

Utah State University

DigitalCommons@USU

---

All Graduate Theses and Dissertations

Graduate Studies

---

5-1965

## Suggestibility of Placebo Reactors and Non-Reactors in the Autokinetic Situation

Lee Glenn Mason  
*Utah State University*

Follow this and additional works at: <https://digitalcommons.usu.edu/etd>



Part of the [Psychology Commons](#)

---

### Recommended Citation

Mason, Lee Glenn, "Suggestibility of Placebo Reactors and Non-Reactors in the Autokinetic Situation" (1965). *All Graduate Theses and Dissertations*. 5557.

<https://digitalcommons.usu.edu/etd/5557>

This Thesis is brought to you for free and open access by the Graduate Studies at DigitalCommons@USU. It has been accepted for inclusion in All Graduate Theses and Dissertations by an authorized administrator of DigitalCommons@USU. For more information, please contact [digitalcommons@usu.edu](mailto:digitalcommons@usu.edu).



SUGGESTIBILITY OF PLACEBO REACTORS AND NON-REACTORS  
IN THE AUTOKINETIC SITUATION

by

Lee Glenn Mason

A thesis submitted in partial fulfillment  
of the requirements for the degree

of

MASTER OF SCIENCE

in

Psychology

Approved:

UTAH STATE UNIVERSITY  
Logan, Utah

1965

378.2  
M38  
C.2

#### ACKNOWLEDGMENTS

I express my gratitude and appreciation for the assistance and guidance given by Dr. Heber Sharp. This study is part of a group project originated by him and financed through funds he procured.

I am indebted to him for his efforts along with Dr. Walter Borg and Dr. David Stone, the other members of my graduate committee, for their review and assistance with this thesis.

Lee G. Mason

## TABLE OF CONTENTS

INTRODUCTION . . . . .	1
REVIEW OF LITERATURE . . . . .	3
Autokinetic illusion . . . . .	3
Placebo effect . . . . .	14
Judgment change . . . . .	17
HYPOTHESIS . . . . .	21
METHODS AND MATERIALS . . . . .	22
Selection of subjects . . . . .	22
Experimental design . . . . .	23
Autokinetic equipment . . . . .	24
Procedure . . . . .	25
RESULTS . . . . .	29
Experimental data . . . . .	29
Questionnaire . . . . .	34
DISCUSSION . . . . .	37
Experimental data . . . . .	37
Questionnaire . . . . .	41
SUMMARY AND CONCLUSIONS . . . . .	44
Summary . . . . .	44
Conclusions . . . . .	45
LITERATURE CITED . . . . .	46
APPENDIX . . . . .	50

LIST OF TABLES

Table	Page
1. Expressed averages of the male reactors . . . .	30
2. Expressed averages of the male non-reactors. . .	31
3. Expressed averages of the female reactors . . . .	32
4. Expressed averages of the female non-reactors . .	33
5. Analysis of covariance F-test ratios. . . . .	35

LIST OF FIGURES

Figure	Page
1. Autokinetic tracking apparatus . . . . .	7
2. Visual cue to suggest direction of movement in the autokinetic situation . . . . .	13

## INTRODUCTION

The phenomenon of not relying solely upon one's own judgment and of distorting one's perception toward a perceived social norm has been observed to take place with a rather large percentage of subjects participating in a number of research projects. Both Asch and Sherif have done extensive work showing this distortion of perception when an individual is placed in a group setting and finds himself in a contradictory position between his own perception and that of the other group members.

The question arises as to whether or not acceptance of suggestion is a personality trait characteristic of the individual. To what extent, if any, will the trait of suggestibility manifest in one situation transfer to a second setting when suggestion is applied? Specifically, in this research project, individuals will be chosen according to their reactions to a placebo pill experiment. Placebo reactors will be those individuals who have manifest the internalization of suggestion in the experiment. Non-reactors will be chosen for their lack of placebo pill reaction which will be considered as rejection of the applied suggestion. Both the placebo reactors and non-reactors will be placed in an unstable experimental situation that has the possibilities of being structured according to the individual's perception or perceived social norm. Since the autokinetic illusion is almost

universal, this phenomenon will be employed in the experimental procedure. Suggestion as to the amount of movement present in the autokinetic effect will then be given. The amount of movement will be recorded and tested for significance for the reactor and non-reactor groups.



## REVIEW OF LITERATURE

### The autokinetic illusion

The science of psychology has need at times for a situation that is somewhat indefinite and has the possibilities of being structured differently by each individual. Sherif (1937) observed that the same stimulus is then viewed and treated differently by each person according to what their perception of the stimuli seems to be. As the stimulus does not change, the difference in perception must come from "within" the individual. This may include the person's physical and cultural orientation as well as internalized suggestion. In other words, the difference in perception comes from the individual's psychological point of view. The principle under which the results are obtained and their interpretation is similar to that used by Murray's Thematic Apperception Test (1943). The unstable situation gives an experimenter the opportunity to study the individual's internal frame of reference, how it is developed, and the dynamics of change that take place within this framework of the individual (Sherif, 1935). The autokinetic illusion is one of the psychological stimuli that fulfills the needs of the above situation.

The autokinetic effect takes place when an individual observes a stimulus that does not have a fixed background to spatially orient the observer (Sherif, 1935). The stationary

stimulus appears to move after a short time, thus giving it the connotation of autokinetic or self movement. Guilford and Dallenbach (1928) stated that this effect was first recorded in 1799 by Van Humbolt, an early astronomer who observed the stars appearing to move. Sherif (1935) reports Schweizer as being the first to realize that what was being observed was an illusion, as different individuals watching at the same time and comparing their observations, saw the stars moving in different directions at a given instant. Guilford and Dallenbach (1928) state that the first mention of a laboratory study using the autokinetic effect was reported done by Charpentier. They also mention that Aubert coined the phrase from which the term "autokinetic effect" was translated, and this term is used at present to include the illusion of using a dim light in a darkened room, a black dot on a white background, as well as the apparent movement of the stars.

