

# SCIENCE

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## SUGGESTION IN INFANCY.<sup>1</sup>

THE rise of hypnotism in late years has opened the way to an entirely new method of mental study. The doctrine of pure reflexes was before largely physiological, and only pathological cases could be cited in evidence of a mechanism in certain forms of consciousness as well as out of it; and even pathological cases of extreme sensitiveness to casual suggestion from the environment or from other men did not receive the interpretation which the phenomena of hypnotic suggestion are now making possible, i.e., that suggestion by idea, or through consciousness, must be recognized as as fundamental a kind of motor stimulus as the direct excitation of a sense-organ: in other words, *that nervous reflexes work directly through states of consciousness; that the latter are integral portions of these reflexes*; and, further, *that a large part of our mental life is made up of a mass of such ideo-motor reflexes, which are normally in a state of subconscious inhibition.*

Without discussing the nature of the hypnotic state, nor venturing to pass judgment in this connection upon the question whether the suggestion theory is sufficient to explain all the facts, we may yet isolate the aspect spoken of above, and discuss its general bearings. Of course, the question at once occurs, is the normal life a life to any degree of ideo-motor or suggestive re-actions, or is the hypnotic sleep in this aspect of it quite an artificial thing? Further, if such suggestion is normal or typical in the mental life, what is the nature of the inhibition by which it is kept under? Leaving this second question altogether unanswered for the present, it has occurred to me to observe my child<sup>2</sup> during her first year to see if light could be thrown upon the first inquiry above. If it be true that ideo-motor suggestion is a normal thing, then early child-life should present the most striking analogies to the hypnotic state in this essential respect. This is a field that has hitherto, as far as I know, been almost untouched by psychologists.

Observation of re-actions clearly due to suggestion in my child, either under natural conditions or by experiment, lead me to distinguish the following kinds of suggestion, mentioned in the order of their appearance in child-life:—

Suggestion	{	Physiological	{	Deliberative	
		Sensori-motor			Imitative
		Ideo-motor			

I shall proceed by first describing the class of phenomena designated, and then the evidence, small or great, which my observations afford in each case.

1. *Physiological Suggestion.*—By “suggestion” ordinarily is understood ideal or ideo-motor suggestion,—the

<sup>1</sup> For the general facts and interesting treatment of the movements of infants, see Preyer's *Senses and Will*, part ii.

<sup>2</sup> Called hereafter simply H.

origination from without of a motor re-action by producing in consciousness the state which is ordinarily antecedent to that re-action. But observation of an infant for the first month or six weeks of its life leads to the conviction that its life is mainly physiological. The vacancy of consciousness as regards any thing not immediately given as sensation, principally pleasure and pain, precludes the possibility of ideal suggestion as such. The infant at this age has no ideas in the sense of distinct memory-images. Conscious states are affective. Accordingly, when the re-actions which are purely reflex, and certain random impulsive movements, are excluded, we seem to exhaust the contents of consciousness.

Yet even at this remarkably early stage H. was found to be in a degree receptive of suggestion—suggestion conveyed by repeated stimulation under uniform conditions. In the first place, the suggestions of sleep began to tell upon her before the end of the second month. Her nurse put her to sleep by laying her face-down and patting gently upon the end of her spine. This position soon became itself not only suggestive to the child of sleep, but sometimes necessary to sleep, even when she was laid across the nurse's lap in what seemed to be an uncomfortable position.

This illustrates what I mean by physiological suggestion. It is the law of physiological habit as it borders on the conscious. No doubt some such effect would be produced by pure habit apart from consciousness; but, consciousness being present, its nascent indefinite states may be supposed to have a quality of suggestiveness, which indicates the degree of fixedness of the habit. Yet the fact of such a coloring of consciousness in connection with the growth of physiological habit is important more as a transition to more evident suggestion.

The same kind of phenomena appear also in adult life. Positions given to the limbs of a sleeper lead to movements ordinarily associated with these positions. The sleeper defends himself, withdraws himself from cold, etc. All secondary automatic re-actions may be classed here, the sensations coming from one re-action (in, say, walking) being suggestions to the next movement unconsciously acted upon. The state of consciousness at any stage, if present at all, must be similar to the baby's in the case above,—a mere internal glimmering, whose reproduction, however brought about, re-enforces its appropriate re-action.

