Brit. J. Psychiat. (1965), 111, 316–325

Post-hypnotic Amnesia and Post-hypnotic Effect

By GRIFFITH EDWARDS

The purpose of this investigation was to obtain data on the influence of the subject's conscious knowledge of the content of a post-hypnotic suggestion on obedience to that suggestion. Little information is available on this problem, which is one having obvious bearing on hypnotherapy. So that results could throw some light on the hypothesis that hypnosis can be explained as role-playing (Sarbin, 1950), a role-playing control group was employed.

The technique used here for studying quantitative aspects of post-hypnotic effect (P.H.E.) was originally described in its application to experiments on the duration of P.H.E. (Edwards, 1963), and the advantages of this technique when compared to earlier attempts to quantify post-hypnotic behaviour (Kellogg, 1929; Patten, 1930) have also been discussed (Edwards, 1962).

In this paper post-hypnotic suggestion (P.H.S.) will be defined as the actual suggestion (form of words) given to the subject, while P.H.E. is defined as the subsequent observable post-hypnotic behavioural effect on the subject of the P.H.S. which he has received.

Experimental Design

Behaviour of two groups, each of five subjects, was compared. The first group consisted o subjects who on previous screening had been found to pass readily into a deep trance state and to obey a simple P.H.S. such as that to open a window, and who were subsequently found to maintain amnesia for such a suggestion for at least 24 hours. The second group were five volunteers matching the hypnotic group for age, sex, and occupation (Table I).

The two groups were put through parallel procedures, and an outline of the experimental schedule is given in Table II.

Hypnotic Group

1. A base line recording (series B) was made of the subject's normal reaction time (RT) on 25 trials, using a buzzer signal: the operator pressing a key completed a circuit, set off the buzzer and started an electrically actuated stop-watch. The subject pressing the subject's key broke that circuit, stopped the watch, and stopped the buzzer. Before this base-line recording was performed, the subject made a preliminary 25 trials to overcome practice effect: further practice effect after this initial warm-up is not likely to be significant (Hall and Stride, 1954; King, 1954).

2. A deep trance was induced using a simple eye-fixation technique (Edwards, 1961).

Table I

Hypnotic and Control Groups. Age, Sex, and Occupation of Each Subject

Subject	Age		Sex	Occupation
	Hypnotic	Control	Hypnotic and Control	Hypnotic and Control
I	22	21	F	Student
II	22	22	M	Student
III	23	22	M	Student
IV	26	26	F	Nurse
V	29	31	F	Clerk

https://doi.org/10.1192/bjp.111.473.316 Published online by Cambridge University Press

TABLE II

Procedure	Series (25 trials of Reaction Time)
Base line recording of subject's normal RT: both groups	B
Hypnotic subjects given P.H.S. Control subjects instructed to act "P.H.S."	
Non-relevant experimental procedures carried out for 45 minutes: both groups	
Initial P.H.E.: both groups	H
Hypnotic subjects in waking state told content of P.H.S. Control subjects: role-playing analogy	
Effect of above procedure	S
Hypnotic subjects re-hypnotized and told that they will now on waking recall content of previous P.H.S. Control subjects: role-playing analogy	
Effect of above procedure	T
Hypnotic subjects re-hypnotized and told they will now on waking recall content of P.H.S. and have normal RT Control subjects: role-playing analogy	
Effect of above procedure	U

3. The subject while in a deep trance was played a tape-recorded P.H.S. of slowing of reaction time, which included the following instructions:

"You won't know why, you won't understand at all why, but now, when you do these tests, whenever the buzzer goes, you will be very slow indeed pressing the key. You won't remember my telling you this, you will have no memory at all of my telling you this, but that's what will happen when you wake . . . the memory fading like a dream, fading away like a dream that's forgotten . . ."

4. The subject was woken up and for the next 45 minutes participated in a number of experiments which were without bearing on the present investigation and which will not here be discussed further.

5. Reaction time (series H, 25 trials) was now recorded. This series showed the slowing of reaction time which constituted the P.H.E.

6. After the last recording of series H, the experimenter, reading from a script, asked the subject:

"Do you remember being given a suggestion when you were hypnotized about how you would do these tests when you were woken up?"

