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Peter Mitchell

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Peter Mitchell



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The Psychology of Childhood



Contemporary Psychology Series

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This series of books on contemporary psychological issues is aimed primarily at 'A' Level students and those beginning their undergraduate degree. All of these volumes are introductory in the sense that they assume no, or very little, previous acquaintance with the subject, while aiming to take the reader through to the end of his or her first course on the topic they cover. For this reason the series will also appeal to those who encounter psychology in the course of their professional work: nurses, social workers, police and probation officers, speech therapists and medical students. Written in a clear and jargon-free style, each book generally includes a full (and in some cases annotated) bibliography and points the way explicitly to further reading on the subject covered.

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Series Editor's Preface

Childhood is a strange country to which all adults have been but about which we have few and distorted memories. We may just recall that golden sunny day when we picnicked with our mother and father by the stream and when everyone was happy and relaxed. Some may have darker and more depressing memories. But can any of us actually remember how we thought about those things when they were actually happening? When the lemonade was poured into two glasses, one for me and one for my brother, did I regard it as unfair because his glass was taller than mine, albeit also much narrower? I don't know.

I suppose we first develop self awareness, in the adult sense, at around 8–9 years of age and then we can semi-permanently fix our conscious thought processes by reflecting on them, or even writing them down. Before that it is unlikely we can recall our actual thought processes, or can be aware, except perhaps because of later retelling, of the parental, peer and other social influences which so deeply affect our later development and which make us what we are as adults.

Psychologists have to study early childhood as though they were studying the behaviour of another species – their own childhood experiences are not available for study as a reliable source of data. Indeed, they need to be quite ingenious to be able to get a handle on what is happening. They are denied the precise experimental control that is available to the student of animal behaviour, nor can they utilize the detailed introspection and self respect, or the completion of quantitative paper and pencil tests, that contribute so large a proportion of the data derived from studies of adult human behaviour. The magnitude of the ingenuity required to study the thought processes of young children is amply demonstrated in the first few chapters of Peter Mitchell's book. The work of the famous Swiss developmental psychologist Jean Piaget has been the catalyst for literally hundreds of other researchers who have committed themselves to finding more evidence to support his ideas or, equally productively, to trying to prove him wrong! Mitchell takes a balanced view of this enormous effort and aggregation of data (to which he has contributed in no small way) and at the same time provides a completely accessible route into the intricacies of research on the development of cognitive processes in infants and children.

The second half of this book is concerned not so much with how children think and behave during the time they are children, but the way in which childhood

experiences and encounters permeate through the child's psyche as s/he grows up to create the adult personality with the attendant value systems, interpersonal skills and characteristic modes of interacting with others. Human psychological development is not like a train travelling along a track and stopping at various stations and then moving on to the next. Our trains carry bits of the stations, and some of the tracks we have passed over, on with us. We never escape our earliest social relationships, our earliest experiences, even if we cannot recall them. They form the template, the pattern, the stereotype of future relationships and understandings of situations.

There is probably no better way to begin the study of psychology than via the study of children. Although they are strange and alien in the way they think and behave, we know that they are going to grow up to be just like us. But how?

Raymond Cochrane

Birmingham

November 1991

Acknowledgments

The figures in this book were drawn by my wife, Rita Mitchell, and I thank her not only for the excellent art work, but also for all the encouragement and moral support she provided while I wrote the book. Raymond Cochrane's painstaking reading of a draft of the text has resulted in the omission of errors and also a final product which flows more smoothly. Any remaining blunders are, of course, my responsibility. I am also grateful to Raymond for suggesting that I write this book.

The book is a credit to those who taught me developmental psychology, particularly James Russell, who provided the inspiration during my first degree, and who then supervised my doctorate. Also, I am eternally grateful to my friend and colleague Elizabeth Robinson. In the three years I worked with Elizabeth at Birmingham University, my understanding of psychology truly took a quantum leap.

Last, but certainly not least, I am indebted to children, especially the thousands who participated in my studies over the years. My son, Andrew Mitchell, deserves special thanks for the patience he has displayed in being my most tested subject, and also for his highly insightful comments on the procedures I have tried to perfect. I need hardly add that it is the children above all who make developmental psychology such a fascinating topic.

