

## SUGGESTION AS A THERAPEUTIC MEASURE IN NOCTURNAL ENURESIS \*

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Failure to control the bodily functions of excretion constitutes a breach of conduct so offensive to civilized society that its origin as a social refinement is apt to be obscured. Although it is "only necessary to scratch civilization to find savagery," there is a tendency to forget the influence of traditional associations on civilized activities.<sup>1</sup> Primitive impulses, the utility reactions of a simple environment, still survive. Their readjusted nervous mechanisms are generally less stable than the reflexes of instincts subject to less direct social scrutiny. All the newer requirements of civilization call on the organism to develop self-control. Consequently many customary actions of frequent repetition speedily become unconscious mechanisms. Hand in hand with this automatic activity goes an increase in the emotional value of its omission, still more of the performance of such activities contrary to custom.<sup>2</sup> In the mature individual lapses in control of the urinary bladder suggest at once a psychopathic taint, for even positive, somatic disorder rarely imposes loss of control beyond the power of voluntary modification. Although nocturnal enuresis during the first two years of life is considered physiologic, training in regular habits during the first year may accomplish much. If by the end of the third year restraint has not become habitual the situation should be looked on as one demanding more than mere nursery attention. Few cases of uncomplicated enuresis diurna are seen in children of ordinary intelligence, but sleep presents conditions to which certain of these ill-balanced children are unable to become adjusted. As a result various neurotic manifestations develop, sleep walking, night terrors, bed-wetting, all rightly regarded as evidence of nervous instability. The annoyance that a child disposed to bed-wetting causes itself and its attendants is so much greater than that resulting from other neurotic symptoms that its frequency is naturally overemphasized. Even among nervous children its characterization as one of the commonest diseases of childhood<sup>3</sup> is not substantiated by experience. Among 800 nervous children of various

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1. Boaz, F.: *The Mind of Primitive Man*, Journal of American Folklore, 1901.

2. Baldwin, J.: *Social and Ethical Interpretations*, New York, 1902.

3. Mello-Leitao: *Treatment of Nocturnal Enuresis in Children*, Brit. Jour. Child. Dis., 1912.

nationalities admitted to Phipps Psychiatric Dispensary, ranging in age from 5 to 16 years, only 7 per cent. were bed-wetters. Various theories point to its obscure causation, this suspicion being intensified by an analysis of the cases. Admitting the occurrence of a purely objective type, due to congenital defects, intestinal parasites, diabetes, cystitis and other organic disturbances, there is another group of subjective cases of an entirely different character. In these children evidence of psychic inferiority may be easily elicited or it may be quite elusive. Consequently they are often dismissed as habitually nervous, their malady to be outgrown. Successful treatment of these patients with empirical remedies is frequently as surprising as it is inexplicable. The element of mystery thus added temporarily enhances the virtue of the cure until its failure for each and every case relegates it to the limbo of the charlatan, another nostrum taking its place.

Without attempting thoroughly to analyze a situation presenting many physiologic elements of controversy, a brief recapitulation of the definite, biologic manifestations bearing on the cases here clinically reported is offered for criticism. The earliest response of the human organism to bladder stimulation is an involuntary process. During the first few months of life it represents the activity of a purely unconditional,<sup>4</sup> spinal reflex, the mechanism of which resides in the sacral and thoracic autonomic systems.<sup>5</sup> Awake or sleeping the normal infant exerts no attempt at voluntary control. Even after he is able to associate a manifest degree of discomfort with his unpleasant habit he is unable to readjust himself to the situation without assistance. Whether the muscular structures at the neck of the bladder are stimulated by chemical or physical agents the subsequent reflex activity seems to be touched off by the stimulus of the few drops of water in the posterior urethra.<sup>6</sup> The primitive nature of the mechanism is shown in the fact that section of the thoracic-autonomic innervation does not affect the reflex, though it is abolished when the pelvic nerves are cut.<sup>6</sup> This difference in function as well as in later dissociation phenomena might be explained on the ground that the two systems have an independent, biologic history of dissimilar chronology.<sup>7</sup> Thus, early reflex activity, controlled wholly by instinct, independent of cortical association, reveals the regularity of primitive organic response to environment, through the nervous system. Moreover, one may recognize herein another function of nervous tissue, that of forming new reflexes in

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4. I have called these reflexes of recent formation "conditional reflexes," in order to distinguish them from the ordinary reflexes to which I have given the name "unconditional reflexes."—*Pawlow*.