The subjects all answered, "No" to this question.

The experimenter then went on:

"Well, I'm going to tell you exactly the suggestion you were given. You were played a tape recording of my voice saying that you would be slow pressing the key when doing the tests again and that you wouldn't know why. Now I've told you the suggestion you were given when you were hypnotized."

The subject was again questioned on his recall.

7. Series S was recorded, with the instruction, "Fast as you can".

https://doi.org/10.1192/bjp.111.473.316 Published online by Cambridge University Press

8. The subject was re-hypnotized. With the subject in a deep trance the experimenter read the following instruction:

> "You are deep asleep. Everything that happened to you when you were previously hypnotized is coming back to you. You are remembering that tape-recorded suggestion —you can remember its exact wording. And when you wake up, you will this time remember that recording with complete clarity."

The subject was woken up and again questioned on his amnesia.

9. Series T was recorded with the instruction, "Quick as you can".

10. The subject was re-hypnotized and the experimenter read the following suggestion:

> "You are deep asleep. Everything that happened to you when you were first hypnotized is remembered by you with complete clarity. When you do these tests again you will remember the tape recording and do the tests at an absolutely normal speed."

The subject was once more questioned on his amnesia.

11. Series U was recorded with the instruction, "Quick as you can".

Control Group

The procedure in every way paralleled that adopted with the hypnotic group, except that in place of hypnosis role-playing instructions were given, in which the subject was asked to pretend that he had been hypnotized and was then played the tape recording. In series H he was then asked to behave exactly as he imagined someone who had been given a P.H.S. would behave. When questioned on amnesia, it was indicated that the subject should give an answer appropriate to his concept of the "play" in which he was engaged. Thus, before series S, the subject was told:

> "I want you to go on play-acting that you have been deeply hypnotized, played that recording, and woken up. Part of the play is now this."

Exactly the same script—stating the content of the taped suggestion—was then read to the control subjects as had been read to the hypnotic subjects.

Similarly, before series T, the following instruction for a role-played "re-hypnosis" was read:

> "The play continues. Shut your eyes. Now you are pretending to be re-hypnotized and I now say to you . . ."

The suggestion noted in paragraph (8) was then given, and after the subject was "woken up", he was questioned on "amnesia" and then given the following instruction:

> "Now we are going to do these tests again. I want you to act just as you imagine someone would act in all these circumstances, after doing all those tests, after then being re-hypnotized and told the content of the tape recording, and then being woken up again and asked to do the tests again."

Before series U, the subject was once more asked to act that he had been re-hypnotized, and appropriate role-playing instructions were given.

Experimental Results

Inter-subject Variability

For each subject in the two groups, the series mean reaction time and the 95 per cent. confidence limits are shown in Table IIIa (hypnotic group) and Table IIIb (control group).

(a) *Hypnotic group.* There is considerable inter-subject variability, e.g. subjects I, II and IV show no significant difference between series S and H, whereas subject V shows a borderline difference, and subject III shows a fall in RT from H to S. Between series S and series T, three subjects (I, III, V) show no change, while subject II shows a fall and subject IV shows correspondingly an increase in RT.

(b) *Control group.* Table IIIb shows that with the control group inter-subject variability is again manifest. For instance, two subjects (I and III) show a definite fall in mean RT from H to S, while the other three subjects (II, IV and V) show no or a borderline fall.

https://doi.org/10.1192/bjp.111.473.316 Published online by Cambridge University Press

TABLE IIIA

Hypnotic Group

(Series mean reaction time (seconds) for each subject, together with 95 per cent. confidence limits on the means)

Subject	B			H			S			T			U		
	Lower 95%CL	M	Upper 95%CL	Lower 95%CL	M	Upper 95%CL	Lower 95%CL	M	Upper 95%CL	Lower 95%CL	M	Upper 95%CL	Lower 95%CL	M	Upper 95%CL
I ..	·07	·09	·10	·50	·56	·62	·61	·66	·71	·66	·70	·75	·13	·16	·19
II ..	·09	·10	·12	·49	·53	·57	·43	·48	·54	·07	·09	·11	·07	·09	·11
III ..	·13	·14	·16	·21	·24	·27	·11	·12	·14	·08	·10	·12	·09	·10	·12
IV ..	·17	·19	·21	·80	·83	·86	·74	·78	·82	1·12	1·15	1·19	·27	·29	·31
V ..	·11	·12	·13	·54	·58	·63	·45	·49	·53	·42	·45	·48	·22	·24	·26