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The Development of Thinking

The branch of psychology which studies the development of thinking is usually called cognitive developmental psychology. The word 'cognitive' refers to knowledge, but not in the general sense. When people talk about knowledge, they often mean the kind of information that it would be useful to call upon in order to answer questions in games such as *Trivial Pursuit* and *Blockbusters*, or in order to answer GCSE exam questions. In contrast, cognitive developmentalists think of knowledge as referring to understanding about things. So, for example, the finding that 5-year-olds are terrible at communicating on the telephone, because they seem to overlook the fact that the listener cannot see what they can see, or does not know what they know, might be taken as a symptom that the young child is incapable of putting himself or herself in someone else's shoes. Cognitive developmentalists look at particular difficulties children may have, such as poor communication ability, and then draw general conclusions about the child's immature understanding of the world. An example would be the conclusion that young children cannot take into account another person's point of view. An exciting feature of cognitive developmental psychology is observing some of the things children say and do in various situations, and speculating about the meaning of these things in terms of the child's understanding of the world.

Not everybody is in agreement about the way children understand the world, and how that understanding develops. This is mainly because what children say and do can be taken as symptoms of different underlying thought processes by different people. For example, a common-sense explanation for young children's difficulty in communicating on the telephone might simply be that their lack of experience in using telephones has not allowed them to develop a suitable 'telephone manner'. If this were true, the problem would not be attributable to the child's immaturity, but to lack of practice. The implication would be that an adult who had little experience of using telephones would be equally poor at communicating on them. Consequently, cognitive developmentalists look for independent evidence to support their suggestion concerning the child's immature understanding, in order to convince everyone that their idea about the child's immature understanding is correct. The result of this is that cognitive developmentalists who hold different opinions try to present evidence and argument to show that their idea is the correct one, and not their adversary's.

The most interesting aspect of cognitive developmental psychology is, of course, making discoveries about how the child understands the world. However, there is also an interesting subplot, which is the discovery process itself. The interest of this discovery process takes the form of some ingenious tasks which have been presented to children in order to assess their understanding, and also some brilliantly insightful arguments which have been developed in support of particular ideas about the nature of the child's understanding. The purpose of these arguments is to persuade us to accept one view of the child's understanding as opposed to a competing one.

In the pages which follow, we will begin by looking at some of the findings and ideas of the most brilliant cognitive developmentalist, Jean Piaget. We will consider some criticisms of Piaget's conclusions, and then examine contemporary findings and ideas which have been presented in this post-Piagetian era.

Piaget was born in Switzerland in 1896, and died in 1980. Piaget's early interest was in biology and his first publication, which was on that subject, appeared when he was aged ten. A few years later he was invited to be curator of shellfish at a natural history museum in Geneva. This was an offer he had to decline, since he was still attending secondary school! At the age of 21, Piaget was awarded a doctoral degree for a thesis he wrote about shellfish. It was at this point that the great man switched his attention to cognitive development, when he began working on the idea that a crucial ingredient in the relationship between creatures and their environment is intelligence. In order to acquire insight into this intelligence, he focused on the most intelligent creatures of all: human beings. Piaget believed that insight into the nature of intelligence could best be gained by studying its development. Hence Piaget became a cognitive developmentalist. At the time of his death, Piaget had written over forty books on cognitive development, and over a hundred articles on the subject. This was in addition to numerous other publications on shellfish, philosophy and education. Piaget also tried his hand at fiction: during the emotional turmoil of his adolescence, he expressed some of his feelings in a novel which was published in 1917.

Piaget suggested children pass through a series of stages on the way to cognitive maturity. His idea was that cognitive development is not a continuous process, dependent upon the accumulation of more and more information and skills; his view was that cognitive development proceeds not by gradual evolution, but by way of cognitive revolution. As the child shifts onto a new and more sophisticated plane of intelligence, she sheds many of the old cognitive limitations at a single sweep. Later, we will look at what, according to Piaget, it is that enables children to progress through the stages (i.e. the mechanism of development), but first we will examine Piaget's description of the stages, and some of the evidence he hoped would persuade us the stages are real.