5. Luciani, L.: *Human Physiology*, Translation, London, 1913, ii.

6. Elliott, T.: *The Innervation of the Bladder and Urethra*, *Jour. Physiol.*, 1907.

7. Langley, J.: *The Autonomic Nervous System*, *Brain*, 1903.

order to adapt the organism to its social environment. These reflexes of recent formation, or conditional reflexes, together with the cortical, association neurons or analyzers, are responsible for all higher, nervous activities. They represent the reaction of the organism as a unit in response to a localized stimulus. They are phenomena of a higher, more complex order than are simple contractions or other direct changes in the motor organs at the point of stimulation. Pawlow's experiments on animals indicate that fully formed, conditional reflexes exhibit great sensitivity to all sorts of conditions, on which account they are subject, in circumstances of everyday life, to continued variation, often to complete inhibition.<sup>8</sup> Krasnagorski's<sup>9</sup> observations show the same results in children. Three distinct types of inhibition have been recognized: one conditioned by drowsiness and sleep; another due to the synchronous arrival, at the higher centers, of extrinsic and intrinsic stimuli giving rise to other reflexes; a third due to disharmonies between conditional and unconditional stimuli from which the reflex was formed. Returning now to events in the life of the unconditional or primitive spinal reflex concerned with urination, one finds that the educational procedure adopted by the attendant induces voluntary control in the child by presenting frequently a temporary association stimulus coincident with the biologic stimulus. The child attends to the nursery chair or other associative object at the same time that the desire stimulus is about to react. Through this cooperation he is enabled gradually to build up a definite control, stimulated by the visual or auditory image associated with the accomplishment of desire. These temporary stimuli or associations, presented repeatedly in conjunction with the unconditional stimulus inducing desire to empty the bladder, make for themselves new inhibitory paths. Impulses which formerly went to a particular region of the nervous system now become directed to a different one, thereby inducing controlled action in the nature of a conditional reflex. Thus the child, at first forced to conform to rules of conduct, acquires a habit thereafter voluntarily cultivated. This is all the more easily directed or diverted since "the bladder is very sensitive to reflex stimulation, every psychical act and every sensory stimulus being apt to cause contraction or increased tone in its wall."<sup>10</sup> The new reflex formed has a different afferent neuron, "the voluntary act of urination being essentially a reflex through the central nervous system."

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8. Pawlow, I.: *The Investigation of the Higher Nervous Functions*, Brit. Med. Jour., 1913.

9. Krasnagorski, N.: *Ueber die Bedingungsreflexe im Kindesalter*, Jahrb. f. Kinderh., 1909.

10. Howell, W.: *Textbook of Physiology*, Philadelphia, 1915.

Elliott has observed that the pelvic nerves cause the bladder to contract. They also inhibit the sphincter, hence they are the nerves of micturition. They affect the primitive visceral movements that are the first need of the animal, to wit, the voidance of the excreta. It seems to be a reasonable assumption that they are the aboriginal nerves. The hypogastrics represent later refinements, whereby these acts may be deferred to a moment better suited to the other activities of the whole animal. They are the nerves which facilitate retention of urine and justify the belief that this second condition of the muscle has been recently developed.

This act consciously acquired and assiduously practiced is gradually relegated from a wholly conscious to a largely unconscious performance. In the infant, whose associative mechanism is undeveloped, no voluntary control is possible until there is a linking up of the vegetative and associative nervous system. After the age of 2 years the unconditional mechanism is firmly established in the normal child as a conditional reflex. The association between motor activity and its emotional response thus occurs more or less faultlessly in the absence of conscious supervision. The success of the process depends, of course, first, on an ability consciously to attend to the stimulus—sensation, desire—which underlies the motor impulse, together with an ability to interpret these sensations of behavior in terms of conduct; second, an ability unconsciously to interpret these phenomena. For “eager desire one must substitute attention,”<sup>11</sup> a condition which can be realized only in individuals possessing a fairly well-balanced mentation. Thus, children who show a marked disagreement in mental and chronologic age are unsatisfactory subjects. Those who respond most readily to constructive treatment are intelligent though ill-balanced individuals. Again, success in education depends on the anatomic continuity of the newly formed reflex arc, this in turn depending on the permanency of the synapses. Disjunction most readily occurs in newly formed association centers, the autonomic system being especially vulnerable from the fact that no efferent fibers of the system run from the central nervous system to the bladder without having a nerve cell in their course.<sup>12</sup> Thus fatigue, to which conditional reflexes are sensitive, or the vagaries of the ductless glands, with whose functioning the autonomic system is intimately associated, may readily induce synaptic disjunction. In case of this lack of associative activity the primitive condition easily dominates the situation, thus abolishing voluntary control. Elliott’s observation that epinephrin, however applied to the bladder never causes any effect other than that of relaxation may thus

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11. Pawlow, I.: *The Work of the Digestive Glands*, London, 1910.

