnesia Testing anterograde and retrograde amnesia	205 205 205 208 210
<i>Da</i> 7.1	Amnesia and its causes The effects of amnesia Causes of amnesia Amnesia as an impairment of long-term memory Anterograde and retrograde amnesia Distinguishing anterograde from retrograde amnesia Testing anterograde and retrograde amnesia Anterograde and retrograde impairment in organic	205 205 205 208 210 210 211
<i>Da</i> 7.1	Amnesia and its causes The effects of amnesia Causes of amnesia Amnesia as an impairment of long-term memory Anterograde and retrograde amnesia Distinguishing anterograde from retrograde amnesia Testing anterograde and retrograde amnesia Anterograde and retrograde impairment in organic amnesia	205 205 205 208 210 210 211
<i>Da</i> 7.1	Amnesia and its causes The effects of amnesia Causes of amnesia Amnesia as an impairment of long-term memory Anterograde and retrograde amnesia Distinguishing anterograde from retrograde amnesia Testing anterograde and retrograde amnesia Anterograde and retrograde impairment in organic amnesia Focal retrograde and focal anterograde amnesia	205 205 205 208 210 210 211
<i>Da</i> 7.1	Amnesia and its causes The effects of amnesia Causes of amnesia Amnesia as an impairment of long-term memory Anterograde and retrograde amnesia Distinguishing anterograde from retrograde amnesia Testing anterograde and retrograde amnesia Anterograde and retrograde impairment in organic amnesia Focal retrograde and focal anterograde amnesia Explaining the temporal gradient in retrograde	205 205 205 208 210 210 211 212 213
<i>Da</i> 7.1	Amnesia and its causes The effects of amnesia Causes of amnesia Amnesia as an impairment of long-term memory Anterograde and retrograde amnesia Distinguishing anterograde from retrograde amnesia Testing anterograde and retrograde amnesia Anterograde and retrograde impairment in organic amnesia Focal retrograde and focal anterograde amnesia Explaining the temporal gradient in retrograde amnesia	205 205 205 208 210 210 211
<i>Da</i> 7.1	Amnesia and its causes The effects of amnesia Causes of amnesia Amnesia as an impairment of long-term memory Anterograde and retrograde amnesia Distinguishing anterograde from retrograde amnesia Testing anterograde and retrograde amnesia Anterograde and retrograde impairment in organic amnesia Focal retrograde and focal anterograde amnesia Explaining the temporal gradient in retrograde amnesia Brain lesions associated with anterograde and	205 205 205 208 210 210 211 212 213
7.1 7.2	Amnesia and its causes The effects of amnesia Causes of amnesia Amnesia as an impairment of long-term memory Anterograde and retrograde amnesia Distinguishing anterograde from retrograde amnesia Testing anterograde and retrograde amnesia Anterograde and retrograde impairment in organic amnesia Focal retrograde and focal anterograde amnesia Explaining the temporal gradient in retrograde amnesia Brain lesions associated with anterograde and retrograde amnesia	205 205 205 208 210 211 212 213 215
7.1 7.2	Amnesia and its causes The effects of amnesia Causes of amnesia Amnesia as an impairment of long-term memory Anterograde and retrograde amnesia Distinguishing anterograde from retrograde amnesia Testing anterograde and retrograde amnesia Anterograde and retrograde impairment in organic amnesia Focal retrograde and focal anterograde amnesia Explaining the temporal gradient in retrograde amnesia Brain lesions associated with anterograde and	205 205 205 208 210 210 211 212 213
7.1 7.2	Amnesia and its causes The effects of amnesia Causes of amnesia Amnesia as an impairment of long-term memory Anterograde and retrograde amnesia Distinguishing anterograde from retrograde amnesia Testing anterograde and retrograde amnesia Anterograde and retrograde impairment in organic amnesia Focal retrograde and focal anterograde amnesia Explaining the temporal gradient in retrograde amnesia Brain lesions associated with anterograde and retrograde amnesia Intact and impaired memory systems	205 205 205 208 210 210 211 212 213 215 215 218