Piaget indicated age ranges for the stages, but these were only intended as a rough guide. The more important point is that the order of the stages is supposed to be fixed and invariant. Piaget's idea was that each stage served as the foundation for the subsequent stage, so according to the theory, it would be impossible to miss a stage. To Piaget, missing a stage would be akin to building the second storey of a house without first building the first floor: impossible! To consider an example more relevant to the development of thinking, it is very hard to imagine

how one could do long multiplication without first being able to do addition. Addition is necessary for carrying tens and also for subtotals in order to calculate the grand total. In this example, addition is a prerequisite for long multiplication. According to Piaget's theory, progressing through one stage is a prerequisite for shifting onto the subsequent stage. However, if one enjoyed the benefit of appropriate experiences, it might be possible to progress through the stages more rapidly than one who was less fortunate. We will consider what such experiences might be later.

Sensori-motor Stage: Birth to 2 Years

This is the stage of babyhood or infancy. The stage gets its name from the idea that the infant has sensory experiences (can see, hear, feel, taste, smell) and can move her limbs and other parts of her body (motor movements), but there is little cognition mediating the two. For example, Piaget's belief was that the infant has no conception of the permanent world which has an existence independently of the infant.

Piaget had a great many things to say about this stage, but we shall focus on his ideas about the development of the concept of object permanence. Piaget claimed that at birth we are in a state of solipsism. In other words, he was making the remarkable claim that babies cannot distinguish between self and not self. As a consequence, infants have no understanding of the permanent existence of things (i.e. objects) other than the self. However, after having passed through a series of substages, which we will take a look at in a moment, by the age of 24 months the infant will differentiate between herself and her surroundings, will be capable of mental imagery and will have an understanding of symbols.

In all, Piaget listed six substages of infancy, but we shall just examine those most relevant to the concept of object permanence. The first relevant one is Stage 3, which is approximately from 4 to 8 months of age. At this age, the baby is perfectly capable of grasping and picking up things such as a rattle. Given this ability, we can play a game with the baby, in which we take her rattle and put it in various places, just within the baby's reach. Providing the rattle is within reach (many babies of this age cannot crawl yet), the baby might enter into the game and retrieve it. However, if we put the rattle within reach but immediately cover it with a cloth, even though the covered object is in full view, the baby will not reach out. Instead she will switch attention to something else.

Piaget claimed that the baby does have the dexterity to remove the cloth, then grab the rattle. He claimed, therefore, that the baby's failure to retrieve the rattle from under the cloth was not due to a lack of skill. Instead, Piaget suggested that when an item is hidden from view, the baby no longer conceives of its existence. At this stage, when the infant can no longer directly sense an object, the object no longer exists as far as the infant is concerned. If we remove the cloth, the infant will then recognize the rattle and grasp it. So the infant can recognize objects she is familiar with, but when objects are no longer accessible to the senses, they no longer have any existence for the baby. According to Piaget, this is because the infant is unable to conjure up an image of the object in its physical absence. One

implication of this radical claim is that although the infant recognizes and is familiar with her mother, when the mother leaves the room, from that moment to the mother's return, the infant no longer has any notion of the mother. To the young infant, the mother is just a picture which goes through a curious sequence of appearing and disappearing.

During Stage 4 of infancy (8 to 12 months), the baby's concept of object permanence develops to the point that the infant appears to possess a primitive notion that objects may exist even if they cannot be sensed directly. At this age, the infant will have no difficulty in retrieving a rattle hidden beneath a cloth. On the face of it, you may think that if the infant searches for something hidden from view, this must mean that the infant knows about that hidden thing even when it cannot be seen. However, Piaget would have us believe that the infant is still dominated by what she senses, and in particular, at this stage of infancy, her actions (i.e. motor movements). An older child, in contrast, would rely much more on mental imagery. According to Piaget, once the infant has retrieved the rattle from under the cloth, she then understands the existence of the rattle, in terms of her action in retrieving it.

