

EXPERIMENTS TO DETERMINE CO-CONSCIOUS (SUBCONSCIOUS) IDEATION

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ALTHOUGH a large and still accumulating mass of evidence has shown, under certain pathological and other conditions, the presence of co-conscious (subconscious) processes of which the subject is unaware and yet which manifest themselves through intelligent actions, still all writers are not in accord as to the interpretation which shall be put upon these manifestations. While I believe all students of abnormal psychology — those who have done the experimental work — are in agreement in interpreting subconscious manifestations as the expression of subconscious ideas more or less dissociated from the personal consciousness — that is to say, they are agreed on the psychological interpretation — there are certain theoretical psychologists who still insist that all such subconscious manifestations are compatible with the interpretation that they are a result of physiological processes without any association with ideas whatsoever.¹ This is the physiological interpretation. It is, therefore, desirable to obtain evidence which will determine which of these two interpretations is correct.

The following experiments were undertaken to obtain, if possible, such evidence.

B.A. is a case of multiple personality of which one personality may be designated as A and the other as B. Observation extending over many months has shown that A has no knowledge of B, but B is completely aware of A; that is, A has amnesia for the state of B, while B has no amnesia. B can be hypnotized and in hypnosis is known as "b." On awakening from hypnosis B has no recollection of b. Now the important point for our present purpose is

¹ See Symposium on the Subconscious. JOURNAL OF ABNORMAL PSYCHOLOGY, Vol. II Nos. 1 and 2, 1907.

that B, both when awake and when in the hypnotic state as *b*, claims to be subconscious (co-conscious) with A when that state is to the fore; she claims to have perceptions, feelings, and trains of thought distinct from and synchronous with the mental life of A; she describes them with precision and specifically.

Of all this claimed subconscious life A has no knowledge. The question is, can B's (and *b*'s) claim be verified even in part? She herself says: "I *know* it is so, but that is not proof for another person."

To obtain evidence that would justify the inference, I devised the following tests: —

TESTS IN CO-CONSCIOUS PERCEPTION:

Experiment 1. The following experiment was made without the knowledge of any of the personalities.

While talking with A, I had her close her eyes for a moment and while they were closed, as silently as possible, without moving from my seat, I hung a handkerchief over the back of a chair on my left within the range of her peripheral vision. I then directed her to open her eyes, to keep them fixed on mine and to listen to what I had to say. I talked to her earnestly for a few moments, holding her attention. She kept her eyes fixed on mine and did not once look towards the handkerchief or allow her eyes to deviate. (As every physician knows, it is easy to detect the slightest deviation of the eyes under such conditions.) After the lapse of about half a minute she closed her eyes at my request and I surreptitiously removed the handkerchief. Then, after allowing her to open her eyes again, she was directed to describe any change she had noticed in the environment while I was speaking to her; anything she had seen which had not been present before closing the eyes the first time, or anything which she missed now. She was unable to describe any change; she had seen nothing. She was now hypnotized; the hypnotic state *b* immediately said on coming: "I know; there was a handkerchief hanging on the arm of the chair; I saw it. A did not see it, or at any rate, did not think about it, for I only know what she sees by what she thinks." As to the content of *b*'s co-con-

scious perception she testified, "There was no thought in my mind connected with the handkerchief, excepting I thought Dr. Prince's handkerchief was hanging on that chair. I didn't know it was any part of an experiment,— I thought you were going to hypnotize her without her knowing it. It seems to me that I was there as a personality, that I am there all the time, just as I am here now, only now I can move and do as I please. When A is here I can't." Here it is interesting to note that two other hypnotic states which can be obtained in this case did not see the handkerchief, but neither of these claims to be or has shown any evidence of being co-conscious with A. Their testimony, however, corroborates A's statement of not having seen the handkerchief. Both these hypnotic states, known as *a* and *c*, have a complete knowledge of A's consciousness, or rather, *are* A hypnotized. Neither saw the handkerchief.

Exp. 2. A similar experiment was made under the same conditions with (the real) Miss Beauchamp. Awake as Miss B. she did not see the test object, but the hypnotic state B II described it. Afterwards Miss B. could not be made to recall having seen it, though it was described to her.