The best understanding of the autokinetic effect in relation to this study is obtained by first becoming acquainted with the physical factors which influence the illusion, and then study the social influence and the setting in which the illusion is used in psychology.

Much of the early research done was with the illusion itself and was orientated toward determining why the effect takes place. There is still no completely acceptable explanation as to the cause of the illusion, and some work is presently being done to better the understanding of causative

origins of the illusion and factors which influence it.

Movement of the eyes (Adams, 1912; Carr, 1910; Gregory, 1959; Guilford and Dallenbach, 1928; and Skolnick, 1940) has been considered as a possibility of the cause of the illusion. Adams (1912) reports that Exner studied the effect by placing a small black spot on a white paper and putting a pin hole in the center of the dot. He found that the pin hole and the spot moved independently of each other. This could not possibly have been due to eye movement. He also states that the after image technique used by Carr also produced negative results. Guilford and Dallenbach (1928) came to the same conclusion when they photographed the eye movement and compared the results with the reported autokinetic movement. The only other alternative as to the cause was internal functions of the body.

A number of body functions have been investigated to determine what internal conditions facilitate the illusion. Since the effect is described as taking place when there is no frame of reference, an individual's internal frame of reference has been the main focus of attention and has been studied extensively. Sherif (1937) noted that gravity and posture were not sufficient reference points on which to prevent the illusion, but he went on to state that the opposite extreme of being without a backrest and a lack of knowledge as to one's surroundings facilitated the extent of the effect. He stated:

At times the person himself feels insecure about his spatial bearings. This point comes out in an especially striking way if he is seated in a chair without a back and is unfamiliar with the position of the experimental room in the building. Under these conditions some subjects report that they are not only confused about the location of the light, they are even confused about the stability of their own position. (Sherif, 1937, p. 92)

The conclusion, therefore, is that the illusion is influenced to some extent by the posture and support of the body.

The inner ear has been studied in order to further determine the effects of balance on the illusion. Graybiel, Ashton, and Niven (1956) obtained individuals who had had the labyrinth of the inner ear injured through accident and placed them in the autokinetic situation but found nothing unusual in their reports.

An experiment was conducted by Wishner and Shipley (1954) to study the sensory-tonic theory using the autokinetic situation. Their experiment was orientated along the theory that if sensory and tonic factors are related, a stimulus acting on one will influence the other. Therefore, individuals who are prone to favor a specific orientation such as being right handed should see an unstructured situation such as the autokinetic illusion tending to move in the direction of their favored orientation, which in the case of right handers would be motion to the right. Two of their hypotheses were supported and another one did not prove significant in their experiment. More evidence is needed on this point.

Several investigators have reported studies that are somewhat closely related to the orientation of the above

experiment. Bridges and Bitterman (1954) found that the tilt of the head may effect the direction of movement. Body movement such as contracting the jaw and breathing was found by Carr (1910) to influence the direction of motion. He also noted that when he observed the illusion with one eye, the motion of the light tended to be in the direction of the viewing eye. Luchins (1954) confirmed this tendency for the light to move in the direction of the viewing eye when he studied the autokinetic effect as observed by peripheral vision.

An interesting method for accurately recording the apparent movement of the light was devised by Bridges and Bitterman (1954) who built a tracking apparatus as is shown in the following figure.

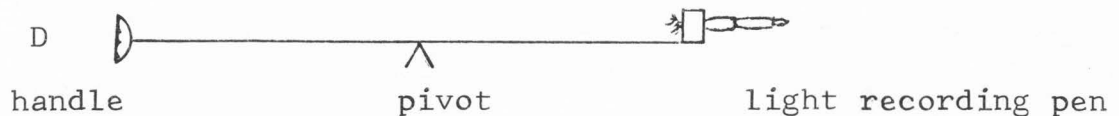


Figure 1. Autokinetic tracking apparatus

Their instructions to their subjects were that the light will move, and their task was to return the light to its original position. The records produced are upside down and backward but much more accurate than having the subjects draw the path of the light freehand.

There are several other physical conditions concerning the stimulus light that should be reviewed before turning to the social influences effecting the autokinetic illusion. The light may be varied as to its size (Edwards, 1954; Luchins,

1954; and Myers, 1959) illumination (Adams, 1912; Edwards, 1954; Enders; and Luchins, 1954) and exposure time (Comalli, Werner, and Wagner, 1957; Edwards and Crutchfield, 1951; Hoffman et. al., 1953; Hood and Sherif, 1962; and Luchins, 1954) in order to change the extent of observed movement. It must be remembered when considering these factors that the autokinetic motion is an individual observation, and the following factors are only able to influence the individual's observations to the extent that he is able to see the movement. An extreme example of this is where several investigators have reported having subjects who were unable to experience the autokinetic illusion even in the most favorable conditions (Carr, 1910 and Luchins, 1954).

A well known fact about the autokinetic illusion is that the longer the light is exposed, the more movement the individual will be able to see (Edwards and Cruchfield, 1951; Hoffman et. al., 1953; Hood and Sherif, 1962). After a short latency period the light begins to move; and although there is some experimental contradiction as to whether or not the light can be arrested by mental effort (Gregory, 1959) most investigators agree that the light will keep moving as long as it is fixated.