The most we can say of such physiological suggestion is, that, when the conscious state is present, the re-action is subsequently abbreviated and facilitated; but whether abbreviation is due entirely to habit, and the consciousness is only a result of such abbreviation, not its cause, we are unable to say.

The physiological process involved, and its relation to consciousness, may be brought out by a diagram; but, in order that it and those which follow may be easily understood, it may be well to present the *motor square*, as we

may call it (Fig. 1), which contains all the elements of the phenomena of suggestion, and of which the special diagrams below are modifications.

Each corner indicates a physiological process with or without consciousness, as follows: *sg* = suggestion (sensory); *mp* = seat of motor process; *mt* = movement of muscle; *mc* = consciousness of movement. The sides of the square are connections between the seats of these processes. A cross (X) in any corner indicates that the brain process alone is intended at that seat; a circle (O), that consciousness at that seat is intended.

The stimulus *sg* (Fig. 2) starts the motor process *mp*: it leads to movement, *mt*, which is reported to consciousness,

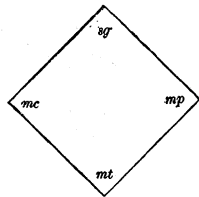


FIG. 1. — MOTOR SQUARE.

*mc*. The line between *sg* and *mc* is broken, because at this stage in infancy associations are just beginning to be formed between a feeling of muscular movement and its stimulating sensation.

2. *Sensori-Motor Suggestion*.—These cases of suggestion may be classed somewhat in this way:—

(a) *Various Sleep Suggestions*.—From the first month on, there was a deepening of the hold upon her of the early method of inducing sleep. The nurse, in the mean time, added two nursery rhymes. Thus position, pats, and rhyme sounds were the suggesting stimuli. Not until the third month, however, was there any difference noticed, when the same suggestions came from other persons. I myself learned, during the fourth month, to put her to sleep, and

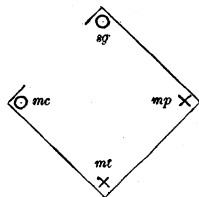


FIG. 2. — PHYSIOLOGICAL SUGGESTION.

learned with great difficulty, though pursuing the nurse's method as nearly as possible. Here, therefore, was a sleep suggestion from the *personality* of the nurse,—her peculiar voice, touch, etc. At this time I assumed exclusive charge of putting H. to sleep in order to observe the phenomena more closely. For a month or six weeks I made regular improvement, reducing the time required from three-quarters of an hour to half an hour, finding it easier at night than at mid-day. This indicated that darkness had already become an additional sleep suggestion, probably because it shut out the whole class of sensations from sight, thus reducing the attention to stimuli which were monotonous. I found by accident, in this connection, the remarkable fact that a single flash of bright light would often put H. immediately to sleep

when all other processes were futile. In her fifth month I despaired one evening, after nearly an hour's vain effort, and lighted the gas at a brilliant flash unintentionally. She closed her eyes by the usual reflex, and did not open them again, sleeping soundly and long. I afterwards resorted to this method on several occasions, carefully shielding her eyes from the direct light-rays, and it generally, but not always, succeeded. I would like to know if this experience is shared by nurses or other parents. In the following month (sixth) I reduced the time required (day or night) to about a quarter of an hour, on an average. In this way I found it possible to send her off to sleep at any hour of the night that she might wake and cry out.

I then determined to omit the patting and endeavor to bring on sleep by singing only. The time was at first lengthened, then greatly shortened. I now found it possible (sixth to seventh month) to put her to sleep, when she waked in the dark, by a simple refrain repeated monotonously two or three times. In the mean time she was developing active attention, and resisted all endeavors of her nurse and mother (who had been separated from her through illness) very stubbornly for hours, while she would go to sleep for myself, even when most restless, in from fifteen to thirty minutes. This result required sometimes firm holding-down of the infant and a determined expression of countenance.