Accidental failure on the part of Miss Beauchamp to notice objects, such as passing me in the street, with complete perception by some one of her subconscious states was frequently observed; but, of course, it is not possible to exclude amnesia as a possible explanation. Amnesia is even a possible interpretation in the above two experiments. It was, therefore, necessary to test the subconscious by methods in which amnesia could not be a factor.

CO-CONSCIOUS PERCEPTION AND REASONING

The following experiments were made without A's knowledge of what was being done. C, and afterwards B, were informed of the nature of the tests and entered into them with interest. The point of the experiment was to communicate to subconscious *b*, without A's knowledge, a mathematical or other problem, of which even *b* did not previously know the factors. This had to be done while A was thoroughly alert, and without in any way disturbing (dissociating) her consciousness or allowing her conscious-

ness to become aware of and thereby possibly take part in the problem. *b* must, therefore, subconsciously become informed of the given problem without *A* being informed at the same time. The problem also had to be one which presumably could only be performed by psychological processes so far as we know.

Accordingly it was agreed with *b* that, when co-conscious, she should do a particular sum in arithmetic while *A*'s consciousness was engaged in another task. The sum would be to add mentally certain numbers and, as a more difficult problem, to calculate the number of minutes or seconds intervening between two given hours. The figures to be added and those indicating the times were not to be given until *A* was present so that *b* thus far knew only the nature of the task, not the task itself. It was necessary, of course, to convey to subconscious *b* the information, without at the same time informing *A*, and without producing any of those artificial dissociations which frequently follow when communicating with the subconscious.

It was accordingly agreed that *A*'s attention should be engaged by having her write some verse with which she was familiar on a sheet of paper, on the upper and lower margins of which the required figures for the sum would be unobtrusively written. Co-conscious *b* was to perceive these figures and make the computation. It was expected that *A* would not notice the figures if her attention by a little art was centered upon the verse as the important thing, but at the same time it is obvious that it did not matter if she did, as the figures could have conveyed no idea to her, either as to their meaning, or as to the nature of the task, or as to whether she was expected to do anything with them, for *A* was kept entirely in the dark regarding the nature of the experiment, and was not even informed that an experiment as such was being made. If she had seen the figures they could have meant nothing to her.

On the other hand if *b* was truly subconscious, as she asserted, she should be able to recognize the figures, interpret them, and possibly make the computation. It was further arranged with *b* that as soon as *A* had completed the verse she was to be changed to *b* who was to give the answer

immediately on "coming," without delay, before she could have time to make the computation from memory after the change to *b*, in case it had not been done co-consciously.

Exp. 3. A was brought and the number 53 was written, without her knowledge, in the left-hand upper corner of a sheet of paper measuring $8\frac{1}{2} \times 11$ inches, and 61 in the lower right-hand corner. The task for the co-conscious was to recognize these numbers and to add them together mentally.

A was then directed to write in the middle of the sheet the verse: "Tell me not in mournful numbers," etc. I distracted her attention, as a conjurer might, so that she would not and, apparently, as a fact did not examine the paper, though as already said, it would have been immaterial if she had.

As she wrote she repeated aloud in all the experiments, whatever verse was chosen, sometimes commenting on the poet's thoughts, sometimes on the faults in her own memory as to the words, sometimes laughing at both. This is of importance as indicating that she was *alert* and did not go into a dreamy state as some automatic writers do.

Once only (the first experiment) she stumbled a bit while writing, as if there was a momentary inhibition of her thoughts by the subconscious process. A different verse was selected for each experiment.

After the verse was finished, when questioned she stated that she had not noticed, in any of the experiments, any other writing (the numbers) on the paper which had appeared quite blank.¹ This was the case in every instance. Whether this was due to my distracting her attention or to the effect of what might have been equivalent to a post-hypnotic suggestion, due to the conditions of the experiment, is not material. She was then changed to *b*. Immediately on appearing *b* exclaimed, almost shouted: "114," which is correct.