Illumination present both in the light and the surrounding field has an important influence as to the amount of movement seen. A small light of low intensity is considered optimum in producing movement. Research has been done toward the opposite extreme where the stimulus fills the greater

part of the visual field. Edwards (1954) used a stimulus field that covered as much as 60 percent of the visual field. All his subjects were able to observe the autokinetic motion, and he goes on to raise the unanswered question as to why ordinary visual experiences are not observed to have autokinetic motion.

With the larger stimulus, one must take into account the greater illumination that is present. If the background becomes sufficiently illuminated from a bright stimulus, the individual can orientate the light in the illuminated frame of reference, and the autokinetic illusion is destroyed (Edwards, 1954; Enders, 1960; and Luchins, 1954). A stimulus that in a sense is its own frame of reference has been noted by Myers (1959). He used a rod which had half of its diameter dipped into luminous paint. As he turned the rod until only a very narrow strip was visible in the dark, he observed a streaming type of autokinetic effect along the length of the rod but no visible sideways distortion. The straight rod acted as a frame of reference to prevent motion along the width of the rod. Other figures studied which connote movement in a direction will be discussed in the next section under suggestion.

Suggestion probably has the greatest influence on the perception of motion of the autokinetic illusion. Within the realm of psychology, the autokinetic effect is closely associated with the studies concerning the social interaction involved as an individual develops his frame of reference.

The autokinetic had been explored previous to the work in connection with social dynamics, but most of the publicity and common knowledge of the phenomenon today is tied into the work of Sherif and the social experimenters that have followed him. Sherif (1935) performed a classical experiment using the autokinetic effect in which he had subjects judge the distance of movement of the light individually and in small groups.

Those subjects who first observed the light while alone would tend to evolve a standard range of movement particular to the individual. As the trials proceeded, the individual would fluctuate around a value within a range that could be thought of as his frame of reference. Later, when these individuals were brought together in small groups to observe the illusion, they tended to be influenced by the group and would converge toward a group average.

The other subjects who first observed the illusion in small groups did not evolve individual standards of movement but tended to evolve one standard range for that specific group. Later when these groups were broken up, and the individuals observed the autokinetic effect while alone, the subjects tended to keep the range of movement of the group that they had been affiliated with. One of the conclusions Sherif drew from this experiment was that the social dynamics of a group was important in the determination and internalization of an individual's frame of reference.

This study led Sherif to question whether or not he



could lead subjects to adopt a prescribed range and norm by the influence of social interaction. Sherif (1936) performed another experiment to study this problem of suggestion. He found that the experimenter has direct influence on the subjects as shown by the example where when he informed the subjects that they were "too low," he raised their averages. A second method of influencing the subject's estimates that he found effective was to use a prestige follow experimenter posing as a confederate. To an extent, the confederate could influence the subjects estimates as to the amount of movement observed; but the degree of influence was found to vary for different individuals. From a questionnaire he administered, he found that the subjects became aware of their developing norm even though they might not be conscious of the social forces influencing them toward their adopted norm.

Bovard (1948) and Enders (1960) each did a study on the endurance of socially modified perceptions and found these modifications of the individual's perceptions are relatively permanent over long periods of time. The inference drawn here is that an individual modified his frame of reference to match the group rather than the change being merely compliance during the test in order to escape an uncomfortable situation. Sherif's experiment using the autokinetic effect to demonstrate social dynamics has been a prototype for a large number of similar experiments that have followed. Some of the more recent studies have correlated the differential effects of suggestion in the autokinetic situation with some

phase or trait of personality. A few of these recent studies with important innovations are reviewed here.

Canning and Baker (1959) experimented with authoritarian and non-authoritarian subjects who were first placed in the autokinetic situation alone in order to establish individual judgment norms. A second testing session was conducted in small groups with confederates who gave high estimates of movement. The non-authoritarian individuals increased their judgments by over double while the authoritarian individuals increased their judgments by an average of over five times their original estimates. These increases in judgment were reported as being resistant to any further social influence but fluctuated close to the newly adopted value.

Hoffman, Swanders, Baron, and Rohren (1953) studied the difference in levels of anxiety as correlated with suggestibility. In their experiment, they determined that the reaction of the subjects to the group was influenced by these variables and each individual differed as to the amount of shift in his judgment norm as a result of his differential response to these factors.

Walters, Marshall, and Shooter (1960), doing a similar study with anxious and non-anxious subjects, concluded that anxiety increases the effect of social reinforcement.

One of the most recent studies reviewed was one by Fisher (1961), who used low need achievement and high need achievement subjects. The experiment was performed to determine if there was a difference in direction of movement for

the two groups. The hypothesis was that the orientation of the person's internal frame of reference (achievement) may influence the perception of motion of the stimulus. More research will have to be done with this concept before a definite conclusion can be drawn. The possibilities of suggestion in the autokinetic situation are apparent when reviewing a few of the findings in this area. Comalli, Werner, and Wagner (1957) used visual cues in the stimulus presented and found they have a bearing on the direction of apparent movement. Subjects saw the example in the figure below as the stimulus and reported the majority of movement in the direction connoted by the figure.

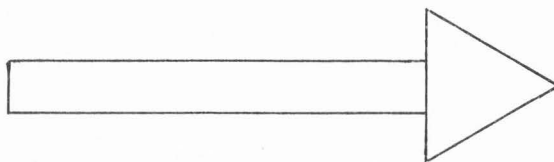


Figure 2. Visual cue to suggest direction of movement in the autokinetic situation

Carr (1910) reports that Charpentier observed that the more thinking about the light moving in any direction desired may modify the direction of the illusion. This phenomena was confirmed by Carr (1910) when he further found the illusion traced letters thought of by the observer. Going one step beyond is a study conducted by Mednick, Harwood, and Wertheim (1957) in which they not only suggested words but also had subjects report sentences supposedly written by the autokinetic light.

