STUDIES IN EDUCATION AND PSYCHOLOGY

An Experimental Study of Some Factors in Suggestion

DR. A. S. PATEL

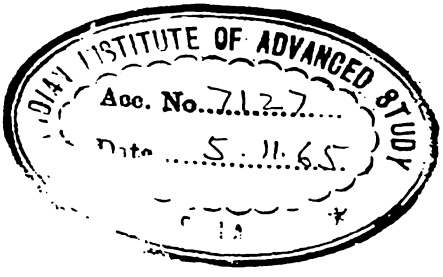
aculty of Education & Psychology
A SAYAJIRAO UNIVERSITY OF BARODA
Baroda, 1958

STUDIES IN EDUCATION AND PSYCHOLOGY

An Experimental Study of Some Factors in Suggestion

DR. A. S. PATEL

Faculty of Education & Psychology
MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA
Baroda, 1958



Printed by Shri R. J. Patel, Manager, The M. S. University of Baroda Press (Sadhana Press), Raopura, Baroda and Published by Prof. T. K. N. Menon, Dean, Faculty of Education and Psychology Baroda

FOREWORD

This monograph is an abridged presentation of a research study carried out by Dr. A. S. Patel at the University of Wisconsin, U. S. A.

Any educational activity, like teaching, guidance or counselling, involves, as the author puts it, more or less a process of suggestion—a suggestion from the one who commands a superior position or skill whether one wills or not to the one who perceives that position. To this extent, teaching or counselling is a case of prestige suggestion and the success of such an activity is mainly determined by the relation ('rapport') between the two. Besides the nature and capacity of these two, the nature of the task—teaching material or counselling situation—also has an important say in the extent of suggestion. The present experimental study is an investigation into suggestibility as related to these several factors, such as sex, training, prestige source and difficulty level.

Teachers, guidance workers and counsellors are ever eager to teach and help others; but in their enthusiasm to help, they perhaps often lose the track to trace whether the recipients of help are benefitted by or accept what is imparted. The implications of the present study will be of value in this consideration.

BARODA. T. K. N. MENON

ACKNOWLEDGEMENT

The author expresses his feelings of gratitude to Prof. A. H. Edgerton (School of Education, University of Wisconsin, U. S. A.) for the guidance and direction throughout the research work, to his teachers in the Department of Psychology (University of Wisconsin) for the readily available advice and facilities as well as to the M. S. University of Baroda for the publication of this work.

THE PROBLEM OF SUGGESTION

It is a general observation, virtually a truism, that people in the same field alter each other's ideas, feelings, purposes, interests and actions. One cannot be in a social field and be free of its effects. The actions of others exert distinct intellectual effects upon us; they introduce us to correct as well as erroneous ideas. All this is evidenced by a high degree of regularity and uniformity of practices and beliefs and convictions, both essential and baseless. The role of social condition in forming and modifying beliefs, opinions, or judgments has been recently the focus of much investigation in social psychology. At this point, to clarily the social formation and manipulation of beliefs, psychologists have introduced the concept of " suggestion ". It has been rightly remarked by Cantril and Fredericksen (8) that one of the most important single concepts in the field of social relations is that of suggestion, for it is largely by means of suggestion that the individual acquires the stereotyped norms of his community, his religion, his politics, his racial prejudices, of his ethical and esthetic standards. All our traditions, customs, culture, or in a word, our social heritage has been transferred to us and will be passed on to future generations to a greater extent through some short-circuited process of suggestion rather than through direct teaching.

Definition and meaning of the concept of "Suggestion":

According to McDougall's representative definition (18), suggestion was the acceptance of a proposition in the absence of logically adequate grounds, a characterization that has remained unaltered to the present, as seen from the role of suggestion in social relations, quoted earlier (8) or as viewed in F. M. Allport's definition (3): " Suggestion is a process involving elementary behavior mechanisms

in response to the social stimulus; the nature of the process being that the one who gives the stimulus controls the behavior and consciousness of the recipient in an immediate manner, relatively uninfluenced by thought, and through the method of building up motor attitudes, releasing them, or augmenting the released response as it is being carried out." Some writers have gone so far as to state a thesis of "primitive credubility" to the effect that there is a fundamental tendency in the human mind to believe immediately any idea presented to it, provided no contradictory idea is allowed to intrude. On the theoretical basis, the facts of suggestion were derived from the classical concept of "association" or stimulus response connection. A suggestion is simply an external impression that exerts an automatic effect on the basis of connection with previous experience. Viewed in this way, suggestion is not a special psychological phenomenon, but follows the same general laws explaining learning or conditioning. This characterization of suggestion has remained unchanged to the present, as hinted in the statement of Pavlov (22); "We can therefore regard suggestion as the most simple form of the typical conditioned reflex in man." Early accounts of suggestion, because they based themselves on the postulate of association, were almost wholly devoid of reference to motivational and social conditions. In light of experimental evidences (2, 6, 7, 11 21, 23 and those described in later section), the concept or role of suggestion has undergone some changes, and is no more looked upon as a general tendency of the mind to accept uncritically (18), nor as a unique force in crowd behaviour (14), nor a key social process indistinguishable from imitation (26), nor a modifying technique, nor a mode of social control of action and experience, as some sociological writers held in early literature. The effect of suggestion is not a new psychological phenomenon, but is the result of the same perceptual processes, brought about by

a change in cognitive structure, a change in the psychological field though not in physical field, which accounts for a modified comprehension or interpretation (13). Because there are no external changes in the objective world, it has been loosely called blind acceptance; however because of some situational, social, motivational or personal factors referred to in experimental studies quoted above or in the next section, the individual perceives internally the changes in the stimulus and the response is the modification of judgment. This is the present explanation of the process of suggestion.

Murphy, Murphy and Newcomb (20) indicate that the term "suggestion" has been used in a confusing way for three quite distinct human tendencies: (a) the tendency to make a response which has been previously made in similar situation, whether appropriate or inappropriate at the time —this includes habit and the response by analogy; (b) the tendency to go on doing what one has started doing..this is said to be due to suggestion if the experimenter believes that the tendency to go on with the act involves gross failure to realize its inappropriateness; (c) the tendency to believe or to do what one is told because of social motives such as dependence upon, or fear of, or fondness for, some person—this includes hypnosis. The first two types which are not always distinct in operation, as in Binet's illusion of progressive lines or similar illusion of progressive weights, constitue together what Aveling and and Hargreaves (5) call "ideo-motor suggestion", and the third type they call "prestige suggestion". In the former category the suggestion or idea comes from the nature of the material or of the act previously performed, whereas in the latter it depends upon the relation to some other individual or group of individuals. It is evident that in the field of education and guidance, prestige suggestion is by far more important. This prestige influence may be the result of the perception of either the superior knowledge

of an individual suggesting or the size of the group suggesting—the former being termed " expert suggestion " and the latter, " majority suggestion ". This phenomenon of prestige suggestion differs in important respects from ideo-motor suggestion, since the former is affected by a host of social and emotional attitudes developed as a result of interaction between the two, while the latter draws chiefly from the characteristics of the person suggested and the nature of the matter of suggestion. The different factors affecting in different modes the two types of suggestion probably accounts to a considerable degree for the low correlations between the different tests of suggestibility, and makes it impossible or difficult to speak of suggestibility as a trait of character or personality. The present investigation undertakes to study some of these important factors in suggestion, which teachers, guidance workers and clinicians should take into consideration to make their programme successful.