In addition to this sum in mental arithmetic it was arranged that *b* was, subconsciously, to count the buttons

¹ This was probably due to the fact that I had picked up intentionally, but with apparant carelessness, a wad of loose sheets of paper lying on my desk, some of which were blank and some written upon (notes of experiments, etc.), so that there was nothing peculiar in a couple of numbers written on a sheet to strike the attention or arouse suspicion.

on my vest (previously concealed) and multiply the number by six. *b* gave the number of buttons correctly in the same breath with the above sum—but, as she explained, she forgot to multiply by six. As to the way she subconsciously did the sum, she explained that she visualized the numbers, though they did not arrange themselves in a definite form before her mind, and the sum then did not do itself, as was the case with another subject *b*; but she said to herself: “Three and one are four, six and five are eleven,” etc. “I looked up and I looked down at the numbers, and I looked at the buttons on your vest.” (I had noticed a movement downwards of the eyes towards the lower number, but did not detect the other movements; but, of course, the eyes were in constant motion as she wrote.)

Exp. 4. The numbers 1.20 and 2.47 were written at the top of the sheet of foolscap (8×12 in.), thus: 1.20
2.47

These indicated twenty minutes past one, and forty-seven minutes past two, and the problem for the subconscious was to calculate the difference in time in minutes. On appearing *b* promptly gave the answer: “one hour and twenty-seven minutes.”

Exp. 5. In the same way the numbers 3.15 and 4.33 were written. The problem was, as before, to calculate subconsciously the number of seconds intervening between these hours. *b* correctly gave the answer: 4680. She further described her subconscious mental processes in doing these calculations. She said, for instance, to herself: three-fifteen to four-fifteen is one hour or 60 minutes; four-fifteen to four-thirty-three is 18 minutes. 60 and 18 make 78. 60 times 78 is 4680. (This multiplication was done in the usual way, *i.e.*, $6 \times 8 = 48$; $6 \times 7 = 42$; $42 + 4 = 46$, etc.)

Personality B was now brought and her memory for the subconscious processes tested. (It will be remembered that B claimed to remember the subconscious states of A as a part of her own personality.) B thus far knew nothing of the experiments. All the details had been arranged with her hypnotic state *b* of whom, of course, she had no memory.

B now remembered the numbers which had been

written on the otherwise blank sheets on which A had written the verse, and that she had seen them, *but she remembered nothing of the subconscious calculations*, did not even know that there had been any calculations or that the numbers meant anything. In fact, she thought the figures stood for dollars and cents, as suggested by the decimal point.

The evident reason for this was that the calculations formed part of the system of ideas forming the synthetic group *b*. With the awakening of synthesis B, this calculating group naturally became dissociated as 'is always the case on awakening B out of hypnosis (*b*).

To prove this principle the following experiment was made. This time the directions being given to B instead of *b*.

Exp. 6. The following figures were written as before:
12.11

1.20

The problem was to calculate the number of seconds intervening between these hours. After A had written her verse, she was changed directly to B who immediately gave the answer 4860.

B now remembered not only the perception of the numbers, but the calculation, which she said had been difficult. She had made the number of minutes 81 instead of 79. This was due to the fact that she had taken the hour 1.20 as 1.30, then calculating, 12.11 to 1.11 is 60 minutes. If it had been 1.10 there would have been 20 minutes more (to make 1.30), but it was 1.11; so she should have subtracted 1 minute—instead of which she added 1 minute, making 21 minutes in all (instead of 19). $60 + 21 = 81$; $81 \times 60 = 4860$. This answer was not correct, but the error was even more instructive than if it had been right. The answer should have been 4940.

In order to meet the possibility (however improbable) of *b* and B having made the calculation after "coming," notwithstanding the shortness of time at their disposal—a few seconds—or during the transition period when A's consciousness was partially (or wholly) extinguished¹ it was arranged that the computation should be written auto-

¹ During such a transition period, however short, it is obvious that the secondary personality ceases to be co-conscious and becomes an alternating personality.

matically while A was conversing. The figures were 1.43 and 3.39. As a result the hand wrote out the calculation while A was alert as before but, of course, without awareness of her hand.

There was a slight error in the answer, the hand making the elapsed minutes 114 instead of 116. This obviously is of unimportance. Of importance is the fact that the *hand* explained, in part, the steps of the problem, thus: "1.43 to 3.39 would be two hours less than [four minutes]." (This sentence was unfinished.) Then the number 114 was written and multiplied by 60 which was placed under it in the conventional manner and the answer 6840 obtained thus:

$$\begin{array}{r} 114 \\ 60 \\ \hline \end{array}$$

$$6840^2$$

It must be remembered that the subject did not look at the paper while the hand wrote, so that the "co-consciousness" was obliged to keep the figures in her head, though she calculated on paper. B and *b* later explained that when doing a calculation co-consciously on paper she could not visualize the figures as she did when she did the calculation mentally. She, therefore, could not keep the figures in her head. It was "like throwing them away," *i.e.*, they would drop out of her mind.