### Placebo effect

The placebo as understood in the light of science today is suggestion in pure form. The substances being used are inert (Rosenthal and Frank, 1956 and Roueche, 1960) and, therefore, can have no physical effect but must rely on psychological processes (Wendt and Cameron, 1961) only to make manifest any effect. When one pauses to consider this self-deception device and the claims that are made on its use, he may become skeptical that an inactive substance may have the power purported until he stops to consider the size of the psychosomatic branch of medicine which in its strictest sense is a matter of mind over body. A large proportion of ills viewed by physicians today are considered to be psychic in their origin. The placebo is reported to have the same power in its ability to influence body functions through the psychic.

A review of the known factors which foster this effect in a drug evaluation experiment or in the study of the placebo effect is important as greater reaction may be forthcoming under certain favorable conditions than others. As the effect does not come from the pill, we must turn to the person and his psychological environment. Wendt and Cameron (1961) have listed as influential factors such items as: the attitudes, moods, and expectations of the subjects; the feelings of the subject toward the experimenter; the subjects' environment both in and out of the laboratory; the perceived attitude of the experimenter toward the subjects. The bias of the experimenter (Borg, 1963) and the size, shape, and color of the

pill (Lasagna, 1955) must also be mentioned. Placebos have also been found to be influenced by stress and by the severity of pain; the more stress and pain (Qoueche, 1960) the more effective the placebo is. Another interesting fact reported by Beecher (1960) is that placebos are as much as ten times more effective in reducing pathological pain than pain that is experimentally induced. This selective influence in the reduction of pain may come from the less subjective evaluation of pathological pain (Benjamine, 1958).

Placebos have a tendency to lose their effectiveness with continued use. Wendt and Cameron (1961) report that approximately 10 percent of the college students they tested had a marked placebo reaction on the first or second trial. The results of these first few trials of a subject were rejected in their drug studies as they were higher than normal.

Much of the placebo research today is in the area of drug research and development where it has been found necessary to always use the placebo in a control group (Rosenthal and Frank, 1956). This control group is essential in evaluating the placebo effect arising from the active drug in the experimental setting as a result of suggestion. A few years ago, before the procedure of testing a drug with a placebo was being practiced, many drugs were discovered, and their effects reported; but the expectations of their evaluation were not forthcoming. This can readily be understood when the extent of the placebo effect of the drug test evaluations is considered.

Rosenthal and Frank (1956) report a study in which a reduction of 55 percent in the number of colds was achieved by a cold vaccine; but a reduction of 61 percent was obtained in the same experiment by a placebo vaccine. If only the cold vaccine was evaluated, the results may have appeared favorable enough to adopt the medicine. However, as this study shows, the vaccine being tested has less effect than the placebo.

The Hawthorne effect and the attitudes and biases of the experimenter must be controlled in order to subjectively appraise a drug's effectiveness. An experimental procedure called the "double blind" technique is now used to effectively prevent these influences from entering into and distorting the subjective appraisal of a new drug (Borg, 1963). The double blind procedure involves a placebo and the drug in question where one individual prepares the placebo and drug in identical form with a code as to their identity. He then turns the pills over to a second individual without disclosing which is which and lets the second person administer and record the effects. This method insures that the subjects cannot be influenced in any subtle way by the experimenter.

The use of placebos in research on suggestion has been mainly orientated in the direction of determining personality traits of the reactors and non-reactors and the conditions which influence the effectiveness of the placebo. Lasagna (1955) found reactors to be characterized by less education, more cooperation, good outlook, bodily concerns, church

goers, more anxious, more dependent, a tendency toward depression, and passiveness. The results of the studies viewed are not always consistent so these characteristics should be considered as tentative.

### Judgment change

Attitudes upon which a person's judgment is based must be recognized for their complexity, interrelationships, and personal nature. Sherif and Hovland (1961) reported the following data which aptly illustrates this point:

<u>Subject's position</u>	<u>Moves in direction of communication</u>	<u>No change</u>	<u>Moves opposite direction of communication</u>
Extreme Far	20.8%	60.9%	18.3%
Moderate Far	22.9%	45.8%	31.3%
Middle	30.0%	45.0%	25.0%
Moderate Near	37.1%	48.5%	14.4%

Asch (1952) points out that studies on change in attitude are usually accomplished by an experimental design which first measures the existing attitude, then proceeds to introduce information which differs from the subjects' attitude, and then measures the amount of change by determining the final attitude and comparing it with the previous measure. One weakness of this design is the possibility that the test which is supposed to measure the attitudes may distort the attitude it is to measure.

The group size and unity are shown by Asch (1955) to be of vital importance. In an experimental setting where he had confederates judging length of lines in error, he reports that:

<u>Number of confederates</u>	<u>Percent of subjects estimates that were in error</u>
1 . . . . .	3.6
2 . . . . .	13.6
3 . . . . .	31.8
4 . . . . .	35.9

Further increase in the number of confederates present brings about no appreciable increase in the number of errors, but the dissention of one confederate who supports the subject lowers the pressure on conformity sufficiently that he makes only about one quarter the number of errors that he would if he were facing the majority alone.