REVIEW OF RELEVANT LITERATURE

Klineberg **(12)** points out that suggestion has been used as an explanation of many phenomena of an otherwise mysterious nature, examples of which have been reported with some frequency, particularly in ethnological literature. This has been, however, put to experimental test in laboratory situation and there is ample evidence of this influence, as noted from the review of experimental studies. To study the social effect of suggestion experimentally, the general procedure is to determine the views of individuals before and after they have been subject to the views of others; the latter is the experimental factor the effect of which is measured. One of the earliest investigators in this region was Moore **(19)**. Though not most significant, his study has served as a model for subsequent work. Moore asked a group of college students to evaluate individually between pairs of statements involving linguistic,

ethical and musical judgments. A few days later they judged the identical items again to establish how stable their reactions were in absence of special external influences. After a lapse of time sufficient to obscure the recall of earlier judgments, the same material was again presented for judgment, but this time each was preceded by a statement of how the majority had judged it (some being identical with their own, others being in the opposite direction). Lastly, the experiment was repeated, this time being preceded by announcement of the way the experts had judged the matters. The results showed a large and statistically significant number of reversals in response to opinions of the majority and the experts. Moore concluded that the results represented modification of judgment in response to the pressure of majority and expert opinion. Since this classical study, many investigators have undertaken to demonstrate similar influence in a variety of situations. Binet's illusion of progressive lines, tested in educational clinics and similar illusion of progressive weights demonstrated in psychological laboratories belong to the category of ideo-motor suggestion. The autokinetic effect produced whenever the visual stimulus lacks a spatial frame of reference, e.g. perceiving a single small light as moving in a completely dark room or on a cloudy night in the open, can be accounted for to some extent by this same process of ideo-motor suggestion. Several theories have been advanced by psychologists **(1)** to explain the nature of this autokinetic effect and suggestion plays one important role in producing such autokinetic sensations in uncertain, or ambiguous and unstable situations. The similar experiment involving autokinetic effect has been studied by Sherif **(24)** to illustrate the phenomenon of prestige suggestion, wherein the subjects established a collective frame of reference modified under group pressure (Majority effect). Another more interesting investigation by Sherif **(25)** demonstrates that the factor of prestige (expert effect) can

alter the evaluation of literary materials. Lewis **(16)** has however shown that majority opinion does not always obtain the same prestige effect. In one experiment, she presented to a group of students a list of ten political slogans and asked them to rank for their "social significance", "author's intelligence" etc. Another group was given the same task, but with the knowledge of the rank order for "author's intelligence". The results showed for the various rankings a definite shift in the direction of the prestige suggestion for those subjects who were political liberals, but not for those who were political radicals for whom probably the opinions of majority had little or no prestige. The author concludes that the operation of prestige suggestion is confined to ambiguous, ill-defined situations; when effective, the suggestion usually operates to redefine an ambiguous situation. On similar lines, Lorge **(17)** gave to his subjects a statement by Thomas Jefferson and asked them to indicate their degree of agreement with the statement ; sufficiently later they were given the same statement but with authorship ascribed to Lenin and were asked to indicate their degree of agreement. The degree of agreement turned out to be related to the subject's acceptance of Jefferson and Lenin respectively. Lorge concludes that changes in evaluation can be produced regardless of the merit of the issue involved. Asch **(4)** with a modified procedure concludes differently as to the nature of the same phenomenon. He gave to his subjects the same passage ascribed to the same two authors, but asked them to write down in their own words what the statement meant. He comments: " The outstanding fact about the reactions is that the statement is not simply the 'same' under two conditions, at least for most persons. The effect of changing the authorship has been to alter the cognitive content of the statement". This analysis introduces an important qualification into the interpretation of a good deal of research into prestige suggestion, but does not

alter the fact that frequently people will be influenced by the opinion of others, accept or reject them often quite uncritically and perceive reality differently as a consequence. Asch (4) in another study on judging lines of different lengths under group pressure noted the reactions at the end in an interview with his subjects who were then informed fully of the purpose of the experiment. He observes that experimentally introduced factors of majority or expert opinion fell short of complete effectiveness; the alleged suggestion must therefore have been limited by the operation of other factors. Despite the stress of given conditions a substantial proportion retained their independence and a substantial minority always yielded to majority. He concludes that independence and yielding are a joint function of the following major factors: (a) the character of the stimulus situation (degree of structural clarity); (b) the character of the group forces (majority or expert prestige) and (c) the character of the individual. On the basis of the interview data, Asch differentiated major forms of reactions and concluded that independence and yielding are not psychologically homogeneous, that submission to or freedom from group pressure can be the result of different psychological conditions of the individual. Thus, Asch stressed, besides the factor of prestige, other two factors viz. the structural clarity of the task and the nature of the individual. Coffin (9) has approached the same two factors a little differently. In his investigation structural clarity or ambiguity of the stimulus situation has been replaced by tasks of graded difficulty. This difficulty level being subjective may be well dependent upon the knowledge, information or training possessed by the individual. Thus he varied the difficulty level of the task by giving mathematical problems of graded difficulty, and the training of the subjects by classifying them according to their background in mathematics. The suggestions were introduced in the form of "hints" penciled in the spaces provided for

working out the problems, with an oral explanation that the authors had reduced the labour in long problems by giving hints on the first steps in procedure. However, most of the hints suggested incorrect procedures and the purpose was to investigate how far subjects accepted suggestions. The results showed a clear correlation of suggestibility with difficulty and training, as expected, i.e. the hints on more difficult problems were accepted consistently to a greater extent and the elementary students in mathematics accepted more than those with advanced course in mathematics.