7.1 7.2	Amnesia and its causes The effects of amnesia Causes of amnesia Amnesia as an impairment of long-term memory Anterograde and retrograde amnesia Distinguishing anterograde from retrograde amnesia Testing anterograde and retrograde amnesia Anterograde and retrograde impairment in organic amnesia Focal retrograde and focal anterograde amnesia Explaining the temporal gradient in retrograde amnesia Brain lesions associated with anterograde and retrograde amnesia Intact and impaired memory systems Motor skills	205 205 205 208 210 211 212 213 215 218 219
7.1 7.2	Amnesia and its causes The effects of amnesia Causes of amnesia Amnesia as an impairment of long-term memory Anterograde and retrograde amnesia Distinguishing anterograde from retrograde amnesia Testing anterograde and retrograde amnesia Anterograde and retrograde impairment in organic amnesia Focal retrograde and focal anterograde amnesia Explaining the temporal gradient in retrograde amnesia Brain lesions associated with anterograde and retrograde amnesia Intact and impaired memory systems Motor skills Implicit memory	205 205 208 210 210 211 212 213 215 218 219 220

	7.4	Theories of amnesia	226
		Encoding deficit theories of amnesia	226
		Retrieval deficit theories of amnesia	227
		Separate impairments of encoding and retrieval	227
		The standard model of consolidation	228
		Multiple trace theory	228
		Impaired declarative memory	229
		Impaired binding	229
		Impaired perceptual processing	230
	7.5	Other types of memory disorder	230
		Impairment of short-term memory	230
		Concussion amnesia	231
		ECT and memory loss	232
		Frontal lobe lesions	233
		Memory loss in the normal elderly	234
		Psychogenic amnesia	235
	7.6	Rehabilitation	236
		Helping patients to cope with amnesia	236
		Maximising memory performance	236
		External memory aids	237
		nmary	238
	Fur	ther reading	239
3.	THI	NKING AND PROBLEM-SOLVING	240
	Nic	ola Brace	
	8.1	Introduction	241
	8.2	Early research on problem-solving	242
		The Gestalt approach to problem-solving	242
	8.3	The information-processing approach to	
		problem-solving	245
		Problem-solving strategies	245
		Difficulties in applying problem-solving strategies	247
		Problem representation	249
	8.4	Problem-solving by analogy	251
		Are analogies spontaneously used to solve problems?	253
		Comparing experts and novices	254
		Encouraging the use of analogies to solve problems	256
	8.5	Deductive and inductive reasoning	257
		Inductive reasoning: hypothesis generation	258
		Is confirmation bias a general tendency?	259
		Deductive reasoning	261
		Wason's four-card selection task	263
	8.6	Theoretical approaches to reasoning	264
		Mental logic theories	264
		Pragmatic reasoning schemata	265
		Mental models	266
		The probabilistic approach	268
		Dual-process accounts	269
		nmary	270
	Furt	ther reading	271

9. DISORDERS OF THINKING AND		
PRO	DBLEM-SOLVING	272
Nic	Nicola Brace	
9.1	Introduction	273
	Anatomy and physiology of the frontal lobes	274
	The impact of frontal lobe damage on behaviour	275
7.3	Early clinical studies	275
	Early animal studies	276
	Later clinical studies and the effect on 'executive'	270
	functions	277
9.4	Impairments in the deployment of attention	279
	Sustaining and concentrating attention	279
	Suppressing attention	279
9.5	Impairments in abstract and conceptual	,
	thinking	281
	Sorting tasks	281
	Evidence concerning perseveration	283
	Going beyond perseveration	284
9.6	Impaired strategy formation	286
	Cognitive estimation tasks	286
	Goal-oriented problem-solving	288
9.7	Deficits in everyday higher-order planning	289
	Conceptual issues	293
	Supervisory attentional system	293
	Alternative approaches	295
	Fractionation of the executive functions of the	
	frontal lobes	296
	Diversity and unity of executive functions	298
A fi	nal note	299
	Summary	
Further reading		299 300
	o .	