TABLE IIIB

Control Group

(Series mean reaction times (seconds) together with 95 per cent. confidence limits on the means)

Subject	B			H			S			T			U		
	Lower 95%CL	M	Upper 95%CL	Lower 95%CL	M	Upper 95%CL	Lower 95%CL	M	Upper 95%CL	Lower 95%CL	M	Upper 95%CL	Lower 95%CL	M	Upper 95%CL
I ..	·16	·17	·18	·33	·37	·41	·17	·18	·19	·15	·17	·19	·13	·14	·15
II ..	·14	·15	·16	·20	·24	·28	·16	·18	·20	·14	·15	·16	·14	·15	·16
III ..	·17	·19	·21	·41	·43	·46	·22	·25	·28	·15	·17	·19	·15	·16	·17
IV ..	·13	·15	·17	·26	·29	·32	·31	·33	·35	·36	·40	·44	·32	·34	·36
V ..	·16	·17	·18	1·78	1·88	1·98	1·46	1·62	1·78	·25	·33	·41	·19	·21	·24

Comparison of Series Means

Table IV shows the mean reaction time for each series of the two groups, together with 95 per cent. confidence limits on the means.

1. *Initial RT—series B*. The initial RT of the hypnotic group and the control group just show a significant difference ($P<0·05$).

2. *Post-hypnotic effect—series H*. The mean for series H did not differ significantly between the two groups.

https://doi.org/10.1192/bjp.111.473.316 Published online by Cambridge University Press

TABLE IV

Hypnotic and Control Groups
(Series means (average of 5 subjects), together with 95 per cent. confidence limits on the means. Reaction time in seconds)

		B	H	S	T	U
Hypnotic Group	Upper 95% CL ..	·14	·59	·55	·57	·19
	M	·13	·55	·51	·50	·18
	Lower 95% CL ..	·12	·51	·47	·43	·17
Role-playing Group	Upper 95% CL ..	·17	·76	·61	·27	·22
	M	·16	·64	·50	·24	·19
	Lower 95% CL ..	·15	·52	·39	·21	·16

3. *Effect of telling subject content of suggestion—series S.* After the hypnotic group had been told in the waking state the content of the suggestion, the series mean showed no significant change when compared with series H. In the analogous situation, the control group also failed to show any change.

4. *Effect of suggesting to re-hypnotized subject termination of amnesia—series T.* The hypnotic group showed no significant change in mean reaction-time as a result of this procedure, but in the control group the analogous role-playing instruction produced a fall in reaction-time to a level only slightly above the mean of series B. The mean RT for series T is very significantly greater ($P<0{\cdot}001$) for the hypnotic than for the control group.

5. *Effect of suggesting to re-hypnotized subject termination of amnesia and return to normal reaction time—series U.* The hypnotic group showed a fall in RT to a level which was just above that of the normal RT (series B), while with the role-playing instruction the control group showed a further slight fall which did not give a significant difference between T and U, but which now returned the mean RT to a level just not significantly different from series B. Whereas the initial mean RT for series B for the hypnotic and control groups were significantly different, the means for series U are not.

Trial Means

Trial means (mean of five subjects for each of 125 observations) are plotted for each group in Figure 1. The graph illustrates very clearly the

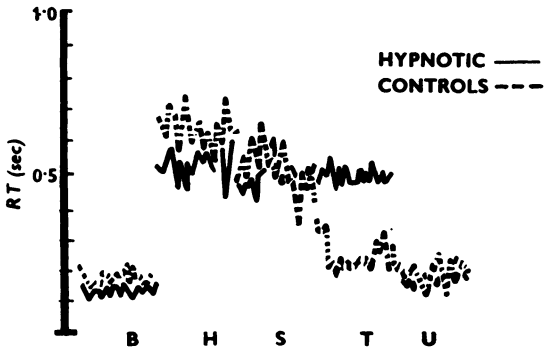


FIG. 1.—Trial means (mean of 5 subjects for each of 125 observations). Hypnotic and control groups.