Raven (1959) mentioned cohesiveness, homogeneity, and group goals as determinants of group pressure. A large number of studies have been performed showing the gradient of effect of prestige versus non-prestige sources of information.

Graham (1962) acknowledges that the extent to which individuals will conform to a group is also dependent on the ambiguity of the stimulus. More conformity may be expected in a vague unstructured situation such as the autokinetic illusion than in a more definite setting with empirical stimulus as in the case of Asch's judgment of lines experiment.

In summary, the influence of suggestion can be treated to an extent as a continuous variable for the autokinetic effect and to a much lesser degree for the placebo reaction experiment, as there are a large number of non-reactors who report feeling no effects at all. Both situations are somewhat vague and must rely upon the individual's perception in order to be structured. Measuring the differential effects of



suggestion in these experiments amounts to determining the extent of the modification of an individual's habitual manner of reaction. In both the autokinetic situation (Canning and Baker, 1959) and the placebo pill experiment (Wendt and Cameron, 1961) subjects are more prone the first few sessions to manifest the effects of suggestion to a large degree and then to become more resistant to change their mode of reaction. In a sense they become more sophisticated by their experiences.

Abraham (1961) speaks of persuasibility as not being an isolated trait but that there may be many factors that contribute to consistent individual differences as to the influence of suggestion. Krech and Crutchfield (1948) oppose the concept that suggestibility is a basic personality trait but point to needs, beliefs, and emotions of the individual's immediate psychological environment as a guiding influence to behavior in the specific situation the person finds himself in.

Some personality correlates reviewed in the literature that appear to be similar in both the placebo reactors and subjects who let social influence shape their perception to a great extent in the autokinetic situation are anxiousness (Hoffman et. al., 1953; Lasagna, 1955), authoritarianism (Crutchfield, 1955; Schramm, 1962), good natured (Lasagna, 1955; Tuddenham, 1959), and dependent (Lasagna, 1955; Tuddenham, 1959; Walters, Marshall, and Shooter, 1960). The list of personality traits which appear to have no apparent

equal in both situations is more extensive. Fatigue (Adams, 1912), depression (Muller, 1961), body concerns (Lasagna, 1955), and clarity of goals (Benjamine, 1958) are some of the traits which can readily be shown to apply in one situation but not in the other.

## HYPOTHESIS

On the basis of the problem and the review of literature, the hypothesis to be tested in the following study are:

1. There will be a significant difference between those who manifest a high degree of suggestibility, the placebo reactor, as opposed to those who are influenced least, the non-reactor, in the autokinetic situation.

2. Individuals who are highly suggestible in one situation will manifest a high degree of suggestibility in the second situation.

3. Those individuals who manifest the least amount of suggestibility in the one situation will also be influenced least in the second situation.

## METHODS AND MATERIALS

### Selection of subjects

The subjects were chosen from three general psychology classes winter and spring quarters of 1964. They were chosen from their reactions to a placebo pill experiment conducted at Utah State University under the direction of Dr. Heber Sharp. These subjects attended two sessions in which they received in random order either one of the drugs, five milligrams of dextroamphetamine (dexadrine) or two milligrams of caffeine, or a placebo. The drugs and the placebo were administered in a double blind setting in which neither the subjects nor the assistant administering the pills knew which was placebo or which was active drug. Two other assistants posing as subjects were in the room with the subjects to add suggestion and to call attention to possible effects of the pills in order to facilitate the subjects' feelings and reactions.

Subjects designated as placebo reactors were those who passed two requirements, the first being the effect reported by the subject for the placebo were as great as or greater than his reported effects of the active drug. The second requirement was that the subject report three or more specific positive reactions in the questionnaire filled out at the end of the session and the following morning. The placebo

questionnaire filled out by the subjects is reproduced in the appendix. Two equal groups made up of placebo reactors and non-reactors were further sub-divided as to sex with the four resulting classifications: male reactor, male non-reactor, female reactor, and female non-reactor. The average age of the four groups was found to be similar. In order to secure the subjects' best efforts and cooperation, they were told when contacted that Dr. Herber Sharp was directing the research project. They were informed that the experiment was concerned with the judgment of distance in a darkened room and that they would be employed in three separate sessions for which they would receive one dollar per session for their assistance with the project.

#### Experimental design

The experimental procedure can be best described in terms of a modified casual comparative design in which groups of subjects were chosen from their reaction or lack of reaction to a placebo pill experiment. The independent variable under study was suggestibility, and the objective of this study was to determine if suggestibility recorded in one specific situation (the placebo pill experiment) would transfer and be manifest in a second situation (the autokinetic setting).

In the previous placebo pill experiment, the reactors were considered to be more suggestible than the non-reactors from their reports of body reactions to an inert substance in contrast to the non-reactors' rejection of such effects. Suggestibility in the autokinetic situation was determined by

the extent an individual would raise his average estimates to more closely conform to a group norm expressed by confederates who were posing as subjects.

The dependent variable was the group norm of those assisting the experimenter plus the subjects' reactions to the confederates as they attempted to influence the individual's estimates.

#### Autokinetic equipment

A large light-proof room (approximately 25 by 28 feet) located on the fourth floor of the building was used as the experimental room. The room and hallway were dark, and the light switches were taped off in order to prevent an accidental view of the equipment. A table and chair for the subjects were situated just inside the doorway. Toward the far corner of the room, 20 feet from the subjects' chair, the autokinetic light was positioned.

The light consisted of a fifteen watt, white bulb in a light proof box. Two pieces of paper were inserted between the light and the two millimeter opening in the box in order to diffuse the light and reduce the illumination. An electric motor was used as sound effects for suggestion to help facilitate the subject seeing the autokinetic illusion. The motor and light were controlled by the experimenter who used an automatic timer previously set to run for seven seconds each trial.