A number of similar experiments in which the calculations were written automatically were made. The results were substantially the same, the multiplication being always correct, though the elapsed minutes were wrong.

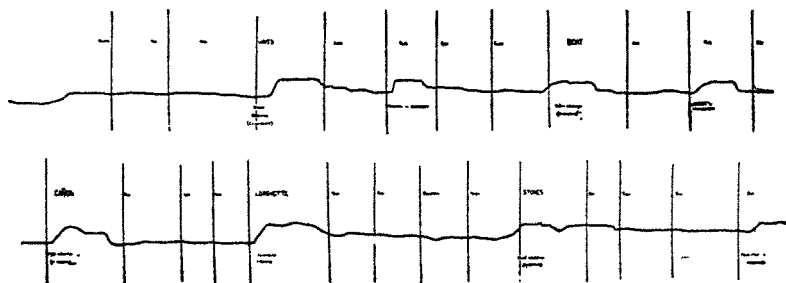
Again; I taught B some dozen characters of a shorthand which I make use of in note-taking. Most of these symbols I believe are purely arbitrary, of my own invention, and B A had never seen them before. As soon as B had memorized them I changed her to A and wrote the following: "I \ | a ✓ of |" This was shown to A, to whom it meant nothing; but the hand promptly translated it, writing automatically: "*I have had a time of it.*" (Correct.)

² On the first trial the hand made the mistake of multiplying twice by 60. (The second time incorrectly.) When told "wrong," it wrote: "I can't do it as well when it is on paper. Are the hours right? 1.43 to 3.39." Then, as above, multiplied 144 by 60 correctly.

Now here something outside of A's consciousness recognized the characters, read them and translated them; something that in our experience can only be defined as intelligence.

Considering the conditions under which these experiments were made; that A knew nothing of their nature, that *b* and B did not know beforehand what the particular problem was to be; that the figures were not visible until A began to write the verse, and that A did not know the short-hand characters, — the conclusion seems inevitable that they, figures and symbols, must have been interpreted subconsciously even if A saw the former (which apparently she did not do); for A could not have known what any of them meant, and that the calculations and translation must have been made co-consciously; accordingly the memory of *b* and B, when afterwards describing the calculations, must have represented the facts. That such perceptions, interpretations, calculations and translations could have been made by pure *physiological processes without thought* is inconceivable and not substantiated by anything that we know of physiological processes.

In conclusion, I may cite one of a series of experiments made in conjunction with Dr. Frederic Peterson by means of the Psycho-Galvanic Reaction Method to determine the presence of subconscious emotions of which the subject was unaware. This method, it will be remembered, depends upon the fact that an electric current, which is made to pass



through the body, is increased whenever an emotion is aroused. The emotions are excited, as in ordinary association experiments, by test words which are given to the

subject interspersed among indifferent words. The increase of current is recorded on a kymograph and appears as waves in the tracing. Advantage was taken of the fact that the hypnotic states, *a* and *b*, remembered dreams of which the subject was unaware on awaking. In one or the other of two night-mares, a boat, waves, a cañon and stones played a strongly emotional part and these words, with the word "lorgnette," were interspersed in a list of twenty-five words. The word "lorgnette" referred to a subconscious experience of *b* made up of perceptions and thoughts of which the waking personality had no knowledge.

The tracing obtained shows very marked rises in the curve corresponding to the words "waves," "boat," "cañon," "lorgnette," "stones."

The subject herself had, connected with these words, no associations which could explain the waves in the tracing and was not consciously aware of an emotion.

ERRATUM:—By a clerical error in transcribing the tracing on page 41, the vertical lines indicating the chronological position of the test words have been displaced, for the most part to the right, so that the words, "boat" and "stones," for example, are made to appear during the rises of the curve instead of shortly before, as was the fact. The correct relations will be shown in the account of the experiments to be published later in full.