THE PRESENT PROBLEM AND PURPOSE OF STUDY

The present investigation arises out of some considerations that are occasioned from the discussion of the preceding relevant experiments in the area. Three major categories of factors in suggestion have been referred to before, viz. character of the stimulus situation, character of the group pressure, and the character of the individual. Now, the last category consists not only of individual differences in psychological conditions observed by Asch (**4**) or the educational background of the individual as studied by Coffin (**9**), but there remain other important individual differences, particularly sex, in operation of suggestion. The present investigation deals with this factor of sex differences as well as educational level of the individual, forming together the third group of influences, besides its dealing with the first two, viz. stimulus structure represented in the present study by difficulty level of the task and the group structure represented here by the level of prestige (expert opinion) of the group. In order words, the present study undertakes to investigate the process of suggestion as a function of four variables viz. sex, educational background, source of prestige and the difficulty level of the matter of suggestion. Next, it is assumed that not a single factor operates independently of the other. In order to verify this assumption, i.e. to evaluate main effects as well as their interactions, the experimental design

for the present investigation has been so set-up that it has been possible to study and analyse the effects of all these four factors simultaneously in the same experiment. Finally, the present study has been undertaken with a view to filling up an important gap in the common procedure that has somehow escaped the notice in most of the studies. In a suggestion experiment, the individual is placed in a monotonous environment and is implicity instructed to adopt a passive attitude. He is asked to fixate to a particular stimulus, to make his mind blank and refrain from thinking about other matters. Other impressions are deliberately excluded, and the individual is asked also to co-operate by limiting his voluntary movements. When the experimenter says to his subject: " Your arm is stiff and you cannot straighten it, " the subject is expected to concentrate solely on the arm and the announcement. Typically, the effects are obtained under conditions that create a " narrowing of the mental field. " As Asch remarks: " A small segment of the environment is isolated from the stream of life, and the connection of the individual with the ongoing events is momentarily suspended or reduced to the dwindling point." Suggestion thus refers to a stunted form of action, lacking the characteristics of give-and-take, that prevent the individual from testing the situation. In the experiments cited above, possibly because the social setting constrained them by placing them under the necessity of arriving at a judgment, the subjects tried to make the best of it and in the process fell into the experimental trap. Once the subject has accepted the task, he feels the need to arrive at a judgment. Not having a clear basis to go on, he leans on the clues the experimenter has placed in his path. But his concern may no longer be that of reaching a clear conclusion, but to respond in a way to escape censure or ridicule. The result may be that his expressions of judgment do not carry conviction to himself and no longer represent actual evaluations or modifications. In short, the instructions or procedure of giving suggestion con-

strains the subjects to accept the suggestions. Under these circumstances when subjects accept suggestions, can we conclude that they did so by altering their evaluation or modifying their judgment, that there has been finally discovered a technique with which "to influence people", a means of changing ideas about the good, the true and the beautiful ? In the test on problems of graded difficulty, Coffin (9) gave " hints " with a clear explanation to follow them to reduce the initial labour involved; there was normally no alternative for the subjects other than to accept ; subjects had no freedom to exercise their critical thinking. Thus, the effects are obtained under conditions which really differ from conditions originally meant for suggestion. The fair procedure would be to leave the subjects to themselves whether to accept or reject the suggestions, without any indirect or implied constraint. The acceptance of suggestions under constraint of instructions may be the effect following from these restraining conditions and not necessarily the function of the manipulated variables. The present study makes an improvement in this procedure. The subjects in this study observe the suggestions marked on the test task, but are definitely instructed in a realistic manner not to pay attention to them and then the responses are studied accordingly, as to what extent the manipulated factors operate in suggestion. In short, the present investigation has been undertaken with a view to studying experimentally how far the individual, though free, is influenced in his judgment by suggestion; it studies suggestibility as a function of varying difficulty level of the task, the nature of the source of prestige, and the difference in sex and educational standing of the individual.

THE PROCEDURE OF STUDY

Subjects and Experimental Design :

Seventy-two high school pupils served as subjects for the test task under investigation. The test was initially admini-

stered to all those pupils present in tenth, eleventh, and twelfth grades of the high school at Portage, Wisconsin (U.S.A.); however, for equalizing the size of the group and for convenience of some statistical procedures, some answer sheets were omitted at random and only seventy-two were retained for actual data.

Though the main groups were on the whole equal in size, other limitations forced the writer to remain contented with unequal number in sub-groups, which consequently demanded greater labour for statistical analysis later. Out of the total of the 72 subjects, 24 came from each of the three grades representing three levels of educational background or training. To put in other respects: 36 were boys and 36 were girls; 36 belonged to a group subjected to suggestion from lower prestige source, and 36 to suggestion from higher prestige source, and each of the 72 subjects described in the procedure later, was given a test consisting of easy task as well as difficult task, thus making an easy task group of 72, and a difficult task group of 72.

In other words, subjects were divided into different groups corresponding to the variables under investigation. Thus, the factor of educational training was varied at three levels represented by three main groups, viz., tenth grade, eleventh grade, and twelfth grade pupils; these consisted of boys and girls enabling study of the second factor of sex; within each class of boys and girls some were subjected to low prestige suggestion and some to high prestige suggestion, thus making possible study of the influence of the factor of prestige; and lastly the easy and the difficult tasks provided for studying the differences due to the nature or structure of the task. In short, as far as later analysis was concerned, the four variables viz. educational training (three grade levels), sex (two groups), prestige (two sources) and difficulty (two degrees) necessitated for use $3 \times 2 \times 2 \times 2$ factorial design with 24 subgroups; however, as far as immediate procedural work was concerned, there

were only six subgroups formed out of three main groups (grade levels) by dividing each into two subgroups for being subjected to low and high prestige suggestion respectively ; the factors of sex and task difficulty were marged within.

Test Material :

The test task for the subjects was to answer the English Synonym Vocabularly Test (Form II) prepared by William M. Lepley (15). The test was in the form of matching type items, in which subjects had to match each test word (response word) with an appropriate synonym out of the five stem words given. In this particular form used, there were 255 response words including fifteen words for practice or illustration purpose. The remaining 240 words were grouped into eight items (sections) of 30 words each, at the top of which appeared five stem words differentiated as A, B, C, D, or E. The subjects had to mark on the separate answer sheet under the appropriate columns A, B, C, D, or E against the appropriate number of the response word in view of the proper match in each item. The difficulty level of each item was tested and standardized on a number of pupils by the author of the test; then the test items of known difficulty level were arranged in an ascending order of the degree of difficulty, as the test progressed. For the purpose of the present study, some words among these 240 words were suggested rightly and wrongly by pencil-marking A, B, C, D, or E in front of them randomly. There was no time limit for the test, though for convenience subjects worked at the task for one class period of about fifty minutes. Most of the subjects finished their work during this time; and in case a few would not finish, it did not matter much since the needed score for each subject was computed as against the total number of words attempted by each.

