Language and the Mind

John Field

LANGUAGE WORKBOOKS

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'This book is a very useful text that introduces key concepts and findings in psycholinguistics. The text covers the core areas from biological aspects of language to language acquisition and language processing, and should encourage students to delve more deeply into all of these areas. I recommend it very highly.'
Professor Martin Pickering, University of Edinburgh

Routledge Language Workbooks provide absolute beginners with practical introductions to core areas of language study. Books in the series offer comprehensive coverage of the area as well as a basis for further investigation. Each Language Workbook guides the reader through the subject using 'hands-on' language analysis, equipping them with the basic analytical skills needed to handle a wide range of data. Written in a clear and simple style, with all technical concepts fully explained, Language Workbooks can be used for independent study or as part of a taught class.

Language and the Mind

- is an accessible introduction to the relationship between language and mental processes
- covers core areas including language in the brain, language impairment, how language is acquired, how the mind stores vocabulary and how it deals with speaking, listening, reading and writing
- draws on a variety of real-life material
- employs a discovery approach that enables students to form conclusions for themselves
- can be used to complement existing textbook material

John Field teaches, writes and researches on the psychology of language and on Second Language Acquisition. His previous publications include *Psycholinguistics* (Routledge, 2003) and *Psycholinguistics: the key concepts* (Routledge, 2004). He currently teaches at Birkbeck College, London and the University of Reading and is a Teaching Fellow at the University of Leeds. He is convenor of the psycholinguistics group within the British Association of Applied Linguistics.

LANGUAGE WORKBOOKS

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USING THIS BOOK

You step into the road without seeing an oncoming car. A passer-by shouts '*Watch out!*', and you take a hasty step backwards. Underlying this apparently simple event is a complex operation that we tend to take for granted. All the speaker has done is to produce a string of sounds. It is *your mind* that distinguishes them from the noise of the traffic. They are in an entirely different category, one which human beings label speech. It is your mind that matches the sounds with those of the English language, breaks the string into words, retrieves meanings for those words and relates the whole to immediate circumstances.

An understanding of how the mind produces and receives language is critical to any study of what language is and how it operates. This workbook offers a basic introduction to this exciting and relatively new area of enquiry. PSYCHOLINGUISTICS, as it is known, can be a little daunting in the early stages because it combines two disciplines: language studies and psychology. Linguists sometimes find the psychological terms a nuisance and psychologists feel the same about the linguistic ones. This book aims to overcome such obstacles. It is designed specifically for those who are approaching the subject for the first time.

Psycholinguistics

It teaches through *discovery*: instead of providing long abstract explanations, it allows you to work out the essential ideas for yourself. The exercises invite you to explore your own language processes and to analyse examples of authentic spoken and written English. They give you insights into mental operations that you perform every waking hour, and they expand your understanding of how language functions.

The book assumes no prior knowledge of psychology and only a minimal knowledge of terms and ideas from language studies. You acquire the necessary information as you go. As well as exploring ideas from the psychology of language, the exercises develop some of the essential concepts that underlie the study of grammar, vocabulary or pronunciation. For example, when the way in which words are associated

in the mind is examined in Unit 6, the terms that linguists use to describe these relationships are explained at the same time. Here, and elsewhere, the study of language use and language form go hand in hand.

If you feel at all unsure about a term that you come across, there are two reference sections at the end of the book to help. The first is a glossary that explains any basic linguistic terms in the book that you might have trouble with; the second is an index that indicates the unit in which a particular psycholinguistic term is first introduced and explained. To help you further, useful terms are highlighted in the text.

What exactly does the study of language and mind cover? At least five major areas can be identified, of which the first four are represented in this workbook.

(a) whether language is peculiar to human beings, how language evolved, how the human brain handles language and what can go wrong with it;
(b) how infants acquire language;
(c) how words are stored in our minds and how we find them when we need them;
(d) how we assemble words in order to express our thoughts and feelings and how we interpret the words of others;
(e) how we succeed in learning foreign languages.

The first area (language and the brain) features in Unit 1, which considers whether or not animal communication is like human language. It is also covered in Unit 2, which looks at how the human brain handles language, and in Unit 5, which is about language disability.

Language acquisition The second area is known as LANGUAGE ACQUISITION. Units 3 and 4 explore current ideas of how a child manages to acquire its first language so smoothly and rapidly. The approach presented in Unit 3 views language as a faculty that we inherit from our parents; while Unit 4 focuses instead on the interaction between carer and child.