A dummy apparatus consisting of a large circle of cardboard and a stick running through the center and extending

past both edges of the cardboard was used to hide the box containing the light in case the subjects' eyes became sufficiently adjusted to the dark to enable them to see by the dim light as they opened the door to leave the room.

The record of each subject's estimates was kept on a previously folded piece of paper which was unrolled for use as the estimates were given.

### Procedure

The subjects were chosen by Dr. Heber Sharp to make four subgroups. The group to which an individual belonged was not disclosed to the experimenter until after the data had been collected in order that no experimental biases would creep in. The subjects scheduled their own appointments and were treated in a consistent manner.

As the subjects were contacted and enrolled in the experiment, they were told that they would be judging distance in a darkened room. As they came in individually for their first session, they were again informed that they were to judge the movement of a light in the darkened room, and then they were given the following instructions typed on a 5 by 8 index card:

#### DIRECTIONS

When the door is closed and you are seated, I will show you a point of light in the far corner of the room which will move. A few seconds later the light will disappear. Then tell me the distance in inches that it moved.

Try to make your estimates as accurate as possible.

After reading the instructions, the subject was directed into a darkened room and asked to close the door and sit down at the desk. The experimenter, seated in the back of the room, then showed the light, saying, "In the far corner of the room is the light. Let me turn it on for a second so that you can locate it. Can you see it?--This is the light that you will be judging the movement of." It was not necessary to give a signal for the subject to get ready as the sound of the motor ran concurrently with the light. The light was then turned on for the first trial. After the light went off the student was asked, "How far did the light move?" Following the student's reply the experimenter asked, "Each time the light goes out, give me your judgment as to how far the light moved."

The remaining 24 trials then proceeded. After the last estimate was given, the subject was asked, "Now considering all your estimates, what do you feel is the average distance that the light has moved?" Upon obtaining this estimate, the experimenter asked the student to open the door and step out into the next room so that he could be signed up for the next session.

Any questions as to how far the light did move were answered, "Telling you about the light would influence your next set of judgments." While signing the students up for the next session, mention was made of the necessity of



refraining from discussing their results with anyone else as this may influence the results.

Each subject required approximately seven minutes from the time he arrived until he finished with the first session and was ready to leave.

Four confederates were used for the second session; three of whom accompanied each subject into the experimental setting and attempted to influence the subject's estimates by giving judgments as average of 18 inches longer than the subject's "expressed" average of the first session. No restriction of range was imposed upon the confederates; their "judgments" at times ranged as much as 20 inches from their individual references or average value.

The fourth assistant was given the task of meeting the incoming subjects and putting them in rooms where they would be unable to see the confederates leave the experimental room. He also signed the subjects up for the final session and handed each subject cards to be filled out and returned in order that they could be paid.

As each subject arrived, he was escorted to a room and joined by the confederates. They then walked to the entrance of the experimental room as a group and were given the following instructions, "I need to have each of you state your judgments in the order I write your names on this paper so that I can keep this record straight." The subject's name was always listed second on the record sheet. The experimenter, subject, and confederates then entered the darkened

room and were seated; the subject and confederates took seats in random order.

The light was turned on for a second in order that everyone could locate it. Twenty five trials were obtained, and the individual averages were recorded for the session. As the group was leaving the room, the experimenter mentioned the record sheet in order to call the subject's attention to it and let him observe that the estimates of the whole group had been recorded. The second session took about 10 to 12 minutes for each subject.

The procedure for the third session was very similar to the first session. Upon completion of the session, the subjects were taken into another room where an assistant had them fill out a questionnaire. The questionnaire is reproduced in the appendix. They were then turned over to another graduate student for an unrelated experiment.

## RESULTS

### Experimental data

Tables 1, 2, 3, and 4 are a summary of the data collected in the three sessions. When reviewing these results, it must be remembered that the purpose of the experiment is not to show that a significant raise in the subjects estimates can be obtained in the autokinetic situation, for this has already been shown to be the case in past experiments. The purpose of this experiment is to place the reactor and non-reactor groups obtained from the placebo pill experiment in the autokinetic situation and determine if the groups differ significantly in their reactions to the applied suggestion.

Analysis of covariance was used to test the hypothesis that there would be a significant difference between the estimates of the placebo reactors and non-reactors. The results failed to achieve statistical significance. Since there was no statistical difference between the reactor and non-reactor groups, the second and third hypothesis were also not supported.

Altogether, six analysis of covariance problems were calculated from the data. The male and female groups; the reactor and non-reactor groups; and the male reactor, male non-reactor, female reactor, and female non-reactor groups were all analyzed for differences between groups in the second session and in the third session. None of the six problems

Table 1. Expressed averages of the male reactors

Subject	First session	Second session	Third session
1	24	36	36
2	7	20	18
3	2.5	6	5
4	3	14	9
5	2	0.5	0.25
6	18	20	18
7	2	0.5	1
8	8	12	9
9	5	15	11
10	1	16	19
11	7	8	15
12	1	15	7
13	16	24	17
14	2	5	5.5
15	2	18	3
Sums	100.5	220	173.75
Means	6.70	14.76	11.58

Table 2. Expressed averages of the male non-reactors

Subject	First session	Second session	Third session
16	2	1	1
17	7	1	0
18	30	38	27
19	12	24	8
20	5	15	8
21	2	16	16
22	2	18	9
23	12	12	6
24	3.5	12	3
25	2.5	0	0
26	6	15	15
27	3	6	3
28	5	15	15
29	8	14	9
30	13	26	28
Sums	113	213	148
Means	7.53	14.20	9.87