10 14	ANGUAGE	302
	phie Scott	002
	Introduction	303
10.2	The language system	303
	Speech sounds	304
	Visual languages – British Sign Language	306
	Words and morphemes	307
	Sentence level	308
40.0	The level of discourse	309
10.3	Psychology and linguistics	309
40.4	Tasks in the study of language	311
10.4	Recognising spoken and written words	311
	How do we recognise spoken words?	311
	How do we recognise written words?	314
	Morphemes and word recognition	316
40.5	Database approaches	316
10.5	Understanding the meanings of words	317

10.6	Explaining lexical access in language comprehension How should we model linguistic processing – rules or regularities? The case of regular and irregular	318
	past-tense verbs	320
10.7	Sentence comprehension	323
	Language production	326
	Discourse level	330
10.7	Coordinating conversations	330
	Meaning and intention in conversation	331
	Social conversations	332
Not	te	333
Sun	nmary	334
	ther reading	334
	ISORDERS OF LANGUAGE ophie Scott	337
	Introduction	337
	Models of aphasia	339
11,2	The Wernicke–Lichtheim model of aphasia and its	337
	modifications	339
	The Boston Aphasia Classification System	341
11.3	Detailed symptoms of aphasic profiles	346
	Broca's aphasia	346
	Wernicke's aphasia	347
	Conduction aphasia	348
	Global aphasia	348
	Transcortical motor aphasia	349
	Transcortical sensory aphasia (TSA)	349
	Mixed transcortical aphasia (isolation aphasia)	349
	Anomic aphasia	349
	Pure word deafness	349
	Phonagnosia	350
	Dysarthria	350
	Speech apraxia	351
	Prosody production and perception	351
11.4	Psychological and psycholinguistic aspects of aphasia	351
	Phonetic deficits	352
	Syntactic deficits	352
44.5	Semantic deficits	352
11.5	Functional imaging of human language processing	353
	Speech perception	353
	A study of speech perception using PET	353
	The neural basis of context effects in speech perception	356
	Rehearsing non-words versus listening to non-words	356
11 /	Neural basis of speech production	357
11.6	Reading Visual word recognition	358
	Visual word recognition	358 359
	Neural control of eye movements Routes to reading	361

	Surface dyslexia	361
	Phonological dyslexia	362
	Deep dyslexia	362
	Functional-imaging studies of written language	364
11.7	Developmental disorders of language	365
	Developmental disorders of speech perception and	
	production – specific language impairment	365
	Developmental disorders of reading – dyslexia	366
	Developmental disorders of speech production	367
	Disorders of language use in autism	368
Sun	nmary	368
	ther reading	369
I ui	the reading	30)
12 C	OGNITION AND EMOTION	370
	lichael Eysenck	0,0
	•	
12.1	Introduction	371
	Manipulating mood states	372
12.2	Mood and attention	372
	Attentional narrowing	372
	Attention and memory	373
12.3	Mood and memory	374
	Mood manipulations and memory	375
	Flashbulb memories	377
	Recovered memories	377
	Amygdala	379
	Urbach-Wiethe disease	380
	Summary and conclusions	380
12.4	Judgement and decision-making: mood effects	380
	Anxiety	381
	Sadness	384
	Anger	385
	Positive mood	387
	Summary and conclusions	390
	Limitations	391
12.5	Judgement and decision-making: cognitive	371
12.0	neuroscience	391
	Cognitive neuroscience research	393
	Limitations	394
12.6	Reasoning	395
12.0	Working memory	395
Sun	nmary	396
	ther reading	397
Ful	mer reading	37/
Glossa	iri	398
Refere		407
	r index	453
	t index	460