We then go on to study two aspects of the mental dictionary, which provides us with building blocks for language in the form of words. The question in Unit 6 is: what information must we store about each individual word in order to use it accurately and appropriately? In Unit 7, it is: how do we find a word when we need it?

Language processing The later units of the book concern themselves with how we construct and understand pieces of language, a topic known as LANGUAGE PROCESSING. Each of the four language skills is explored in turn. Units **Productive** 8 and 9 focus on the PRODUCTIVE skills of writing and speaking. Unit 10 looks at some of the basic principles that have guided thinking about language processing; and Units 11 and 12 apply these ideas to the study **Receptive** of the RECEPTIVE skills of reading and listening.

The point of the exercises in each of these units is to encourage you to think about the issues that arise and to develop your own views. For this reason, the answers to the exercises appear separately at the back of the book. Try not to turn to them until you have fully thought through the problem that is posed: the process of trying to find a solution is as important as the answer itself, if not more important.

The study of language and the mind relies very heavily upon examining and interpreting evidence – so, appropriately, each of the units has a proposal for a project that you might wish to carry out yourself.

Finally, there are suggestions at the end of the book for further reading, in case any of the topics particularly takes your interest and you want to follow it up. A short workbook like this can do little more than give a taste of what psycholinguistics offers – but you will certainly find ideas that fascinate, tantalise and, perhaps, encourage you to explore further.

John Field, London, 2004

ACKNOWLEDGEMENTS

KEY TO IPA SYMBOLS

Consonants

Voiceless		Voiced	
p	pin	b	bin
t	ton	d	done
k	cap	g	gap
f	fan	v	van
θ	thing	ð	this
s	sue	z	zoo
ʃ	ship	ʒ	measure
		h	hit
ʧ	chip	ʤ	gym
		m	met
		n	net
		ŋ	sing
		w	wet
		r	red
		j	yet
		l	let

Vowels

Short		Long	
ɪ	hit	iː	heat
e	head	ɑː	heart
æ	hat	ɔː	hoard
ʌ	hut	uː	hoot
ɒ	hot	ɜː	hurt
ʊ	foot		
ə	a(bout)		

Diphthongs

eɪ	wait	əʊ	boat	ɪə	here
aɪ	tight	aʊ	bout	eə	there
ɔɪ	toy			ʊə	cure

Triphthongs

aɪə	fire	aʊə	flower

The variety of English illustrated is British RP.

CONTENTS

LANGUAGE AND ANIMALS

1

An interesting branch of psycholinguistics investigates the question: is speech special? To put it another way: is language peculiar to human beings or do other species have forms of communication that resemble it? This raises two more specific questions:

- Does natural animal communication resemble language?
- Can animals be taught to understand and to produce language?

EXERCISE

1.1 The brief introduction above made use of three terms that we must define at the outset. What do you understand by: SPEECH – LANGUAGE – COMMUNICATION?

SYSTEMS OF SIGNS

One way of examining communication is by considering it as a system of signs. Technically, the word SIGN refers to something that is used in order to represent something else. There are three types of sign relationship.

Sign

- An ICONIC sign resembles or depicts the object or action that it refers to. Example: the picture of a sun on a weather forecast chart.

Iconic

- An INDEXICAL sign is something that is closely associated with the object or action that it refers to. Example: smoke is an indexical representation of fire.

Indexical

Symbolic • A SYMBOLIC sign is something that stands for something else but otherwise bears no relationship to the object or action that it stands for. Example: a red traffic light means STOP.

Arbitrary Language is symbolic, unlike many other forms of communication. It is symbolic because the signs it uses – we call them words – are ARBITRARY. There is nothing inevitable that links the word ROSE to a particular kind of flower. If we all agreed to call the flower a SPLIDGE instead, it would not make any difference to the thing we were talking about.

EXERCISE

1.2 Here are a number of different forms of animal communication. In each case, decide whether the sign is iconic, indexical or symbolic.

(a) A dog scratches at the door.
(b) A bird sings to establish its territory.
(c) A snake hisses.
(d) A baboon shows its teeth.
(e) An eel signals its position and species by emitting an electrical impulse at a particular frequency.
(f) A cicada has a congregation call which invites other cicadas to join in with it in a chorus.