difference between the two groups. The hypnotic and the control group behave similarly up to the beginning of series T: the hypnotic group continues at the same level, while the line which plots the behaviour of the control group falls. Then, with series U, the line which plots the hypnotic group's RT falls, so that in this series the graphs for the two groups are again very similar.

https://doi.org/10.1192/bjp.111.473.316 Published online by Cambridge University Press

SUBJECT'S ATTITUDES

(a) *Hypnotic Group*

1. *After being told content of suggestion—before series S.* Subject III thought his reaction-time had been normal throughout, while the other four subjects "supposed" that they must have been given a suggestion affecting reaction-time, although there seemed to be no flaw in the amnesia.

2. *After first re-hypnotization—before series T.* All five subjects showed perplexity; they seemed to be experiencing a puzzling difficulty in recall. Subject I could remember the tape recording, but it was "vague". Subject II could remember the content of the suggestion but could not remember that a tape-recorder had been used. Subject III could remember, but "not clearly", and subject IV, too, simply said her memory was "vague". Subject V gave the most articulate description of what she was experiencing:

> "Almost like remembering it in a dream. Although I can picture it in my mind, it's difficult to tell someone."

On close questioning, however, it seemed that all five subjects did, indeed, now recall the facts of the essential content of the original suggestion; it was not, it seemed, so much an inability to believe the facts as a perplexed unwillingness to accept them with absolute certainty, which in turn was due to a feeling that the hypnotic suggestion was somehow not fully invested with the ordinary qualities of reality.

3. *After second re-hypnotization—before series U.* There did not seem to be any diminution in the perplexity.

There was no amnesia (and none was suggested) for either of the two re-hypnotizations.

(b) *Control Group*

1. *After being told content of suggestion—before series S.* Subjects, when asked to give what they considered to be the appropriate response, all said that they could not remember having been given the suggestion.

2. *After first "re-hypnotization"—before series T.* All five subjects, when asked to give what they considered to be the appropriate answer had they indeed been participating in the corresponding experiment, answered quite simply that after "re-hypnotization" they did remember the suggestion. "Perplexity" was not seen as an appropriate response.

3. *After second "re-hypnotization"—before series U.* As "recall" was complete after the first "re-hypnotization", there was, of course, no opportunity for any further change.

All subjects considered that complete "recall" for the content of both re-hypnotizations was appropriate.

DISCUSSION

Previous Experiments

Before discussing the results of the present experiments, a brief summary must be given of previous lines of investigation which have been pursued in the study of post-hypnotic amnesia. Previous experimental work has concentrated largely on two problems.

One of these problems is whether post-hypnotic amnesia is a spontaneous manifestation of a deep trance state. Young (1925) sought to show that this was not the case. More recent work, however (Eysenck and Furneaux, 1945), seems to have produced some evidence that spontaneous post-hypnotic amnesia can occur and that this amnesia correlates with other measures of trance depth: it can, however, be objected that Eysenck and Furneaux did not take sufficient account of the possibilities of auto-suggestion and of the influence of the subject's preconceptions. Hull (1933) concluded that post-hypnotic amnesia is not an intrinsic property of hypnosis but that it is always the result of suggestion or auto-suggestion. On the other hand Weitzenhoffer (1953) concluded that after the deepest trance states amnesia may arise spontaneously.

The second problem which has been extensively investigated is the "completeness" of the post-hypnotic amnesia. It seems to be well-established that this amnesia is a disorder of recall and not of learning or of retention, but the question which has attracted attention is whether the disorder of recall is as complete as the subject's statement suggests. There is

https://doi.org/10.1192/bjp.111.473.316 Published online by Cambridge University Press

evidence that even when the subject declares that he has total amnesia, his actual amnesia, as measured by re-learning (Strickler, 1929), practice effect (Patten, 1932), conditioned reflex responses (Scott, 1930) and autonomic responses to signal words (Bitterman and Marcuse, 1945) is far from complete. Wells (1940) has argued that the completeness of amnesia must be seen as a function of the suggestion given, and claims to have produced "better than 100 per cent. amnesia", i.e. amnesia in which reinstatement is impossible.