Besides answering this Vocabulary Test, the same subjects in the next session later on the same day or on the next day were also given, for reasons explained in the procedure, a separate sheet of those randomly suggested

words for marking them as easy or difficult. This second task material consisted of two practice words, 11 rightly suggested and 50 wrongly suggested words of the first test. The fifty wrongly suggested words which formed the critical basis for evaluating the effect of suggestion were the only words that were taken into account in the final analysis for the study of the extent of acceptance of suggestion under different conditions.

Procedure :

As noted just before, three main groups—X grade, XI grade, and XII grade boys and girls—were further divided into low and high prestige groups, giving in all six sub-groups, viz., X low, X high; XI low, XI high; XII low, and XII high groups, for the purpose of administration of the Synonym Vocabulary Test described above. All groups were administered the same test for matching appropriate response words with the stem words, with the only difference in pre-start hints. The test was administered by the English class teacher of the group concerned, with the expectation that every group had reasonable faith in what she said, particularly the pre-start hints. She first read and explained the preliminary instructions as printed on the test, including the practice part, before the actual test items began. Henceforth the procedure differed with each group. Just before starting the actual test items individually, each group was orally reminded of a few hints with carefully planned carelessness thus:

> "Before you start, please note this. You must not write anything on the test sheet. Mark your answers only on the answer sheet separately provided. Some of the test sheets may have been marked unknowingly by some students who took the test before. Just before this, the test was taken by——(students). In spite of instructions not to mark anything on the test sheet, a few sheets were found being marked at some places by these———— (students) through oversight. So please do not pay any attention to any marked answers, in

case some one of you happens to get such a sheet. You have to mark your own answers only on the answer sheet. Do not look anywhere else. Go ahead now."

The two gaps in the above instructions were filled in and conveyed emphatically with words referring to appropriate sources of prestige suggestion for each group, i.e. comparatively lower class for the low prestige group and higher for the high prestige group.

In fact, these response words were previously purposefully marked by the investigator in order to throw suggestions carelessly. In all, 61 response words were randomly associated with a pencil mark of a letter A, B, C, D, or E matching the stem words; eleven were rightly matched and fifty were wrongly marked. To create confidence, the first four marked words in the first item were right and in all later items rightly marked words appeared at random places to avoid any suspicion. Further, once the test items were started, no subject was expected to raise any question or look at what and how others were doing. It will be clear from this that the above hints with an alternative not to pay attention to markings were indirectly meant only to lead subjects, if they would be led of their own free will without constriction, to accept suggestions. The purpose of the procedure was to study the differences in the extent of unforced acceptance of suggestion under different conditions. For example, it might be expected that subjects would accept less when they were told that "answers were marked by a class lower than their own grade level" than when told "the same done by a class higher than their own; similarly acceptance might be less at a higher grade level (educational training or age) than at the lower; or suggestions on more difficult or doubtful matter might be accepted to a greater extent than those on easy or clearly structured tasks; so also there might be expected sex differences in the degree of acceptance of suggestion. All these hypotheses were put to the experimental test through the procedure designed in the present investigation.

Finally, a few words need be said with regard to the manipulation of the variable of difficulty level. As stated, the Synonym Vocabulary Test consisted of eight items differing in the known, standardized difficulty level and arranged in ascending order. It was planned for the present purpose to divide the whole test task into two parts, viz., first four items and last four times, termed comparatively as easy task and difficult task respectively. In the preliminary pilot study it was, however, found that with try-out subjects and with only fifty words under study, the standard criterion of difficulty gave doubtful results. If all 240 words of this test were taken into account, the criterion for each item of 30 words would have held good; but we were concerned only with the fifty words suggested, i.e. with seven or eight random words in each item. Though these words were randomly selected in each item, it was possible that the representative average difficulty level of the whole item of 30 words might not equally hold true for randomly selected seven or eight; these very few words were likely to be easy to some subjects and difficult to others, thus changing the level of difficulty for each individual.

In view of this, this standard criterion of difficulty established by the author of the test was discarded in the final procedure with the subjects of the present study. To achieve the purpose of differentiating easy and difficult words in a more reliable way, the investigator prepared separately a list of 63 words, including 11 rightly suggested and 50 wrongly suggested words in the first test sheet, together with two extra words for illustration. This sheet was presented to the same subjects conveniently later on the same day or the next day, asking them to mark out the words according to whether they considered the word as easy or difficult. It was interesting that not a single subject was heard suspecting the play of suggestion in the first session nor could detect the identity of words in the second session. In the final analysis

of results, each subject's score on the acceptance of suggested words was itemwise computed in relation to his or her total words attempted and considered as easy or difficult. Though this item analysis involved considerably more laborious strain, it was compensated for by a very high reliability achieved through such procedure and the validity of results.

DISCUSSION OF RESULTS

Responses to the two test sheets were examined and these formed the data for analysis. Subjects matched almost all 240 test words with the stem words in the Synonym Vocabulary Test. But the investigator was for the present not interested in all these responses. His concern was to note how many words subjects attempted to match, from amongst fifty wrongly suggested (marked) words and how many out of those attempted were accepted as corresponding to these marked matches, i.e. the suggestibility score for each subject was the number of words accepted out of the number he attempted amongst the fifty critical words. In the second test sheet containing the same fifty words it was noted which words were easy and which were difficult to each subject. Comparing each word accepted with the subject's rating the same as easy or difficult, the suggestibility scores on the first answer sheet were divided for each subject into two groups of scores, viz., suggestibility score for easy words and that for difficult words. It would be evident that the words that were easy to one were not necessarily the same to others and similarly about difficult words. The number attempted as well as accepted amongst easy and difficult groups was naturally different for each subject and, hence for comparing the results, all the acceptance scores were converted into percent scores for each subject. Thus, the score for each subject could be represented as $\frac{\text{words accepted}}{\text{words attempted}} \times 100$. Accordingly, Tables 1 and 2 show such percent scores—both total as well as mean for each group. Table 1 gives separately the scores of all 24 subgroups formed