Table 3. Expressed averages of the female reactors

Subject	First session	Second session	Third session
31	8	24	18
32	6	20	22
33	6	20	21
34	4	12	12
35	0.5	15	4
36	1	12	6
37	3	20	11
38	5	0	0
39	5	14	12
40	3	3	2
41	9	24	9
42	3	20	10
43	7	25	20
44	6	23	17
Sums	66.5	232	164
Means	4.75	16.57	11.71

Table 4. Expressed averages of the female non-reactors

Subject	First session	Second session	Third session
45	8	24	24
46	2	3	1
47	0.5	4	5
48	4	2	0.5
49	6	12	10
50	2	14	9
51	6	18	24
52	2	22	22
53	8	18	18
54	0	6	0.5
55	8	24	18
56	1	2	5
57	0	0	2
58	9	11	8
59	3	25	25
Sums	59.5	185	172
Means	3.97	12.33	11.47

attained the 5 percent level of significance. The group means and the F-test ratios are listed in Table 5.

### Questionnaire

The questionnaire was used for the purpose of studying some of the dynamics of how the subjects approached the auto-kinetic situation, their views concerning the group (confederate) with which they judged the apparent movement, and their understanding of the purpose of the experiment. The questionnaire is reproduced in the appendix.

The totals reported for some of the questions do not add to 100 percent as some of the students failed to answer some questions and others failed to understand what was being asked.

The first question concerning the procedures used in judging the movement was answered a number of different ways. Approximately one-half of the subjects tried to visualize the starting point and the position where it stopped and then estimate the distance between these points. Another 15 percent reported that they counted the inches the light moved in a cumulative manner as long as the light was on. About 10 percent used the sound of the motor and the time the motor ran as a guide to the movement, and another 10 percent of the subjects tried to follow the light with their finger and estimate from the finger movement.

Over half of the replies as to the purpose of the experiment stated that it was a study of perception in the discrimination of distance. Approximately one quarter of the



Table 5. Analysis of covariance F-test ratios

Group	First session		Second session			Third session		
	N	Mean	Unadjusted mean	Adjusted mean	F-ratio	Unadjusted mean	Adjusted mean	F-ratio
Reactor	29	5.76	15.59	15.58	1.66	11.65	11.64	0.28
Non-reactor	30	5.75	13.27	13.27		10.67	10.67	
Male	30	7.12	14.43	12.91	2.76	10.73	9.38	3.84
Female	29	4.34	14.38	15.96		11.59	12.97	
Male reactor	15	6.70	14.67	13.61	1.61	11.58	10.64	1.62
Male non-reactor	15	7.53	14.20	12.22		9.87	8.10	
Female reactor	14	4.75	16.57	17.69		11.71	12.71	
Female non-reactor	15	3.97	12.33	14.32		11.47	13.25	

None of the F-test ratios are significant at the 5 percent level of confidence

subjects felt the purpose was to see how well movement could be judged without a background as a frame of reference. The remaining 10 percent who replied considered the purpose of the experiment to be a study of how people differ in their perception.

The reported motion of the light was too ambiguous to attempt to correlate the apparent motion of the light with any preferred orientation of the individual such as being right handed.

The fifth question was used to prepare the students for the remaining questions. There were 33 subjects who reported that they had no influence on the group and 22 who felt that they had influenced the group estimates to some extent.

About one-fourth reported that their estimates had definitely been influenced by the group and another 25 percent reported the group as having had only "some" influence. The remaining 44 percent who answered said that the group had no influence on their judgments.

The remaining three questions were concerned with determining the subjects' feelings about the face validity of this study. About one-third of the subjects approached the experiment watching for some type of trick, and 10 percent questioned whether or not the light was moving. One of the students proved to himself that the light was not moving.

## DISCUSSION

### Experimental data

The topic under investigation in this study is the suggestibility of the individual within two different environments. A large number of subjects were placed in the placebo pill experiment to determine if they would accept the suggestion of that situation. Two groups of subjects were selected from among the participants of the experiment; some for their positive reaction to the placebo pill which was considered to be the acceptance of suggestion and others for their neutral reaction to the placebo. These groups were then placed within the autokinetic experiment, and suggestion was given to them in order to determine if there was a correlation between those individuals who accepted and those who rejected suggestion in the two experiments.

It is again necessary to mention that the large majority of the subjects in the autokinetic situation will accept to a degree the groups suggestion. Therefore, it is the amount of suggestion being accepted that is being investigated in the autokinetic situation which contrasts sharply with the placebo experiment where only a few of the subjects were chosen from their acceptance of suggestion.

Originally the plans were to calculate the analysis of covariance for the second session of the autokinetic experiment and use the third session for the purpose of determining

whether the averages expressed by the subjects in the second session were a result of compliance to group pressure or complete acceptance of the group norm. In light of the studies by Bovard (1948) and Enders (1960) on the endurance of socially induced norms, an estimate for the third autokinetic session which was close to the one expressed in the second session would imply acceptance of the group norm. On the other hand, an expressed average that deviates markedly from the average of the second session would connote compliance to group pressure during the experiment and rejection to the group influence afterward. The average of the third session in this experiment was found to be approximately midway between the averages of the first and second sessions which means there was somewhat of a tendency to reject the socially induced norm. It was, therefore, decided to use analysis of covariance for both the second and third sessions.

The differences obtained between the reactor and non-reactor groups were not sufficient in either case to produce statistical significance at the 5 percent of confidence.