VOLUNTARY VOCALISATION

So, one way of distinguishing many types of animal communication from language is that they are not symbolic in the way that language is. A second distinction is illustrated by the anecdote below:

> Chimpanzees often produce food calls when they come upon a new food source. This stereotypic call attracts hungry neighbours to the location, often kin who are foraging nearby. [Jane] Goodall recounts one occasion where she observed a chimp trying to suppress an excited food call by covering his mouth with his hand. The chimp had found a cache of bananas ... and ... apparently did not want to have any competition for such a desirable food. Though muffling the call as best he could with his hand, he could not, apparently, directly inhibit the calling behaviour himself.
>
> (Deacon, 1997: 224)

Much animal communication is REFLEXIVE: it is like human coughing, laughter or tears, over which we can exercise little control. **Reflexive**

There appears to be a marked difference in the brain configurations of animals and of human beings. The CORTEX or upper part of the **Cortex** human brain gives us a high degree of control over operations involving VOCALISATION. The same is not true in most mammals. Their cortices **Vocalisation** include areas that control movements of the mouth, tongue and lips, but the movements concerned are for the purposes of eating and grooming rather than uttering calls. So many of their calls appear to be made without any deliberate intention on the part of the animal. When monkeys suffer brain damage, it may leave them unable to eat, but their calls are often unaffected.

DESIGN FEATURES

In 1963, the linguist Charles Hockett drew up a list of DESIGN **Design features** FEATURES that characterise language, thus enabling us to make comparisons with other forms of communication. His list has been expanded by later commentators, reflecting current ideas of what language is and how it operates.

1	Displacement	5	Interchangeability
2	Arbitrariness	6	Duality of patterning
3	Semanticity	7	Control
4	Cultural transmission	8	Creativity

(a) We can construct completely new utterances that we have never heard before.

(b) Language is used intentionally – unlike involuntary noises such as coughing or laughing.

(c) Smaller units (e.g. sounds) are combined into larger ones (words).

(d) We can talk about things that are not present and visible.

(e) Languages are handed on from one generation to the next.

(f) A word need not resemble in any way the object or action that it refers to.

(g) The same individual can both send out and receive a message.

(h) Different symbols are used to refer to different concepts.

ANIMAL COMMUNICATION

Some forms of animal communication are said to resemble language in certain ways. Here are examples.

- Vervet monkeys have a repertoire of 36 vocal sounds. Among them is a set of three alarm calls which are used to warn of predators. One is used when the threat comes from a snake, one when it comes from a leopard or other large mammal and one when it comes from a bird of prey. The calls are evidently understood by other vervet monkeys, since they look in the direction (ground, trees or sky) from which the danger comes. The other vervets take up the call, passing on the alarm to those that are further away.

- Worker bees use a set of strange dances to pass on information about a source of nectar that they have discovered. If the source is within about 5 metres of the hive, they turn round in circles. If it is a short way away, they dance in a figure of 8. If it is further, they waggle their abdomens. In the second and third of these performances, the angle of the bee's body indicates the direction of the nectar relative to the position of the sun, though 'up' and 'down' cannot be demonstrated. The dance is only performed by worker bees and appears to be inherited genetically rather than learnt.

- Dolphins use a system of clicks to communicate under water. These irregular bursts of sound last for about a thousandth of a second and are not audible by human beings. But they act as a kind of radar and enable dolphins to locate objects (including food sources) very accurately. It is not clear to what extent the clicks represent a one-way transmission of information and to what extent dolphins are able to communicate with each other.

EXERCISE

1.5 Consider these three examples of animal communication in the light of the design features that you have just studied. In what ways do they resemble language? In what ways are they different?

TEACHING ANIMALS LANGUAGE

A different approach to this issue asks whether animals are capable of acquiring a human language. We need first to consider exactly what is meant by 'acquiring'.

EXERCISE

1.6 Consider the example of a dog which comes to recognise the word WALK. The word has always been associated with going out, so the dog becomes excited when it hears WALK and fetches its lead. To what extent can we say the dog has 'acquired' the word?

Now consider what might happen if the dog heard the word on several occasions when no walk took place. What might happen?

The reason the dog responded in the way it did was because it had formed an automatic association between a word and an event. This kind of process was much studied by a movement in psychology known as BEHAVIOURISM, which was influential in the first half of the twentieth century. BEHAVIOURISTS claimed that behaviour was highly automatic – the result of a process known as CONDITIONING in which a particular STIMULUS (in our example, the word WALK) becomes associated with a particular RESPONSE (the dog goes to get its lead). The classic example was Pavlov's dog, which learnt to associate the ringing of a bell with the arrival of food and began to salivate whenever it heard the bell.

Behaviourism
Behaviourists
Conditioning
Stimulus
Response