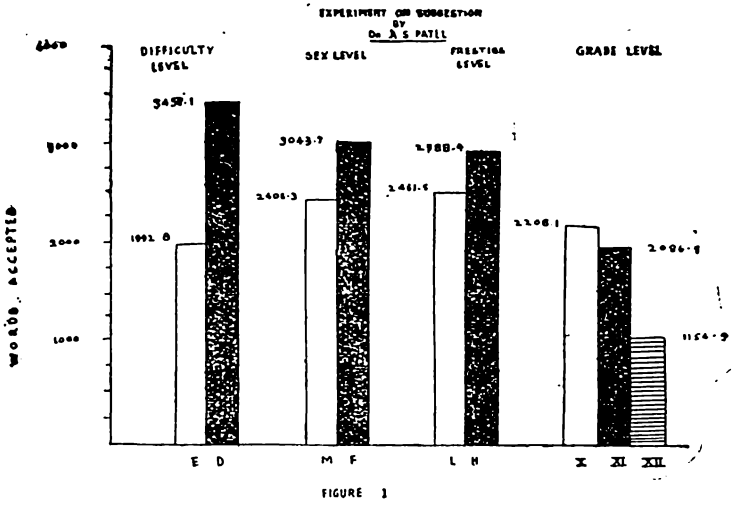


FIGURE 1

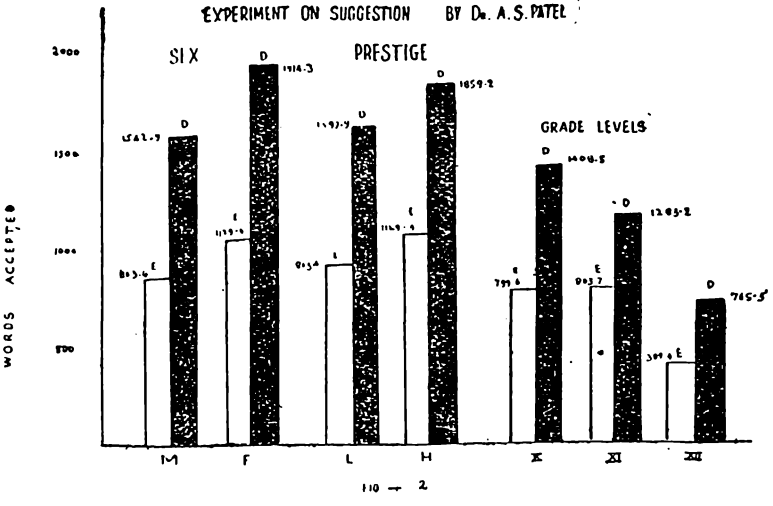


FIG — 2

by different levels of four variables manipulated; whereas Table 2 gives an over-all, total view of scores on the four main variables, which are represented by four histograms in Figure 1. Histograms in Fig. 2 show the same data sexwise, gradewise and prestigewise for easy and difficult words separately.

TABLE 1

SHOWING PERCENT WORDS ACCEPTED IN EACH OF SUBGROUPS

Subgroups				Easy		Difficult		Total (E Plus D)		
Sex.	Pr.	Gr.	N.	Total	Mean	Total	Mean	Total	Mean	N.
F	L	X	8	303.59	37.95	472.92	59.12	776.51	48.54	16
F	L	XI	4	96.8	24.2	185.01	46.25	281.81	35.23	8
F	L	XII	6	113.67	18.95	202.61	33.77	316.28	26.36	12
F	H	X	8	278.23	34.78	511.07	63.88	789.3	49.33	16
F	H	XI	5	235.75	47.15	362.25	72.45	598.00	59.8	10
F	H	XII	5	101.37	20.27	180.41	36.08	281.78	28.18	10
M	L	X	4	84.79	21.2	200.62	50.16	285.41	35.68	8
M	L	XI	7	155.28	22.18	272.97	39.0	428.25	30.59	14
M	L	XII	7	109.43	15.63	263.83	37.69	373.26	26.66	14
M	H	X	4	133.04	33.26	223.88	55.97	356.92	44.62	8
M	H	XI	8	315.89	39.49	462.94	57.87	778.83	48.68	16
M	H	XII	6	64.98	10.83	118.62	19.77	183.6	15.3	12

TABLE 2

SHOWING PERCENT WORDS ACCEPTED IN MAIN GROUPS

Main		Easy		Difficult		Total (E Plus D)		
Groups	N	Total	Mean	Total	Mean	Total	Mean	N
F	36	1129.41	31.37	1914.27	53.17	3043.68	42.27	72
M	36	863.41	23.99	1542.86	42.86	2406.27	33.42	72
L	36	863.56	24.00	1597.96	44.38	2461.52	34.19	72
H	36	1129.26	31.36	1859.17	51.64	2988.43	41.50	72
X	24	799.65	33 32	1408.49	58.69	2208.14	46.00	48
XI	24	803.72	33.49	1283.17	53.46	2086.89	43.47	48
XII	24	389.45	16.23	765.47	31.89	1154.92	24.06	48
E	72	1992.82	27.16					
D	72			3457.13	47.67			
Grand Total	144					5449.95	37.00	144

The casual observation of Table 2 or Figure 1 brings out the clear differences between levels of each of four variables, i.e. between sex, between prestige, between grades and between difficulty levels. There is observed a tendency that females accept suggestions more than males; that low prestige groups accept to a lesser degree than high prestige groups; that as pupils get more equipped with education with the progressing grade or age, they are less prone to suggestion and that subjects of each sex grade and prestige group accept suggestions far more (as observed from fig. 2) in case the matter of suggestion appears to be difficult or doubtful or ill-defined. To confirm statistically these apparent differences, a statistical procedure called " analysis of variance " given in any book on statistics **(10)** was run on the scores and Table 3 gives a summary of results that were statistically significant. The mean differences could have been tested by any other statistical tool, say " t " test; but as " F- ratio " in the procedure of

TABLE 3

SHOWING SUMMARY OF ANALYSIS OF VARIANCE

Source	df	SS	MS	F–Ratio	Confidence level of significance
Between Groups :					
(a) ,, Difficulty Levels	1	14890.3036	14890.3036	a/i 37.1834	Below .001.
(b) ,, Prestige	1	1928.0146	1928.0146	b/i 4.8146	Between .05 & .01
(c) ,, Sex	1	2821.4686	2821.4686	c/i 7.0456	Between .01 & .001
(d) ,, Grade Levels	2	13837.0966	6918.5483	d/i 17.2767	Below .001
Interactions :					
(e) Pr. × Gr.	2	3659.3969	1829.6985	e/i 4.5690	Between .05 & .01
(f) Pr. × S × Gr.	2	3614.0197	1807.0099	f/i 4.5124	Between .05 & .01
(g) D × Pr. × Gr.	2	4405.3883	2202.4942	g/i 5.5005	Between .01 & .001
(h) D × S × Pr. × Gr.	2	4752.9152	2376.4576	h/i 5.0344	Between .01 & .001
(other interactions not significant)					
(i) Within Groups (Error Term)	120	48054.6889	400.4557		
Total Variance	143	98139.7767			

analysis of variance happens to be equal to " t^2 " in comparing results of two groups by " t " test, the data for variables of difficulty, sex, and prestige that were studied at two levels were, however, not subjected separately to " t " test to avoid repetition of the same results. However, in case of variable of grade levels which gave three groups for comparison, another tool called " Tukey Gap Test " (**27**) was applied to the data to find out the significant gap between means of grade levels. This test showed 7.1981 to be a significant gap in the means at .001 level of confidence, 5.3639 at .01 level and 3.9537 at .05 level, implying that XII grade was significantly different from other two grade groups in less accepting suggestions, while the X and XI grades were not mutually different. Despite the influences of all these factors, it should be noted that the effect was far from complete; the mean percent of words accepted on the whole was 37.00% probably due to other influences. Let us now discuss separately the main effects and interactions of each of the factors involved.

