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ORIGIN OF VOLITION IN CHILDHOOD.[1]

BY J. MARK BALDWIN.

IN earlier articles of this series[2] I have endeavored to trace the development of the child's active life up to the rise of volition. The transition from the involuntary class of muscular reactions to which the general word "suggestion" applies, to the performance of actions foreseen and intended occurs, as I have before intimated, through the persistence and repetition of imitative suggestions. The distinction between simple imitation and persistent imitation has already been made and illustrated in an earlier article. Now, in saying that volition—the conscious phenomenon of will — arises historically on the basis of persistent imitation, what I mean is this: that *the child's first exhibition of will is its repeated effort to imitate movements seen and noises heard.*

An adequate analysis of will with reference to the fiat of volition reveals three great factors for which a theory of the origin of this function must provide. These three elements of the voluntary process are desire, deliberation, and effort. Desire is distinguished from impulse by its intellectual quality, i. e., the fact that it always has reference to a presentation or pictured object. Organic impulses may pass into desires, when their objects become conscious. Further, desire implies lack of satisfaction of the impulse on which it rests — a degree of inhibition, thwarting, unfulfilment. Put more generally, these two characteristics of desire are: (1) a pictured object suggesting a satisfaction which it does not give, and (2) an incipient motor reaction which the imaged object stimulates but does not discharge.[3]

The first clear cases of desire — as thus understood — in the life of the child are seen in the movements of its hands in grasping after objects seen. As soon as there is clear visual presentation of objects we find impulsive muscular reactions directed toward them, at first in an excessively crude fashion, but becoming rapidly refined. These movements are free and uninhibited — simple sensori-motor suggestive reactions. But I find, in experiments with my children, that the vain grasping at distant objects, which prevailed up to about the sixth month, tended to disappear rapidly in the two subsequent months — just about the time of the rise of imitation. During the eighth month, my child, H., would not grasp at highly-colored objects more than sixteen inches distant, her reaching distance being ten to twelve inches.[4] This training of impulse is evidently an association of muscular (arm) sensations with visual experiences of distance. The suggested reaction becomes inhibited in a growing degree by a counteracting nervous process; and here are the conditions necessary to the rise of desire. It is safe, therefore, I think, to say, that *desire takes its rise in visual suggestion and develops under its lead.*

The two further requisites to the process of volition are deliberation and effort. The word "deliberation" characterizes the content of consciousness, and may be best described as a state of polyideism, or relatively unreduced plurality of presentations, with a corresponding plurality of motor tendencies (motives). The feeling of effort seems to accompany the passage of consciousness into a monoideistic state after deliberation. It arises just when an end is put to the motor plurality by synthesis or co-ordination. Deliberation may exist without effort, as is seen in deliberative suggestion already described and in pathological *aboulia*, in which a man is a prey to un-coordinated impulses.

Now these further conditions of the rise of will are present first in childhood in persistent imitation, the try-try-again experience. In the pre-imitative period, the so-called efforts of infants are suggestive reflexes. My child, E., strained to lift her head in the second month when any one entered the room; and in her fourth month, after being lifted by the clasping of both her hands around her mother's fingers, the mere sight of fingers extended before her made her grasp at them and attempt to raise herself. Such cases — on which many writers rely, e.g., Preyer—fall easily under sensori-motor suggestion as it borders on physiological habit. The nearest it comes to will is that it may involve faint glimmerings of desire, but it certainly lacks all deliberation. Further, simple imitation, as has already been said, can be readily accounted for without any appeal to deliberation or effort and even without an appeal to desire.

In persistent imitation we have an advance on simple imitation in two ways: (1) A comparison of the first result produced by the child (movement, sound) with the suggesting image or "copy" imitated, i. e., deliberation. This gives rise to the state of dissatisfaction, motor restlessness, which is desire, best described as "will-stimulus;" (2) the outburst of this complex motor condition in a new reaction, accompanied in consciousness by the attainment of a monoideistic state (end) and the feeling of effort. Here, then, in persistent imitation we have, thus briefly put, the necessary elements of the voluntary psychosis for the first time present.