Piaget demonstrated this with a simple test, known as the A-B task. Piaget spread out two cloths side by side in front of the infant. He then hid the rattle under the left cloth (cloth A), and, as expected, the infant pulled away the cloth and grabbed the rattle. Piaget repeated this a further two times. Then, on the fourth trial, in full view of the infant, Piaget put the rattle under the right-hand cloth (cloth B). The infant searched under the left cloth, as before, and on failing to find the rattle there, ceased searching and switched attention to something else! What makes this finding especially odd is that the shape of the rattle remains discernible under the right-hand cloth throughout.

In Stage 4, according to Piaget, once the infant has brought about the reappearance of the object by the act of searching, she then understands the reappearance of the object in terms of the specific actions involved in the search. In other words, the infant has little notion of the existence of the object independent of her own actions. To the infant, the existence of the object means a series of hand and arm movements.

Between 12 and 18 months, the infant progresses to Stage 5. The infant now has no problem with the A-B task, and searches under the right-hand cloth as soon as the rattle is hidden there, even if it had previously been hidden under the left-hand cloth on several occasions. Clearly, the infant no longer understands the object just in terms of her own actions. However, Piaget suggests that infants still have difficulty understanding the existence of objects they cannot directly experience, since they apparently have no notion of the movement of an unseen object. To demonstrate this, Piaget put the rattle under the left-hand cloth, and then, before the baby was given an opportunity to search, Piaget also put an upside-down bowl under that cloth, covering the rattle with the bowl as he did so. He then pulled the bowl from under the cloth, with the rattle hidden inside, and moved it under the right-hand cloth. He then removed the bowl, and placed it in full view, where it could be seen to be empty, having deposited the rattle under the right-hand cloth. The baby, who had been watching all this, was then allowed to begin searching. The baby searched under the left-hand cloth, where the rattle was

put to begin with, but on failing to find it there, ceased searching and switched attention to something else.

During Stage 5, the infant is no longer dominated by her own actions in understanding the existence of objects. However, it seems the infant continues to have great difficulty in understanding objects which are not sensed directly, since she seems unable to comprehend the possibility of movement of the object when it is hidden from view. Older children presumably understand that if the rattle was not under the left-hand cloth, it must have travelled with the bowl to the right-hand cloth. This is an understanding which seems to be beyond a baby aged between 12 and 18 months. The reason, according to Piaget, is because the infant has difficulty in imagining the object to have its own independent existence; the infant struggles to understand that although the object is not directly experienced, it is possible for things to go on happening to it, such as moving from one place to another.

At 18 to 24 months, the infant enters the final of Piaget's stages of infancy, Stage 6. At this stage, the infant at last is able to conceive of the existence of an object independently of the self, and therefore is no longer in a state of solipsism. The infant now understands that on the one hand there is the external world, and on the other hand, distinct from that, is the self. The infant achieves this, according to Piaget, by acquiring the facility of mental imagery. The infant is able to generate a mental picture of things, and what might happen to those things, even though these events cannot be experienced directly. As a consequence, the infant no longer has difficulty locating an object which is hidden and then moved, providing it is easy to work out where it was moved to. That is, the child no longer has any difficulty with the task she failed during Stage 5 of infancy.

As you will discover further on in the book, there is some disagreement about Piaget's interpretation of the findings of his object permanence 'tests'. However, to my knowledge, no one disagrees about the way babies perform in these tests at roughly the ages Piaget indicated, and it is easy to replicate his findings. You can establish this for yourself, testing babies in your own family, providing you get the permission of the baby's parents to begin with.

The acquisition of mental imagery is a revolutionary point in the child's life, which heralds the transition to a whole new stage of development in the broadest sense. It is at this point that the child is viewed as progressing from the sensorimotor stage of infancy to the preoperational stage of early childhood. We will explore the preoperational stage in some detail later, but first, we will take a further look at the implications of being capable of mental imagery.

Perhaps the most important consequence of mental imagery is that it makes possible the use of symbols. A mental image need not be a mental replica of the thing it is concerned with. If the image is about something in the world, but is not a mental replica of that thing, then it is a symbol of that thing. According to Piaget, it is no coincidence that at the end of infancy the child begins to develop proficiency in that most powerful of human symbols, language. The intellectual achievements which become possible with the aid of language in its various forms are literally unimaginable. For example, consider some of the remarkable progress in technology and science this century. Most of this would have been impossible without mathematics and written language to work out and communicate the ideas responsible for this progress.