Suggestibility and Difficulty of the Task:

The first and most striking result that issued from the present investigation is the relationship of suggestibility to the difficulty of the task. The items contained in the test were obviously of varying degrees of difficulty to all subjects on the average. This standard criterion of difficulty would have worked well if all 240 response words would have been taken into account; but if all these words were suggested, the subject might have suspected the procedure and the purpose of the study might have been challenged. Consequently, it was thought that only a few random words should be suggested, including not only wrong suggestion but also a few right suggestions in the beginning as well as a few spread in between. Hence, a more valid and defensible procedure to measure the difficulty level of these words would be, not to accept the average known difficulty level from the

original test, but to get evaluations of the same from the very subjects under study. Thus, as stated before, a separate sheet consisting of the same suggested words was later presented to the subjects to dichotomize them as easy or difficult, and scores were computed on the acceptance of suggested words in relation to the difficulty level of each word separately for each subject. The table 3 of analysis of variance shows that the difference between the difficulty levels is statistically most significant, even below .001 level of confidence, with $F=37.1834$ for one degree of freedom. This confirms the results of other studies **(4, 7, 9)** and leaves hardly any doubt that subjects tend to be suggested far more when the situation or the task is difficult, stressing, doubtful, or illdefined. Even the closer observation of results of sub-groups in Table 1 reveals that there is a consistent increase in mean score of suggestibility for difficult words, compared to the score for easy words. The interactions between different factors are in such different directions that there should not be further attempt to infer whether the relative increases in difficult scores were greater with girls than with boys or with high prestige groups than with low prestige groups or with lower grades than with higher grade pupils. The only clearest inference is that whether subjects were boys or girls, whether they belonged to this group or the other, everybody showed obviously a consistent tendency for significantly greater suggestibillty when the items were difficult than when easy. The role of this factor of difficulty had a swaying influence over the rest, i.e. the influence of difficulty appeared to be more dominant than the influence of others factors which seemed to interact in different ways in conjunction with one another, as discussed in the next sections below. Though other factors of sex, prestige, and educational level appeared to displace the main effects in interaction, they could not disturb much the more prominent effect of difficulty level; e.g. even the relative

increases (changes from E to D in a sub-group) are not much upset $\frac{(F:D}{F:E} = 1{\cdot}7$ and $\frac{M:D}{M:E} = 1{\cdot}9$; $\frac{L:D}{L:E} = 1{\cdot}8$ and $\frac{H:D}{H:E} = 1.6$. etc.).

However, the detailed examination of actual responses word by word brings out some interesting facts. For instance, some subjects seemed to have misunderstood some words or confused them with familar similar words, in marking them as easy though apparently difficult for these grades, e.g. words like 'Straits' 'requite', 'littoral', 'indemnify', 'contend', 'condign', ' descry ', etc. were marked as easy in view of their similarity to familiar words. This tendency is confirmed when it is noted that suggestions on all such words were mostly accepted as difficult words. Or sometimes the word might at first sight appear easy, though doubtful, in view of its one known synonym or common use; while actually in matching with stem words, it might be difficult in view of other synonyms, e.g. the words like "debate" marked invariably as easy had been usually matched with "speech" as suggested and not with the correct stem word "fight". There appears to be also other possibility, particularly in data of X graders, that some subjects being more ego-involved, or to show off that they knew more, might have marked most words as easy, though in reality they were likely to be difficult in view of the accepted suggestion on them, or it may be that these younger subjects might be less precise and more imaginative in differentiating between easy and difficult. These are mere conjectures as to what led them to mark usually difficult words as easy. But any way, if allowance is made for all such considerations, i.e., if acceptance of such words were not classified under category of suggestibility score for easy words, but that for difficult words, this would have raised the level of significant difference still higher in favour of difficult words. Even irrespective of these minute points of subjective observations, the objective stati-

stical analysis clearly leads us to conclude with respect to these groups that the more difficult the task is, the higher is the probability that subjects would be yielding to suggestion on it.

Suggestibility and Educational Training of the Group :

The second phase of the present investigation concerns the relationship of suggestibility to the educational training of or stock or knowledge or information with the group subjected to suggestion. Is it possible that subjects of varying degrees of knowledge display corresponding degrees of suggestibility ? Table 2 giving the means of each group shows that there is a decreasing tendency to accept as the grade level progresses. Table 3 reveals that F–ratio for "between grade levels" is significant even below .001 confidence level. However, this ratio gives an over-all significant difference among the grade levels and does not point out which differs from which. It is possible that one might be differing most from the other two which themselves might not be differing, and yet this would result in an over-all significant difference. To test such difference Tukey Gap Test was used on data and it was found that the gap between the means of XII grade and any other was significant beyond .001 level of confidence, while X and XI grades did not differ significantly in suggestibility. It might be that probably these two might not be mutually differing also in educational training as much as both differed from XII graders in training. It is also possible that XII grade being the final senior class in the high school was more prepared educationally, while the difference between sophomores and juniors of the high school might not be much. The selection of IX grade (freshmen) level should have been a true level of difference.

Secondly, this partial lack of difference in suggestibility might be attributed to the significant interaction of grade level with prestige. It can be seen from Table 3 that all interactions involving grade and prestige are significant; all

other interactions in which these two together are not involved are insignificant. This significant interaction between prestige and grade working in inconceivable directions at different levels raises even doubt regarding the significance of the main effects of each separately, because it might be that individually on its own strength one effect may not be significant but may appear significant under interaction with the other. Then, the reliable way to compare grades would be to control the prestige factor. i.e. to compare the mean scores of three grades under either only low prestige suggestion (better control group) or the three under high prestige. When means from Table 1 are calculated grade-wise for each prestige source separately, we find the following results:

TABLE 4

Showing Gradewise Distribution of Means for Each Prestige

Group	Means
L X	42.11
L XI	33.41
L XII	26.51
H X	46.98
H XI	54.24
H XII	21.74

Again applying Tukey Gap Test, it follows that as far as low prestige suggestion is concerned i. e. when prestige suggestion is low or of no account, all three grade levels differ significantly from one another, the gap being significant in all cases at almost .001 level. But when the factor of high prestige enters, the effect are in different, inconsistent directions—X graders show some increase, XI graders show striking increase and XII graders show some unexpected decrease. In short, in absence of prestige suggestion

(low prestige group), suggestibility shows a definite relation (inversely related) to educational training, but the relation is obscured when training interacts with prestige. This may amount to say that main effects of educational training are indeed significant at all levels, while main effects of prestige, though significant, may be a little doubted in view of F-ratios for " between prestige groups", and for " interaction prestige × grade " being almost the same and significant at .05 level. This will be referred to again in later sections on " suggestibility and prestige". In brief, the influence of educational training though important, seems to have been adversely affected by factor of prestige which seems to exert its influence in doubtful directions at some level of educational training.