The reason that in imitation the material for will is found is seen to be that here the "circular process" already described maintains itself. In reactions which are not imitative (for example, an ordinary pain-movement reaction) this circular process, whereby the result of the first movement becomes itself a stimulus to the second, etc., is not brought about; or, if it do arise, it consists simply in a repetition of the same motor event fixed by association — as the repetition of the *ma* sound so common with very young infants. Consciousness remains monoideistic. But in imitation the reaction performed comes in by eye or ear as a new and different stimulus; here is the state of motor polyideism necessary for the supervention of the feeling of effort.

From this and other lines of evidence,[5] we are able to see more clearly the conditions under which effort arises. It seems clear that (1) the muscular sensations arising from a suggestive reaction do not present all the conditions; in young children, just as in habitual adult performances, muscular sensations simply give a repetition of the muscular event. The kinæsthetic centre empties into a lower motor centre in some such way as that described by James (*Psychology*, II., p. 582) along the diagonal line *mc*, *mp* in

[1] The theory of the rise of volition here announced was presented in detail at the International Congress for Experimental Psychology which met in London in August; a full abstract is to be found in the Proceedings of the Congress. The entire paper with further elaboration is to appear in an early issue of *Brain* (London).

[2] "Suggestion in Infancy," *Science*, Feb. 27, 1891; "Infants' Movements," *Science*, Jan. 8, 1892.

[3] Cf. my "Handbook of Psychology," Vol. II., Chap. XIV., § 2, for a fuller development.

[4] See *Science*, XVI., 1890, p. 247.

[5] Other evidence is (*a*) a research on students, called "Persistent Imitation Experiment," and (*b*) evidence from the pathology of speech; for both of which see the detailed article to appear in *Brain*.

the "motor square" diagram given below (Fig. 1). This is also true when (2) sensations of the "remote" kinæsthetic order (the sight or hearing of movements made) are added to the muscular sensations. They may all coalesce to produce again a repetition of the original reaction. The "remote" and "immediate" sources of motor stimulation reinforce each other. This is seen in a child's satisfied repetition of its own mistakes in speaking and drawing, where it hears and sees its own performances. Consequently (3) there is muscular effort only when the "copy" persists and is compared with the result of the first reaction; that is, on the physical side, when the two processes started by the "copy" and the reactive result reach the higher co-ordinating centre together. The stimulus to repeated effort arises from the lack of co-ordination or identity in the different stimulations which reach the centre of co-ordination simultaneously. The mental outcome, effort, accompanies the motor outburst of these combined influences, and, as soon as this outburst reproduces the "copy," the effort is said to "succeed," the subject is satisfied, "will-stimulus" disappears, and the reaction tends to become simple as habit.

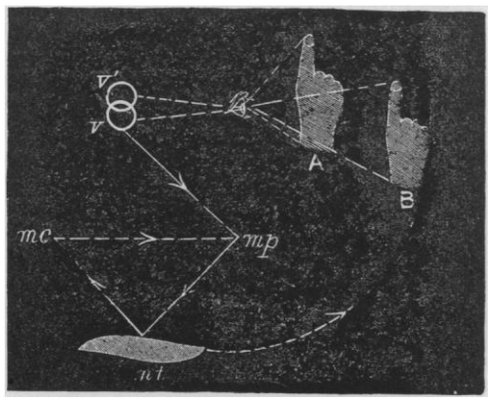

FIG. I.—*Simple Imitation.* v, v' = visual seat; mp = motor seat; mt = muscle moved; mc = muscle-sense seat; A = "copy" imitated; B = imitation made. The two processes v and v' coalesce and the reaction is repeated without change or effort.

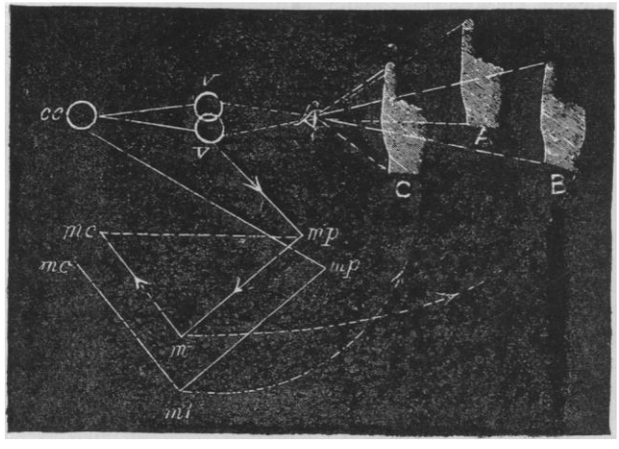

FIG. II.—*Persistent Imitation with Effort.* C=successful imitation; cc=co-ordinating center. (Other letters same as in Fig. I.) The processes at v and v' do not coalesce but are co-ordinated at cc in a new reaction mp', mt', which includes all the elements of the "copy" (A) and more. The useless elements then fall away because they are useless and the successful effort is established.