The investigations in the present experimental study have largely been concerned with the influence of post-hypnotic amnesia on a concurrent P.H.E., rather than with the two problems discussed above. It may be noted, however, that in the present experiments the original hypnosis produced amnesia and amnesia was suggested, whereas the two re-hypnotizations did not produce amnesia and amnesia was not suggested.

The Present Experiment: Limitations on Interpretation Imposed by Use of Small Groups

In interpreting the results of these experiments, it must be remembered that the investigation was carried out only on two small groups of subjects. Experiments with larger groups might reveal further significant between-group differences than are apparent in the present study.

Bearing of Results on Role-playing Theory

(a) *The subject's experience of the experiment.* The value of collecting subjective information is seen in the rather striking difference between the reports of the hypnotic subjects after re-hypnotization, and the reports of the control subjects, who were asked to give the report which they imagined hypnotic subjects would give in this situation. In the face of this evidence, it is difficult to maintain that the experience of being hypnotized is no more than an acting-out of the subject's preconceptions of hypnosis. It is difficult not to conclude that the original hypnosis has produced an impairment of mental functioning which is a phenomenon *sui generis*, and which cannot be adequately accounted for as a reflection of social control or role-playing. That a phenomenon is not "spontaneous"—a word, in any case, of rather doubtful meaning—does not detract from its reality.

(b) *Objective evidence.* Further support for the contention that a simple role-playing hypothesis does not give a complete explanation of hypnosis is found in the striking divergence between the behaviour of the two groups in series T.

Relevance of Results to Hypnotherapy

1. *Subject Variability*

The same conclusion must be derived from these experiments as from all previous studies of P.H.E.—different subjects behave very differently. Series means give a useful general indication of behaviour, but it is obvious that many subjects will deviate considerably from the "average" in their behaviour. The light which these experiments throw on the planning of hypnotherapy is not only that they can provide a general guide to the sort of behaviour which can be generally expected, but also that they serve to emphasize the wide and important deviations from "average behaviour" which will be met. Until results become available on larger groups of subjects so that some estimate can be given as to the relative likelihood of different patterns of behaviour, it would seem unwise to ignore subject variability and to plan therapy on the basis of "average" behaviour.

2. *Influence of Telling the Waking Subject the Content of the Suggestion*

It is possible to state that, on the basis of "average" behaviour, the efficacy of a P.H.S. will not be impaired by simply telling the waking subject the content of the suggestion. But if therapy were planned on the basis of such an assumption, and if patients were encountered whose behaviour paralleled that of hypnotic subject III of the present investigation, then telling these subjects the content of the suggestion might decrease the likelihood of hypnotherapy being successful.

3. *Effect of Breaching Post-hypnotic Amnesia*

In the literature on the clinical use of hypnosis, there is remarkably little evidence bearing

https://doi.org/10.1192/bjp.111.473.316 Published online by Cambridge University Press

on whether a concurrent post-hypnotic amnesia increases the efficacy of a post-hypnotic suggestion. The lack of any available answer to this question is one more instance of the range of uncertainties on which current practice of hypnotherapy is based. The relevance to this question of the experimental information described in this section can probably be summarized by saying that, on the whole, breaching a post-hypnotic amnesia will not influence the efficacy of a post-hypnotic suggestion, but that there will be exceptions. There may, of course, be a considerable difference between the effect of this breach of an established amnesia and the influence of a failure in the first instance to establish an amnesia.

4. *Effect of Giving Hypnotic Suggestion that Post-hypnotic Effect will be Removed*

The difference between series B and series U in the hypnotic group is so small that any confident interpretation of this result would be unwise. This small difference is all the more difficult to interpret as it is probably of the same order of magnitude as the practice and fatigue effects which would be encountered in this experiment.