At the end of the year, this treatment being regular, she would voluntarily throw herself in the old position at a single word from me, and go to sleep, if patted alone uniformly, in from four to ten minutes. This continues to the present (sixteenth month); even when she is so restless that her nurse is unable to keep her from gaining her feet, and when she screams if forced by her to lie down. The sight only of myself makes her entirely quiet; and in, say, five minutes, rarely more, she is sound asleep. I found it of service, when she was teething and in pain, to be able thus to give her quiet, healthful sleep.

This illustrates, I think, as conclusively as could be desired, the passage of purely physiological over into sensory suggestion; and this is all that I care, in this connection, to emphasize. The explanation, as I believe, throws light upon the theory of the rise of volition; but that aspect of it may be left for future discussion.

(b) *Food and Clothing Suggestion*.—H. gave unmistakable signs of response to the sight of her food-bottle as early, at least, as the fourth month, probably a fortnight earlier. The re-actions were a kind of general movement toward the bottle, especially with the hands, a brightening of the face, and crowing sounds. It is curious that the rubber on the bottle seemed to be the point of identification, the bottle being generally not responded to when the rubber was removed. The sight of the bottle, also, was suggestive much earlier than the touch of it with her hands.

She began to show a vague sense of the use of her articles of clothing about the fifth month, responding at the proper time, when being clothed, by ducking her head, extending her hand or withdrawing it. About this time she also showed signs of joy at the appearance of her mittens, hood, and cloak, before going out.

(c) *Suggestions of Personality*.—It was a poet, no doubt, who first informed us that the infant inherits a peculiar sensibility for its mother's face,—a readiness to answer it

with a smile. This is all poetic fancy. When the child does begin to show partiality for mother or nurse, it is because the kind treatment it has already experienced in connection with the face has already brought out the same smile before; the mother's face, that is, grows to suggest the smile. At first it is not the face alone, but the personality, the *presence*, to which the child responds; and of more special suggestion, the voice is first effectual, then touch (as in sleep above), and then sight. Such suggestions are among the most important of infancy, serving as important elements in the growth of the consciousness of self and of external reality; but such considerations are not pertinent to the present connection. Without delaying longer on this class of suggestions, the question occurs, are we not here simply observing cases of the association of ideas? I think we are warranted in answering, "No!" most emphatically, for the reason that it is not an associated idea that is brought up. It is a muscular movement that is produced, without the production of an idea of that movement. Can we say that the sleep suggestions first bring up an idea or image of the sleep condition, or that the bottle brings up an idea of the movements of grasping, or even of the sweet taste? No, the case is more direct. The energy of stimulation passes over into the motor re-action through the medium of the

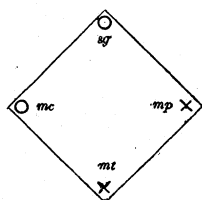


FIG. 3.—SENSORY-MOTOR SUGGESTION.

conscious state. Further, as will appear clearer below, it is not an association plus a suggestion, or an association plus an association, as current doctrines of motor-stimulation would lead us to expect. We cannot say that pleasure or pain always intervenes between the present state of consciousness and the motor re-action; i.e., mother's face, pleasure recalled, expression of pleasure, or present bottle, sweet taste, movements to reach. I believe all this is quite artificial and unnatural,—a point to which the remainder of this paper will put in clear relief.

The explanation is as before for physiological suggestion, except that the re-action begins with a conscious process (O) at *sg* (Fig. 3), and the child is getting associations between *sg* and *mc*.

3. *Deliberative Suggestion*.—By "deliberative suggestion" I mean a state of mind in which such co-ordinate stimuli meet, affront, oppose, further, one another. Yet I do not mean "deliberation" in the full-blown volitional sense; but *suggestion* that appears deliberative, while still inside the re-active consciousness. It lacks self-consciousness, self-decision, self in any form. The last three months of the child's (H.'s) first year are, I think, clearly given over to this kind of consciousness. Motor stimulations have multiplied, the emotional life is budding forth in a variety of promising traits, the material of conscious character is present; but the "ribs" of mental structure may still be seen

through, re-active couples, response answering to appeal in a complex but yet mechanical way.