Physiologically the point which distinguishes persistent imitation with effort from simple imitation with repetition is this conflict of processes in the centre. In simple imitation the excitement aroused by the reaction, as its result is reported inwards by the eye or ear, finds no outlet except that already utilized in the first discharge; hence it passes off in the way of a repetition of this discharge. See Fig. 1.

In persistent imitation the first reaction is not repeated. Hence we must suppose the development, in a new centre, of a function of co-ordination by which the two regions excited respectively by the original suggestion and the reported reaction coalesce in a common more voluminous and intense stimulation of the motor centre. A movement is thus produced which, by reason of its greater mass and diffusion, includes more of the elements of the "copy." This is again reported by eye or ear, giving a "remote" excitement, which is again co-ordinated with the original stimulation and with the after effects of the earlier imitations. The result is yet another motor stimulation, or effort, of still greater mass and diffusion, which includes yet more elements of the "copy." And so on, until simply by its increased mass — by the greater range and variety of the motor elements enervated — the "copy" is completely reproduced. The effort thus succeeds. See Fig. 2.

When muscular effort thus succeeds by the simple fact of increased mass and diffusion of reaction, the useless elements fall away because they have no emphasis. The desired motor elements are reinforced by their agreement with the "copy," by the dwelling of attention upon them, by the pleasure which accompanies success. In short, the law of survival of the fittest by natural, or, in this case, physiological, selection assures the persistence of the reaction thus gained by effort.

This theory of the physical process underlying volition is not open to the objections commonly urged against earlier views. How can we conceive the relation of mind and body? The alternatives heretofore current are three: either the mind interferes with brain processes, or it directs brain processes, or it does nothing — these are the three. Now, on the view here presented, none of these is true. The function of the mind is simply to have a persistent presentation — a suggestion, a "copy." The law of sensori-motor reaction does the rest. The muscles reflect the influence of the central excitement; this creates more excitement, which the muscles again reflect; and so on until, by the law of lavish outlay, which nature so often employs, the requisite muscular combination is secured[1] and persists.

Further, a direct examination of the infant's earliest voluntary movements shows the growth in mass, diffusion, and lack of precision which this theory requires. In writing, the young child uses hand, then hand and arm, then hand, arm, tongue, face, and finally his whole body. In speaking, also, he "mouths" his sounds, screws his tongue and hands, etc. And he only gets his movements reduced to order after they have become by effort massive and diffuse. I find no support whatever, in the children themselves, for the current view of psychologists, i.e., that voluntary combinations are gradually built up by adding muscle to muscle and group to group. This is true only after each of these elements has itself become voluntary. Such a view implies that the infant at this stage knows that he uses his muscles, which is false; knows which muscles he has learned to use, which is also false; and is able to avail himself of muscles which he has not learned to use, which is equally false — not to allude to the fact that it leaves suspended in mid-air the problem as to how the new combination intended gets itself realized in the muscles.

It is evident, also, that in accounting for the earliest voluntary movements as cases of persistent imitative suggestion, we are making the presentation which constitutes the "copy" a thing imported into consciousness, a "suggested" thing which is imposed upon the infant by the necessities of its receptive nature. And so it is. Whether and how the mind ever gets away from this chain of suggestions or "copies," selects its own "copy" or end, and secures by its own choice the persistence of it — this is the question of voluntary attention. Its consideration would lead us too far afield from our present topic, the babies.

[1] This application of the principle of "natural selection" to muscular movement is so simple a solution of this crucial problem that I fear I must have overlooked some suggestion of it in the literature of the subject. At any rate, the tracing of it in the phenomena of imitative suggestion has not occurred elsewhere. As a general hypothesis, however, it is independent of the question as to whether muscular effort is first found in imitation.