An important aspect of Piaget's thinking becomes clear at this point. Piaget stressed that intellectual development underpins language development in important ways, not the other way round; a capacity for mental imagery permits proficiency in use of symbols, one form of which happens to be language. It hardly needs to be stated that language enables more efficient problem solving. However, symbolic activity other than the use of a recognizable language may also facilitate problem solving.

Piaget tells of how his daughter, who was nearing the end of infancy, solved the problem of how to retrieve a chain hidden inside a matchbox. When given the matchbox, the girl made a clumsy attempt to open the box but failed. She then paused, opened and closed her mouth a few times whilst gazing at the matchbox, and then smoothly opened the box to retrieve the chain. According to Piaget, his daughter registered the way in which the matchbox opened symbolically in her mouth movement. After working out the problem in this way, she was able to proceed and open the box with no difficulty. This example shows that Piaget believed it is not the case that language makes possible symbolic problem-solving activity. The child can solve problems symbolically without language. However, no doubt Piaget would accept that, given the potential for symbolic activity, language then becomes a useful tool for this purpose.

Symbolic activity is most evident in young children's pretend play. Here we find children pretending that bananas are telephones, that chairs are cars, that shoe boxes are television sets, and so on. Watching young children engage in pretend play gives the impression that they are exercising their newly acquired symbolic ability purely for the delight of it. There is reason to suppose that the symbolic element of pretend play is not just a manifestation of having reached a developmental milestone. Some argue persuasively that pretend play actually promotes cognitive development in various ways (e.g. Leslie, 1987).

Preoperational Stage: 2 to 7 Years

As the child enters this stage, she is capable of solving problems with the help of symbolic activity, and is rapidly developing proficiency as a language user. You would be forgiven for thinking that most of the developmental milestones have been achieved, and that things are downhill from this point. However, Piaget argues vehemently that this could not be further from the truth.

According to Piaget, the young child is plagued with egocentrism. This term might seem a little confusing to begin with, because Piaget did not use the term according to its common meaning. In ordinary parlance, we might call someone 'egocentric' to mean that they are selfish and inconsiderate of others. Piaget's use of the word, in contrast, indicates a cognitive limitation which prevents the child from seeing things from somebody else's point of view. It is not really appropriate to say the young child is inconsiderate, since it is claimed that the young child is incapable of understanding that another person might have a viewpoint different from her own. In this case, 'different viewpoint' is used both in a literal sense, as in failing to understand that objects look different from different perspectives, and in a conceptual sense, as in failing to understand that people may hold opinions, beliefs, etc. different from her own.

Intimately linked with egocentrism is a profound inability to understand and apply principles to the world. The young child's grasp of things is intuitive and highly subjective, rather than logical and objective. Consequently, the child's thinking is dominated by surface appearance, rather than by underlying principles. The best way to illustrate this is with examples of tests which a preoperational child fails. We will consider this in a moment, but first a note on the name of this stage.

By 'operation', Piaget meant the following of a set of rules in solving a problem: in other words, a logical operation that is done mentally. According to Piaget, operational intelligence is necessary to rid the child of egocentrism, to rid the child of his highly subjective and overly intuitive view of the world. So the *pre-operational* child is egocentric.

Perhaps the best known evidence of failure to understand and apply principles during the preoperational stage is in the failure to conserve. In this sense, 'conservation' has nothing to do with green politics, but rather is to do with the understanding that transformation of appearance need not result in alteration of the underlying reality. The underlying reality remains constant, and therefore is conserved, despite the transformation in appearance.

In the conservation of quantity task, the child watches as we fill two short wide jars with water to the same level. We then carefully pour all the content from one into a tall thin jar, and put this beside the remaining short wide jar. Of course, the level of water in the thin jar is much higher than that in the wide jar. Very few people above the age of 7 would say that the thin jar has more water in it, but nearly all children below that age claim that it does. Young children's incorrect judgments seem even more striking because Piaget always got them to agree initially that there was the same amount of water in the two wide jars. Also, he took pains to ensure that the child was watching carefully as he poured the water from one glass to another; the child could see that no water was added.