12. Langley, J.: *Nerve Fibers of the Bladder*, *Jour. Physiol.*, 1911.

explain the theory of Konrádi,<sup>13</sup> Williams<sup>14</sup> and others that the underlying cause of nocturnal enuresis is always a glandular disharmony. The favorable action of atropin on many of these cases<sup>15</sup> may also be accounted for in its sedative affinity for the autonomic fibers. Applying Pawlow's observations on inhibition to the reflex in question, we may make a logical explanation of the hypothesis of Fürstenheim,<sup>16</sup> Collin<sup>17</sup> and others who regard "the soundness of sleep as the initial factor," or with Herrman's<sup>18</sup> classification of bed-wetting with tics and speech defects, or with Pronstein<sup>19</sup> whose examinations reveal constant anatomic lesions.

In this group of ill-balanced children, whose unstable nervous mechanism is indicated by the tendency to bed-wetting, one is confronted with a problem of biologic adjustment. Success depends on the ability to change a situation which, during sleep, simulates a primitive state controlled by an unconditional, reflex mechanism. Granted favorable circumstances, all that is required for a positive effect is the ability to awaken attention, thereby establishing associative control through a conditional reflex. By presenting repeatedly a definite stimulus the bladder is reeducated in a proper method of functioning. The form in which this associative suggestion should be presented depends on the point of view of the observer. It certainly does not present a new or unique method of procedure, for it is narrated in the Saxon Chronicle that the Magi also taught the patient suffering from this disorder to drink the ashes of a pig's pizzle in sweet wine, and so to make water into a dog's kennel, adding the words: "lest I like a hound, should make urine in my own bed."<sup>20</sup> Bruni<sup>21</sup> reported "twenty-three cases treated by injection of normal salt solution into the arachnoid sack, with lumbar puncture, seven of which were cured." Allaria<sup>22</sup> reported "pseudo-epidural injections of normal salt solution under the skin, merely, with the same success as when injected into the

13. Konrádi, D.: *Die Organotherapie der Enuresis nocturna*, Pest. med.-chir. Presse, 1910.

14. Williams, L.: *Adenoids and Nocturnal Enuresis*, Brit. Jour. Child. Dis., 1909.

15. Simpson, J.: *Incontinence of Urine in Children*, Edinburgh Med. Jour., 1913.

16. Fürstenheim: *Enuresis nocturna infantum*, Therap. Monatsh., 1908.

17. Collin, A.: *Contribution à l'étude de l'énurésie dite essentielle*, Gaz. d. hôp., 1911.

18. Herrman, C.: *The Treatment of Enuresis by Reeducation*, Arch. Pediat., 1910.

19. Pronstein, R.: *Russk. Vrach.*, 1914.

20. Cockayne, O.: *Leechdoms, Wortcunning and Starcraft*, London, 1864.

21. Bruni, C.: *Il metodo Cathelin nella cura dell' incontinenza essenziale d'orina*, Atti d. r. Accad. Med.-Chir., di Napoli, 1905.

22. Allaria, G.: *La punctura pseudo-epidurale nell'enuresi essenziale dei bambini*, Pediatria, Napoli, 1912.

sacral canal." Rotch,<sup>23</sup> following an old precedent, advocated "raising the foot of the bed so that the urine shall not irritate the neck of the bladder." Various clinicians, resorting to placebos of bitter decoctions, by instructing the child as to administration and results, report cures more or less permanent. Punishment sometimes works wonders. In spite of a degree of success, these methods, all of which are frankly modifications of suggestion, are open to criticism. One is justified in shrinking from surgical procedures if equally satisfactory results may be attained through less objective methods. Again, in spite of the harmlessness of a placebo, the possibility of drug habits, especially in children of neuropathic constitution, is to be considered in choosing a therapeutic method.

As a harmless, and, in the experience of the writer, a uniformly efficient means of treatment, the following technic in applying suggestion to these cases is presented. A set of four associative sentences is printed on a card. The wording is not immaterial, though it may be varied to suit the case. It should be positive and of simple structure. Following are the stimulus words used for the cases here reported:

I am not going to wet the bed.

I am going to wake up at midnight.

I shall get up and pass water.

I shall not wet the bed any more.