Experimental Abreaction

There are very divergent views on what constitute the effective elements in therapeutic abreaction. Wolpe (1960), for instance, seeks to explain abreaction within the general framework of his theory of reciprocal inhibition, and therefore focuses on the anxiety-relieving setting. It is difficult to see how he would fit in ether (Palmer, 1945) or nitrous oxide (Rogerson, 1944) abreaction techniques into this theory. Indeed, Shorvon and Sargant (1947), in discussing ether abreaction, emphasized the importance of arousing horror and fear in the patient. Another controversy centres around the importance or otherwise of recovering lost memories; Wolpe would see this as being of minor importance, while McDougall (1926), who had very wide experience in the use of abreaction during the first World War, stressed that the essential element was the relief of dissociation. Yet another controversy is whether suggestion is an important part of the technique; Brown (1938) saw suggestion as having little part to play in abreaction, whereas Sargant *et al.* (1963) would use "forceful suggestion".

The hypnotic experiments described here are, in some ways, analogous to a therapeutic abreaction, if the P.H.E. is seen as evidence of an "experimental neurosis". In terms of this analogy, simple abreaction (breach of amnesia) is seen as, on the whole, ineffective in removing the "symptom", while abreaction coupled with suggestion is effective. It would, of course, not be permissible to regard this as any but a very superficial analogy, but it is possible that further application of the experimental methods described here might give some evidence on what constitute the therapeutic elements in abreaction.

Further Investigations

There is, in particular, a need for assessing the long-term rather than the short-term influence on the P.H.E. of procedures affecting amnesia. Not only is it necessary to assess the influence of these procedures on the duration of the P.H.E., but it should also be determined whether they influence the lability of the P.H.E. in the face of contrary motivation.

Further exploration of the role-playing hypothesis requires that this investigation should be repeated with a control group constituted of subjects who have deep-trance potential. The question must be explored as to whether the hypnotic group were to some extent manifesting behaviour which was a reflection not simply of their having been hypnotized, but of their having been selected as hypnotizable.

Summary

1. The purpose of this experiment was to investigate the effect of factors influencing the subject's conscious knowledge of the content of a post-hypnotic suggestion (P.H.S.) on obedience to that suggestion. Five deep trance subjects (all of whom originally showed complete amnesia for the experimental post-hypnotic suggestion) were employed, and a

https://doi.org/10.1192/bjp.111.473.316 Published online by Cambridge University Press

matched control group of five subjects were studied in an analogous role-playing situation.

2. In the hypnotic group, baseline recording of normal reaction time (RT) was made (series B). The post-hypnotic effect (P.H.E.) studied was the slowing of RT (series H) which was produced by a tape-recorded P.H.S. which also contained a suggestion of amnesia for the complete trance. RT was then recorded after three procedures—first, after subjects had been told the content of the suggestion in the waking state (series S), secondly, after they had been told the content of the original P.H.S. under re-hypnosis (series T); and thirdly, the same procedure as T was repeated, but the suggestion added that RT would return to normal (series U).

3. Analogous procedures were carried out with the control group.

4. In both groups, results showed inter-subject variability.

5. Differences between the patterns of behaviour of the two groups are apparent on comparison of series means and on graphing trial means. Mean for series B was slightly, but significantly ($P<0\cdot05$), slower in the control group. Mean for series H did not differ significantly between the two groups. Mean for series T showed no significant difference from mean S in the hypnotic group, but in the control group T showed, compared with S, a significant fall: the T series mean for the hypnotic group was very significantly slower ($P<0\cdot001$) for the hypnotic than for the control group. Finally, in series U, means for hypnotic and control groups did not differ significantly, both groups having returned to near normal RT.

6. The hypnotic group showed perplexity in attempting to recall the original P.H.S. after re-hypnotization; no analogous phenomenon was acted by the control group.

7. No amnesia was suggested for re-hypnotization and in these circumstances the hypnotic subjects showed no amnesia.

8. Previous experimental work on post-hypnotic amnesia is reviewed.

9. Objective and subjective results are seen as further evidence that a role-playing explanation of P.H.E. is not wholly satisfactory.

10. The relevance of the results to hypnotherapy is discussed, and the possibility of seeing breach of post-hypnotic amnesia as "experimental abreaction" is considered.

