

Book review

Imitation in human and animal behavior, by Wanda Wyrwicka, Transaction Publishers, New Brunswick (USA) and London (UK), 1996, 101 p.

"Imitative behaviour" or simply "imitation" is the copying by an individual of a certain motor or vocal act performed by another individual. Although imitation is often observed and there are many studies concerning this form of behaviour, there has been no comprehensive examination of the neural mechanisms of imitation and general rules of imitative behaviour. The book *Imitation in human and animal behavior* is a synthesis that examines these problems of behavioural neuroscience. The work was written by Wanda Wyrwicka, senior scientist from the University of California School of Medicine in Los Angeles, formerly a scientist in the Department of Neurophysiology of the Nencki Institute of Experimental Biology in Warsaw. The volume comprises 11 numbered chapters followed by conclusions, references, name index and subject index. The book consists of two main parts. The first part (chapters 1 to 5) presents data obtained from humans. The second part (chapters 6 to 9) describes the results of studies on animals, related mostly to feeding behaviour. Chapters 10 and 11 concentrate on inhibition of imitative behaviour in both humans and animals, followed by a summary of the book and, finally, theoretical considerations concerning possible brain mechanisms of imitative behaviour.

The initial chapters concern imitative behaviour in human neonates and children. It was stressed that imitative abilities occur very early: for example, facial gestures can be imitated by neonates of less than one hour of age. Children under three years of age become capable of performing deferred (delayed) imitation; this behaviour refers to the case when imitation does not occur immediately after the demonstration by the model, but some time later, e.g. after a 24-hour delay period. In this part of the book we can also find selected cases of imitation in 3- to 5-year-old children;

for example, imitation of aggressive behaviour is decreased when aggression has been punished.

Later there is a description of the role of imitation in cognitive development of children and adolescents. It has been demonstrated that observation of the performance of others facilitates the subsequent acquisition of the behaviour shown by the model (learning by observation). We can also read about the role of imitation in the therapy of phobias, e.g. warm water phobia, in children and adults. It has been stressed that a modelling method (using imitation) is more effective than play therapy or guided imagery in reduction of some phobias. In this section of the book the author emphasises that there is a general rule that imitative behaviour plays an important role in the development of the organism by facilitating the acquisition of knowledge about the environment and behavioural adjustments to it.

There is a section demonstrating an especially dramatic and controversial case of complex imitation, i.e., imitation of suicide. A reader can see a suggestion that television news stories about suicide may be responsible for an increase in the suicide rate.

The part of the book devoted to studies made on animals is at first related to the effect of companions on feeding. For example, adult cats eat more in the presence of a companion than in its absence, although sometimes the presence of a companion appears to be an inhibitory factor, resulting in a lower food consumption. The next section describes the experiments conducted in the author's own laboratory. The research concerned whether or not weanling kittens (30 to 39 days of age) would accept new food independently of the presence of their mother. In general, kittens offered new food in the presence of their mother started to eat faster than their siblings which were offered new food in the absence of their mother. This role of the mother in imitation of eating new food occurred independently of the type of food (canned tuna in one group and cereal in the other group of kittens). The role of the mother in imitation of eating new

food by weanling kittens can be extended to the case in which the improper food, i.e. food which is refused by the adult cats (e.g. bananas), is used. Moreover, the acquired acceptance of the unusual food is persistent and lasts in the kittens even in absence of the mother. Additionally, there is a suggestion that some maturity of kittens is needed for the acceptance of a new unusual food (e.g. potatoes), even in the case when the mother has been consuming this food in their presence. The data presented in that section may be related to the development of food preferences in humans. Namely, the choice of food acquired by imitation of adults in early childhood may last later in life, even when the selected food is harmful to health.

There is a chapter which describes some experiments concerning the question of whether animals can learn a specific motor task solely by observing an animal demonstrator performing the task. It has been stressed that motor acts are not acquired solely by observation, but subsequent acquisition of the task is facilitated by observation. In this chapter we can also see cases regarding the behaviour of following the leader and the kind of behaviour called imprinting (according to Lorenz terminology); these behaviours do not exactly fit the definition of imitative behaviour (see page 68).

The tenth chapter concentrates on inhibition of imitative behaviour in humans as well as animals. It is known, for example, that sometimes the presence of a companion appeared to be an inhibitory factor: cats eat less in sessions with a companion than in sessions without a companion. This means that the imitative effect of the companion is inhibited by the occurrence of aggression. In this chapter we can also see the role of frontal lobes in the process of inhibiting imitative behaviour.

The last chapter contains a summary of the book and theoretical considerations concerning the mechanisms of imitative behaviour. According to the author's point of view, the mechanisms responsible for simple cases of imitation are innate. For example, imitation of tongue protrusion, occurring in human neonates at only one hour of age, is a result of an inborn ability, due to the sensorimotor connections in the brain; the simplest mechanism responsible for this imitative behaviour is the unconditioned reflex (instinct) of imitation. On the other hand, brain mechanisms responsible for complex cases of imitation represent a combination of the unconditioned reflex of imitation and previous

experience. Namely, the initial imitative behaviour is gradually replaced by an instrumental conditioned reflex; in other words, the process of learning by imitation takes place. For example, the case of kittens imitating the mother in eating a new food (even unusual for their species) represents a complex case of imitative behaviour.

The book has a perspicuous structure and well-chosen illustrations. However, there are a few slight inaccuracies that should be corrected in the second edition of this book.

Imitation in human and animal behavior is undoubtedly a fascinating lecture. Although the author has written that "this book is not a comprehensive review of all studies on imitation" (see p. 1), the volume will be very useful for both neuroscientists and others interested in behavioural and developmental neuroscience.

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