This is to be repeated ten times, twice a day, preferably during the act of urination, and at bedtime just before going to sleep. The card is then put under the child's pillow. This method, combined with no other measure, was employed in treating the ten patients whose cases are reported below. Auditory-motor stimuli were at first used, with satisfactory results in high-grade children, but were less applicable to children of moderate responsibility. The visual-motor method has been adopted, however, as a better routine procedure. The subjects were all schoolchildren who, from their appearance and conduct, were tacitly neurotic. Treatment was begun Feb. 1, 1916, and is being continued. The results here reported are therefore of four months' duration. The two girl subjects were at home while all the boy subjects were inmates of the Baltimore Parental School, an ideal institution of its nature. Each subject had a thorough physical and mental examination in order to rule out etiologic factors other than those of psychic inferiority. The urine was examined in each case and was within the range of normality respecting quality and quantity. The majority had been under unsuccessful medical treatment.

Various historical factors are shown in the table of clinical data and the results are there briefly indicated. In general, one may say

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23. Rotch, T.: *Pediatrics*, Ed. 5, Philadelphia, 1906.

## CLINICAL DATA OF TEN PATIENTS TREATED FOR NOCTURNAL ENURESIS

Name	Sex	Chronological Age	Binet-Simon Age	Nocturnal Enuresis	Remarks	Results
H. N.	M	12	9	From birth, nearly every night	An ill-balanced truant; neurotic family history; cooperative, eager to stop "floating"	Perfect for 2 months; left school and lost sight of; wakes up himself
E. T.	M	12	12	From birth, nearly every night	An ill-nourished, intelligent, cooperative truant; poor home environment; psychopathic family history	Twice in February, not since; wakes up himself
O. H.	M	14	14	From birth, 2 or 3 times weekly, till 8 years, when truancy began; every night since	Highly emotional, somnambulist, snake dreams and terrors; family history of drink and debauchery	Three times only; wakes up himself
R. S.	M	11	11	From admission to Parental School 6 months before; every night; before occasionally	Bright boy, no other neurotic traits; family history good; truancy, from bad neighborhood	Twice only; wakes up himself
L. K.	M	14	8	From infancy every night	Dull boy; family history not known	Improved, but still about once a week; has to be awakened sometimes
C. P.	M	12	8	From infancy every night	Fairly bright boy; family history not known	Once in each month for 2 months; paroled and lost sight of
R. W.	M	12	12	Twice weekly from birth; every night since admission to Parental School, 6 months before	Bright boy; family history good	Only once since beginning; wakes up himself
W. W.	M	13	13	Occasionally all his life	Bright boy; poor environment	Once only from beginning
B. E.	F	9	9	Father drinks, somnambulist, bed-wetter; mother "fits and spells"; home environment "the worst"	Nocturnal and diurnal enuresis began after diphtheria at 5 years; every night; night terrors; a brother has same habits	Much improved; one month perfect; later "forgot" and wet bed once or twice a week
H. B.	F	12	12	Family history good; mother rheumatic	Nocturnal enuresis since scarlet fever at 5 years; nearly every night; night terrors; large, over-developed; infantile; type, normal sella turcica; choreiform movements	On second night of trial wet bed; not once since; wakes up herself.

The eight boys were observed at the Baltimore Parental School. They were all white, and were all committed for truancy.

that the mass result was entirely positive. This is evident when it is recalled that all these subjects were chronic bed-wetters, the act occurring, in the majority of cases, every night. Under treatment cessation of the habit was essentially complete in all but one case, L. K., whose mental level explains his irresponsibility and poor success. As Dubois long ago suggested, "enuresis may be cured by education only, interrupting the child's sleep for this purpose in the middle of the night. It is thus that good habits are created." It is of interest, however, to note the result of this dictum on one of these subjects, H. B. For several weeks the girl was nightly aroused from sleep by her mother and urged to micturate; rarely would she awaken so thoroughly as to recall the incident the following day. The result was negative, bed-wetting generally occurring as before, but later in the night. This well illustrates the part played by consciousness in a successful reaction. The child must assume the responsibility of waking up and caring for himself.

#### SUMMARY

From this point of view uncomplicated nocturnal enuresis is an element in the psychic regression of an unstable organism toward a more primitive biologic state.

The mechanism concerned in inhibition is an unconditional reflex which through social evolution becomes a conditional reflex.

The object of treatment is to assist normal development in the associative mechanism, tending thus to induce a conditional reflex.

The means employed are the presentation of a series of associative visual stimuli.

Ten clinical cases are presented.