As an illustration of what I mean, I may record the following case of deliberative suggestion from H.'s thirteenth month: it was more instructive to me than whole books would be on the theory of the conflict of impulses. When about eight months old, H. formed a peculiar habit of suddenly scratching the face of her nurse or mother with her nails. It became fixed in her memory, probably because of the unusual facial expression of pain, reproof, etc., which followed it, until the close proximity of any one's face was a strong suggestion to her to give it a violent scratch. In order to break up this habit, I began to punish her by taking the hand with which she scratched at once, and snapping her fingers with my own first-finger hard enough to be painful. For about four weeks this seemed to have no effect, probably because I only saw her a small portion of the time, and only then did she suffer the punishment. But I then observed, and those who were with her most reported, that she only scratched once at a time, and grew very solemn and quiet for some moments afterwards, as if thinking deeply. And soon after, this climax was reached: she would scratch once impulsively, be punished, and weep profusely, then become as grave as a deacon, looking me in the face. I would then deliberately put my cheek very close to her, and she would sit gazing at it in "deep thought" for two or even three minutes, hardly moving a muscle the whole time, and then either suddenly scratch and be punished again, or turn to something (noise or object, watch-chain, etc.) near by. Having scratched, she began to cry in anticipation of the punishment. Gradually the scratching became more rare. She seldom yielded to the temptation after being punished, and so the habit entirely disappeared. I may add that her mother and myself endeavored to induce a different re-action by taking the child's other hand and gently stroking the face which she had scratched. This movement in time replaced the other completely, and now the soft stroking has become one of her most spontaneous expressions of affection.

Now, the interpretation is this, in terms of the foregoing pages: the first act of scratching was probably accidental, one of the spontaneous re-actions or physiological suggestions so common with an infant's hands; it passed, by reason of its peculiar associations, into a sensori-motor re-action whenever the presence of a face acted as suggestion,—so far, a strong direct stimulus to the motor centres. Then came the pain,—a stimulus, both direct and associative, to the inhibition of the foregoing. For a time the former was too strong; then there followed an apparent balance between the two; and finally the pain overcame the suggestion, and the re-action was permanently inhibited. The stroking re-action gained all the strength of violent and intense association with the elements of this mental conflict, and was thus soon fixed and permanent.

Taking this as a typical case of "deliberative suggestion,"—and I could instance many others, less clear, from H.'s life-history,—my point is twofold: there is nothing here that requires will, meaning by "will" a new influence due to active consciousness (if we do call it will, we simply apply a different term to phenomena which in their simplicity we call by other names); and, second, suggestion is as original

a motor stimulus as pleasure and pain. Here they are in direct conflict. Can we say that H. balanced the pleasure of scratching and the pain of punishment, and decided the case on this egoistic basis? And, if suggestion be an original stimulus, why may it not be an altruistic suggestion, — my pain and your pleasure as well as your pain and my pleasure?

There are two (or more) suggestions, *sg* and *sg'* (Fig. 4), each either sensory or ideal. They arouse a motor process which is the union of two processes (*mp* and *mp'*). In the instance above, the scratch suggestion *mp* controls, gives the re-action *mt* and its consciousness *mc*.

4. *Imitative Suggestion*.—For a long period after the child has learned to use all his senses, and after his memory is well developed, he lacks entirely the instinct of imitation. I have been quite unable in H.'s case to confirm the results of Preyer, who attributes imitation to his child at the age of three to four months. I experimented again and again, and in a great variety of ways, but failed to get any thing like a decisive case of imitation till the eighth month; that is, till after the will was clearly beginning to show itself. During this period, however, H.'s consciousness was a rich field of suggestive re-actions of the other classes. There were, earlier, a few instances of apparent imitations of movements of opening and closing the hands, but they turned out to be

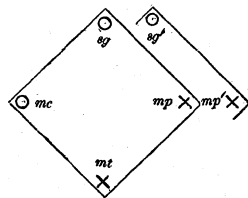


FIG. 4.—DELIBERATIVE SUGGESTION.

accidental. I think it likely that observers are often deceived as respects imitation, taking happy coincidences for true instances; yet it is possible that H. was peculiar in regard to this.