11. Proposals for some further investigations are outlined.

ACKNOWLEDGMENTS

I would like to thank Dr. D. L. Davies for his interest in this work, and also to thank Mrs. Frances Parsons, Dr. Victor Meyer and Dr. H. Holland for their advice and help. Messrs. Grundig kindly made a Grundig tape recorder available. I would like to thank Mrs. E. Wade for secretarial assistance.

REFERENCES

BITTERMAN, M. E., and MARCUSE, F. L. (1945). "Autonomic responses in post-hypnotic amnesia." *J. exp. Psychol.*, **35**, 248.

BROWN, W. (1939). *Psychological Methods of Healing: an Introduction to Psychotherapy*. London: University of London Press.

EDWARDS, G. (1961). "A technique of hypnosis." *Med. World*, **94**, 413.

—— (1962). "Quantitative aspects of post-hypnotic effect." Dissertation, submitted for Part II of the Academic Post-Graduate Diploma in Psychological Medicine of the University of London.

—— (1963). "Duration of post-hypnotic effect." *Brit. J. Psychiat.*, **109**, 249.

EYSENCK, H. J., and FURNEAUX, N. D. (1945). "Primary and secondary suggestibility: an experimental study." *J. exp. Psychol.*, **35**, 485.

HALL, K. R. L., and STRIDE, E. (1954). "Some factors affecting reaction time to auditory stimuli in mental patients." *J. Ment. Sci.*, **100**, 462.

HULL, C. L. (1933). *Hypnosis and Suggestibility*. New York and London: Appleton-Century-Crofts.

KELLOGG, E. R. (1929). "Duration of the effects of post-hypnotic suggestion." *J. exp. Psychol.*, **13**, 502.

KING, H. E. (1954). "Psychomotor aspects of mental disease." *Commonwealth Fund*. Cambridge, Mass.: Harvard University Press.

MCDOUGALL, W. (1926). *An Outline of Abnormal Psychology*. London: Methuen and Co.

PALMER, H. E. (1945). "Military psychiatric casualties." *Lancet*, *ii*, 492.

PATTEN, E. F. (1930). "The duration of post-hypnotic suggestion." *J. abnorm. soc. Psychol.*, **25**, 319.

—— (1932). "Does post-hypnotic amnesia apply to practice effect?" *J. gen. Psychol.*, **7**, 196.

ROGERSON, C. H. (1944). "Narco-analysis with nitrous oxide." *Brit. med. J.*, *1*, 811.

https://doi.org/10.1192/bjp.111.473.316 Published online by Cambridge University Press

SARBIN, T. R. (1950). "Contributions to role-taking theory. I: Hypnotic behaviour." *Psychol. Rev.*, **5**, 255.

SARGANT, W., SLATER, E., and DALLY, P. (1963). *Physical Methods of Treatment in Psychiatry*. Edinburgh and London: E. and S. Livingstone.

SCOTT, H. D. (1930). "Hypnosis and the conditioned reflex." *J. gen. Psychol.*, **4**, 113.

SHORVON, H. J., and SARGANT, W. (1947). "Excitatory abreaction with special reference to its mechanism and the use of ether." *J. Ment. Sci.*, **43**, 709.

STRICKLER, C. B. (1929). "A quantitative study of post-hypnotic amnesia." *J. abnorm. soc. Psychol.*, **45**, 160.

WEITZENHOFER, A. M. (1953). *Hypnotism: an Objective Study in Suggestibility*. New York: John Wiley and Sons; London: Chapman and Hall.

WELL, W. R. (1940). "The extent and duration of post-hypnotic amnesia." *J. Psychol.*, **9**, 137.

WOLPE, J. C. (1960). "Reciprocal inhibition as the main basis of psychotherapeutic effects", in *Behaviour Therapy and the Neuroses* (ed. H. J. Eysenck). Oxford and London: Pergamon Press.

YOUNG, P. C. (1925). "An experimental study of mental and physical functions in the normal and hypnotic states." *Amer. J. Psychol.*, **36**, 214.

Griffith Edwards, M.A., B.M., B.Ch., D.P.M., *Honorary Senior Registrar, Maudsley Hospital, S.E.5*

https://doi.org/10.1192/bjp.111.473.316 Published online by Cambridge University Press