Apparently, instead of attending to a principle (i.e. operation), such as 'none was added or taken away, so the amount of water must be the same', young children were seduced by, and centred on (to use Piagetian terminology), the increased height of the water level in the thin glass. The child gives an intuitive answer instead of working out the correct answer on the basis of an underlying principle. That is, the child fails to 'decentre'.

Young children also display a failure to conserve on a variety of other tasks, some of which we will now take a look at. In the conservation of length task, we show the child two pencils of the same length, and begin by aligning the points so that equality of length becomes apparent. After the child agrees they are the same length, we move one of the pencils slightly, so that its point protrudes above that of the other by about a centimetre. We then ask, 'Are these two pencils the same size now, or is this one bigger or is that one bigger?' Preoperational children will judge they are no longer the same size, and point to one of the pencils, claiming it is bigger. In the conservation of mass task, we make two balls of plasticine the same size, and, after the child agrees that they are the same size, we roll one into a sausage shape. Preoperational children usually judge that the sausage shape is bigger and has more plasticine in it. In the conservation of number task, we spread out two rows of, for example, ten counters, in one-to-one correspondence. After

the child has agreed there is the same number of counters in each row, we spread out one of the rows further, making spaces between the counters bigger. Preoperational children now claim that the longer row has more counters in it.

Piaget documented many errors young children make which he claimed are symptoms of preoperational, non-principled, non-logical thinking. We shall consider just two more of these. First is the difficulty young children have with class inclusion. We spread out, for example, seven Lego bricks, five red and two blue. In this example, the overall class of bricks includes the subclasses of red bricks and blue bricks. The child knows that all seven items are in the class of bricks, because if we ask how many bricks there are, they have no difficulty in answering with 'seven'. We then ask, 'Are there more bricks or more red bricks?' Preoperational children answer with, 'More red bricks.' According to Piaget, the young child centres on the greater number of red bricks compared with blue bricks, and as a result fails to operate on the principle that the class of bricks must be bigger than the subclass of red bricks, because the class of bricks includes both red and blue bricks.

Finally, we come to transitive inference. This is the test that gives most of us a cold sweat as we hear the problem: Jane is taller than Susan; Jane is shorter than Mary; who is the tallest, Susan or Mary? Piaget presented a task which involves the same problem in principle, but which to adults and older children seems absurdly simple. We show the child two towers made of lego, one a little taller than the other. Just by looking, it is impossible to tell which is the taller, for two reasons. First, the towers are in different parts of the room, so they can't both be taken in at a glance. Second, they are on different levels, for example, one on a coffee table and one on the floor.

We present the child with a stick which is of intermediate length, and ask him to compare each tower with the stick in order to find out which is biggest. The comparison reveals that one tower is bigger than the stick, whilst the other is smaller. Preoperational children are very poor at this task. They seem to have no idea what to do with the stick, and even if we do the measuring for them, they do not reliably give the correct answer, that the tower taller than the stick is bigger than the tower shorter than the stick. According to Piaget, this is yet another example of young children failing to operate on a principle, which, in this case, would be 'if this tower is bigger than the stick, and that tower is shorter than the stick, then this tower must be bigger than that tower'.

It is very unusual indeed to find a young child who does not make the errors described in these pages, though some people, as you will discover later, disagree with Piaget's interpretation of the findings. The tests are very simple to carry out, and you can demonstrate the errors very easily by performing them on young children in your family. It is especially interesting to introduce modifications to the procedure of the tests to see if it helps children to get the correct answer.

I began this section with a definition of what Piaget meant by 'egocentrism'. Since then we have looked in some detail at preoperational errors but little at the way in which the young child's thinking is manifest in an egocentric manner. A classic example of egocentrism can be found in the 'three mountains task'. We sit the child in front of a model landscape of three mountains located side by side. On each of these mountains is a single distinctive feature, such as a man, a house and a