When the imitative impulse does come, it comes in earnest. For many months after its rise it may be called, perhaps, the controlling impulse, apart from the ordinary life processes. As a phenomenon, it is too familiar to need description. Its importance in the growth of the child's mind is largely in connection with the development of language and of muscular movement.

As a factor in motor development, — the aspect now before us, — the phenomena are plain enough, and may be divided into two general classes, called *simple imitation* and *persistent imitation*.<sup>1</sup> By simple imitation I mean to characterize re-actions in which the movement does not really imitate, but is the best the child can do. He does not try to improve by making a second attempt. This is evidently a case of simple sensori-motor suggestion on the physiological side, and is peculiar psychologically only because of the more or less remote approximation the re-action has to the stimulating

movement. If this were all that imitations are worth, we might omit their further treatment.

But in *persistent imitation* we have a very different phenomenon, — a phenomenon which marks the transition, as I conceive, from suggestion to will, — from the re-active to the voluntary consciousness. Such imitation is necessary, I think, as a stimulus to the tentative voluntary use of the muscles. Professor Bain's theory that all voluntary movements are led up to by accidental spontaneous re-actions which result in pleasure or pain, will not hold water for an instant in the presence of the phenomena of imitation. Suppose H. endeavoring in the crudest fashion to put a rubber on the end of a pencil, after seeing me do it, — one of her earliest imitations. What a chaos of ineffective movements! But after repeated efforts she gets nearer and nearer it, till at last, with daily object-lessons from me, she accomplishes it. Here, simply by imitation, one of the most valuable combinations for future manual manipulation is acquired. Suppose there had been no impulse to do what she saw me do, no motor force in the simple idea of the rubber on the pencil: what happy combination of Mr. Bain's spontaneous movements would have produced this result, and how long would it have taken the child if she had waited for experiences actually pleasurable and painful to build up this motor combination?

In cases of imitation there is no chance for association as such. The movements imitated are new as combinations. It is probable, it is true, that various ideas of former movements are brought up, and that the child has the consciousness of general motor capacity, resting, in the first place, upon spontaneous impulsive re-actions; but on this insufficient associational basis he strikes out into the deepest water of untried experience. For this reason, as was said above, I believe that persistent imitation comes only after there is will; meaning by "will," at this stage of it, that this consciousness of motor capacity is not held down to actual memories of past re-actions, but becomes generalized mentally and motorly beyond its legitimate physiological data. Physiologically, we would expect that the brain energy released by a new stimulus (pencil-rubber combination) would pass off by the motor channels already fixed by spontaneous, reflex, and associated re-actions; i.e., that the child would be content with a motor re-action of any kind. But not so. It is not content until it produces a new re-action of a particular kind, and we must suppose that in consequence of each effort of the child the physical basis is in some way modified, in so far violating strict nervous association, until the one re-action imitated is performed.

The peculiarity of persistent imitative suggestion, accordingly, is that it involves will, and yet is not a voluntary motor re-action. The muscular movements in putting on the rubber is not the child's pictured end: the idea of the rubber on the pencil is her end. Nor is she conscious of the motor re-action as a means to that end. It is probable that the muscular movements figure in her consciousness, if at all, only in the vaguest and most undefined associative way.<sup>1</sup> They represent simply the nervous channel into which the eye-stimulus empties itself.

Further, the re-action at which imitative suggestion aims is one which will reproduce the stimulating impression, and

<sup>1</sup> Preyer's distinction between "spontaneous" and "deliberate" imitation, *Senses and Will*, p. 293. He is wrong, I think, in making both classes voluntary. The contrary is proved for spontaneous imitation by the fact that many elements of facial expression are never acquired by blind children. We could hardly say that facial expression was a voluntary acquisition, however gradually it may have been acquired.

<sup>1</sup> See PREYER, *Senses and Will*, p. 254.