Suggestibility and Sex of the Group :

As far as the particular groups are concerned, the sex differences also seem to have an important relation to suggestibility. The analysis obviously shows a very reliable statistically significant difference between sexes, at almost .01 level of confidence. The examination of means of sub-groups in Table 1 also reveals that when means of two sexes—F and M—are compared respectively keeping prestige and grade level the same for both, there is a clear tendency toward greater suggestibility among female subjects. This overall picture of sex differences, however, obscures other facts which are revealed by still closer examination of means, particularly with respect to educational level. One trend observed is that among low prestige groups, differences between sexes were greater at lower grades than at higher grades. e. g. XII grade girls (F, L, XII=26.36) hardly differed from XII boys (M : L : XII=26.66) when both were subjected to low prestige suggestion; whereas at X and XI grades, girls showed a reliable difference in suggestibility from boys (F : L : X=48.56; M : L : X=35.68, etc) However, when high prestige suggestion entered, girls always were

more suggestible than boys at all grade levels. It appears that, with growth in age and training, sex differences in suggestibility vanished; but with prestige effect, the differences reappear. Curiously, boys were relatively affected more by change of prestige source than girls at the same educational level (e. g. $\frac{M:H:X}{M:L:X} > \frac{F:H:X}{F:L:X}$, etc.). Interactions are really curious.

Suggestibility and Source of Prestige Suggestion :

It was expected in line with many other investigations (**5, 16, 17, 19, 24**), that the majority or expert effect of prestige suggestion would play a decidedly important role in maneuvering the suggestibility of a person. The results of the present investigation do confirm to some extent the same conclusion, as revealed by the F-ratio for "between prestige groups," which is significant at .05 level of confidence. However, its effect has not been as striking and clear as that of any other factor. Moreover, its significant interaction with grade level has been, as noted earlier, a little disturbing, which limits our interpretation of the main effects of prestige source though significant. No doubt comparing low prestige groups with respective high prestige groups keeping sex and grade the same, one observes consistently greater suggestibility with high prestige groups. Yet when prestige results are compared at different grade levels in Table 4, it is seen that X graders were not much affected by change in prestige; XI graders showed a striking rise in suggestibility; while XII graders on the whole (particularly boys), curiously became a little resistant to suggestion from higher prestige source, both with respect to easy and difficult tasks, and so do X grade girls with respect to easy task in spite of high prestige influence. It is possible that XI graders were more sensitive to high prestige suggestion, because for them the high source was XII grade i.e. senior class which, being the final graduating class, commanded more prestige for

all school pupils. However, to all XII graders, the high prestige of college students might be fun, commanding no influence.

Anyway, the interaction effects are sometimes so curious that they do not allow us to generalize on the main effects.

CONCLUSIONS

1. There is a very marked tendency for suggestibility to increase with difficulty of the task. Though this relationship is by no means perfect, it appears consistently with all groups, whether they are boys or girls, whether they belong to lower or upper level of educational training, or whether they are subjected to lower or higher source of prestige suggestion.

2. Suggestibility seems to be inversely related to educational training or knowledge or the group suggested. Subjects display lesser tendency for suggestibility with their growth in knowledge. Thus twelfth grade pupils differed very significantly from X and XI Graders on their suggestibility scores. However, X and XI grades did not differ significantly from each other, possibly because of inadequacy in selecting the different levels of training or more likely because of significant interaction between grade level and prestige effect.

3 The data reveal also significant sex differences in the extent of suggestibility. The girls consistently show greater tendency for suggestibility and particularly when the additional factor of high prestige effect is involved. Normally, in absense of higher prestige suggestion, girls show greater tendency for suggestibility at lower grade level or younger age ; but with advance in age and training, the sex differences in suggestibility disappear unless some other factor plays its role to disturb the relation.

4. One more significant and expected observation is that suggestibility is directly related to the strength of

the prestige source. The higher the status of the group from which the suggestion comes, the greater is the tendency of subjects to yield to suggestion. However, in spite of this consistent tendency to follow the prestige group, its direction and strength have sometimes been disturbed by sex and training or even difficulty level.

5. In view of significant interactions between some factors at some stages, it is with much caution that we can be definite in generalizing that the main effects of these factors are significant by themselves to bring about the results, though it clearly appears so. It is possible that the effects of some of these factors which by themselves are of lesser strength might have been accelerated in conjuction with others.

6. Finally, it should be borne in mind that despite the influence of all these factors, the effect was far from complete. It is possible that some yield, others resist, and a few may be even contra-suggested, all depending on other psychological factors and moods. Even among those who yield or resist, submission or independence may not be psychologically homogeneous; the same can be the result of different psychological conditions. This aspect has not been touched in the present study; the further exploration of the basis for the individual differences forms a separate task.

Educational Implications :

We, teachers and guidance workers, are ever eager to teach and help others, but in our enthusiasm to help, we perhaps often do not wait to know whether the recipients of help are benefitted by or accept what we impart. The implications of the present study will be of much value in this consideration. Any educational activity like teaching or guidance can be said to involve more or less a process of suggestion—suggestion from the one who commands a superior position or skill whether one wills or not, to one who perceives that position and receives what flows from that. To this extent, teaching or guidance is

a case of prestige suggestion (expert effect) and it is often quoted that the succes of such an activity is mainly determined by the relation (" rapport " or confidence) between the one who gives, and the one who receives. Besides the nature and capacity of these two, the nature of the situation or matter of teaching is also of next importance. The conclusions derived from the present study definitely shed important light on the working of the factors involved in this educational process.

Of the first and foremost importance in education is the prestige of the teacher in view of the fact that education is more or less a process of prestige suggestion. The greater the teacher commands prestige, the more the pupils respect her, put faith in her, believe in her, and accept what she says. The more facilitating the teaching becomes and the less the disciplinary actions arise. In view of this, the teacher is in a better position to mould her pupils however she wills. The present study provides an experimental evidence of her influence. It is left to the better judgment of teachers how and when to utilize their influence.

Of next importance are the pupils themselves. Their sex and age and educational equipment play important roles in understanding how far they can be moulded. The present investigation bears testimony on this aspect also, viz. the greater adaptibility of pupils at early age before they are matured with higher training influences and the greater suggestibility of fair sex. It is from this point of view that early years are more important in the formation of the child, when he is less prejudicial, less puffed with knowledge, and more open to suggestion. The children, to start with, have no prejudices but acquire later such prejudices from others through process of suggestion and imitation. The teachers of lower classes have to be more careful in seeing that socially disapproved practices may not be fixated through some suggestion or their own impli-

cations, since the earliest impressions are the most stable and the most difficult to eradicate. It is also equally noteworthy that problems of discipline and adjustment are more numerous at a later age when it is difficult to impose on them or to interfere with their actions, they being less suggestible. In the same note, it is often said that boys are more defiant and create more problems than their replica in "weaker" sex, who are by nature quite and submissive. There should not be any attempt to exploit the younger or the fairer by dominance of one's views; on the contrary, it becomes a greater responsibility of the teachers to respect the nature of those who yield to them, and every effort should be made to direct them through the right channels of proper growth.

Finally, the nature of the material to be conveyed has an important say in the extent of acceptance from a prestige source. It will sound paradox to a teacher in light of the present evidence that easy matter is accepted less than the difficult mater. By acceptance it is meant here "believing uncritically," and not necessarily understanding the matter. No doubt, the easy matter is understood and accepted to a greater extent than the difficult matter. However, when the situation does not concern the learning with discussion or understanding as such (as often the need arises), but when simply learning or assimilation through suggestions is the only alternative, persons tend to accept suggestions far more in a difficult, doubtful, critical, stressing, or ill-defined situation. Often the short-circuit in learning new things is believing in what others say, accepting others' views or imitating others' actions. The present investigation points very strikingly to this. Most teachers might have realized that when the situtation is puzzling or bothering or critical or demanding real advice, as during examination, the pupils are most prone to any suggestions. The teacher or guidance worker should note the importance of this finding and the advice in such

situations is most welcome to them. Such situations and problems arise often during the growth of children, particularly during adolescent stage which is a period of storm and stress, gloominess, moodiness and confusion—a period of difficulty when the adolescent needs tactful and cautious guidance. Guidance is then the most essential and the workers in this field should keep in view the implications of the present findings.

REFERENCES

1. Adams, H. F. "Autokinetic Sensations", *Psych. Monog.*, 1912, **59**, pp. 32–44.
2. Alexander, Mintz: "Non Adaptive Group Behavior", from *Readings in Social Psychology*, Swanston, G. E., Newcomb, T. M., and Hartley, E. L., (eds,), New York: Henry Holt, 1952, pp. 190–198.
3. Allport, F. M., *Social Psychology*, Boston: Houghton Mifflin, 1924, p. 251.
4. Asch, S. E., *Social Psychology*, Chapt. 14 & 16, New York: Prentice Hall, 1955 (Also in "Effects of Group pressure upon modification and distortion of judgments," *Readings in Social Psychology*, pp. 211, Ed. Swanson et al).
5. Aveling, F. and Hargreaves, H. L., "Suggestibiliy with and without prestige in Children", *Brit. J. Psych.*, 1921, 18, pp. 362–368.
6. Bartlett, F. G. "Social Factors in recall", *Readings in Social Psychology* (Swanston, et al), pp. 362–369, from Bartlett, F.C. Remembering, Cambridge, Univ. Press, 1932.
7. Cantril, H. "Invasion from Mars", *Readings in Social Psychology*, pp. 198–207.
8. Cantril, H, and Frederiksen, H. "Social Functions of the Individual", in (Boring, E. G., Langfeld, H. S., and Wold, H. P.) *Introduction to Psychology*, New York, John Wiley, 1939, 22.

9. Coffin, T. F. "Suggestibility and levels of difficulty", *Readings in Social Psychology*, pp. 11–18.

10. Edwards, A. L. *Statistical Methods for the Behavioral Sciences*, Rinehart & Co., New York: 1954, Chs. 16–17.

11. Kelley, M. H., "Two functions of reference groups", *Readings in Social Psychology*, pp. 400–414.

12. Klinebergs Otto, *Social Psychology*, (Chap. 17, Rev. ed.), 1954, New York: Henry Holt.

13. Krech, D. and Crutchfield, R. S. *Theory and Problems in Social Psychology*, Chapter 9, New York: McCraw Hill, 1948.

14. LeBon, G. *The Crowd: A Study of the Popular Mind*, London: T. Fisher, Univ. 1896.,

15. Lepley, W. M. "The Rationale, construction, and preliminary try-out of the synonym vocabulary test" *J. Psych.*, 1955, **39**, pp. 215.

16. Lewis, H. B. "An experiment on operation of prestige suggestion", *Readings in Social Psychology*, pp.18–22. (See also "studies in the principles of judgments and attitudes", *J. Soc. Psych.*, 1941, 14, pp. 229–256).

17. Lorge, I., "Prestige, suggestion and attitudes", *J. Soc. Psych.*, 1936, **7**, pp. 386–402.

18. McDougall, W. *An Introduction to Social Psychology*, Boston: John W. Luce, 1926.

19. Moore, H. T. "The comparative influence of majority and expert opinion", *Amer. J, Psych.*, 1921, 32, pp. 16-20.

20. Murphy, G., Murphy, L. B., and Newcomb, T. M. *Experimental Social Psychology*, (Rev. ed.), 1937.

21. Newcomb, T. M. "Attitude development as a function of reference groups: The Bennington Study", *Readings in Social Psychology*, pp. 420–430.

22. Pavlov, I. P. *Conditioned Reflexes*, New York: Oxford Univ. Press, 1927, p. 407.

23. Postman, L., Bruner, J. S., and McGinnis, E. "Personal values as selective factors in perception", *Readings in Social Psychology*, pp. 375-383.

24. Sherif, M., "Group influences upon the formation of norms and attitudes", *Readings in Social Psyehology*, pp. 249–262. (See also Sherif, M. *The Psychology of Social Norms.*)

25. Sherif, M. *The Psychology of Social Norms.* New York: Harper, 1936.

26. Tarde, G. *The Laws of Imitation*, E. C. Parsons, (trans. from second French ed.), New York : Henry Holt, 1943.

27. Tukey, J. W. "Comparing individual means in the analysis of variance" *Biometrics*, June, 1949, pp. 99-114.