Therefore, in this experiment, the individual's suggestibility manifest in the placebo pill experiment does not correlate with his suggestibility measured in the autokinetic situation.

The results of this study support the viewpoint of Krech and Crutchfield (1948) where they oppose the concept that suggestibility is a basic personality trait. Several possibilities should be considered and explored as to why suggestibility

may not be a personality trait. The sophistication of the subjects should be mentioned, for in both the placebo pill experiment and the autokinetic effect, the subjects may change their characteristic manner of behavior as they gain more experience. This was apparent in the experiment reported by Wendt and Cameron (1961) where, in the placebo pill experiment, there was much more reaction obtained the first couple of sessions. In the autokinetic sessions, it was observed by Sherif (1937) that subjects will usually change their norm of estimates only once in order to conform to a group, and then they become resistant to any further group pressure toward changing their estimates.

The environment within the two experimental settings was definitely not similar. Even with having the confederates give a wide range of estimates in order to make the suggestion somewhat vague as it was in the placebo pill experiment, the differences between the environment of the two experiments was obviously different. This difference in environments would bring different factors of the person's perception and personality into play and produce different reactions in the two experimental settings. The personality factors listed by experimenters in the literature which were found to describe both the placebo reactors and individuals who accepted the greatest amount of suggestion in the autokinetic situation are anxiousness (Hoffman et. al., 1953; Lasagna, 1955), authoritarianism (Cruthfield, 1955; Schramm, 1962), good-natured (Lasagna, 1955; Tuddenham, 1959), and dependent (Lasagna, 1955;

Tuddenham, 1959; Walters, Marshal, and Shooter, 1960). It should be remembered that there were more personality factors describing the suggestible subjects of one experimental setting and having no relation with the other. The personality factors that were found to be common in both experimental situations were either not sufficient to produce a significant correlation or the differences in the environments of the two experimental settings were sufficient to bring out different responses and changes in the individuals' manner of behavior. This would go along with Abraham's (1961) view of persuasability not being an isolated trait. He mentions that there are many factors that contribute to individual differences of susceptibility to suggestion.

Analysis of covariance was also used to investigate the sex differences in suggestibility in this study. Some differences between male and female groups were observed, but the large individual variability within the groups prevented the differences from becoming significant. The males increased the mean of their estimates for the second session by over 100 percent and the females increased their mean by over 200 percent, but the analysis of covariance failed to achieve significance at the 5 percent level of confidence. In order for the above example to reach significance, either the subjects' estimates would have to be more homogenous, or more subjects would be needed.

Several factors were also noted that may have helped prevent the sex difference from reaching significance.

Analysis of covariance was used to determine whether or not the data was significant. The initial group differences were adjusted to prevent these initial differences from effecting the calculations, and the sex differences which may have been present would be destroyed by the adjustment. The group setting where one male and two female confederates were used should be mentioned because of the possibilities of differential reactions toward the confederates.

### Questionnaire

The questionnaire provided an insight into the experimental setting as it was faced by the subjects. Their view of how they established a range of estimates and a norm within the range and the dynamics of changing this norm was better understood in light of the information obtained. Each student had a somewhat different perception of the experimental setting.

The first question brought to light the different ways the subjects had of judging the apparent movement of the light. Some used only the starting and ending points and neglected any random motion. If the light appeared to stop in the same position it started from, the total distance was zero. On the other hand, some subjects recorded the total cumulative distance the light traveled. A few subjects used cues such as the sound of the motor or the time the motor ran. (The motor was previously set to run for exactly seven seconds).

Answers to the question concerning the subjects' knowledge of the purpose of the experiment soothed the experimenters' concern as to whether the subjects were really naive about the confederates. None of the subjects seemed to understand the purpose of the experiment, and none mentioned the presence of the confederates. Replies stating the study of perception, judgment of distance were no background was provided, and a study of how people differ in their perception were mentioned as the purpose of the experiment.

Asch (1955) and Sherif (1937) both noted that in their experiments, the subjects were not fully aware of the extent to which they conformed to group pressure. Half of the subjects in this experiment who answered the question, "What do you feel was your influence on the group?" by replying that they had definitely influenced the group, raised their own estimates by 100 percent or more. Approximately half of the subjects who answered the question, "What was the group influence on your judgments?" by reporting very little or none, raised their estimates by a factor of two or more. An increase of a student's expressed average from approximately 2 to 20 inches and the student reporting little or no group influence was not uncommon. It is apparent from these two questions that about one-half of the subjects did not fully realize the extent of the group influence on their estimates nor their own relationship with the group.

Slightly over one-third of the subjects mentioned that they approached psychological experiments expecting some type



of trick. With this orientation of suspicion toward the experimental setting, 10 percent of the subjects questioned whether or not the light really moved. One curious student proved the light did not move during the third session by placing his fingers in a cross-hatched way and viewing the light through the resulting hole.

Even with the expectation of a possible trick, none of the subjects mentioned the possibility of judging the autokinetic light in the presence of confederates.

## SUMMARY AND CONCLUSIONS

### Summary

The purpose of this study was to investigate the extent of variance of individuals' suggestibility between two environmental situations and thus to determine whether or not there is a well established trait of suggestibility.

The subjects were obtained from three general psychology classes held winter and spring quarters at the Utah State University. The reactor and non-reactor groups were drawn from subjects who either reacted to or did not react to the placebo pill.

These subjects were placed in the autokinetic situation to make estimates of the apparent movement of the light for three sessions. The second session was used for applying suggestion as to the amount of movement seen by way of three confederates posing as subjects and giving estimates 18 inches longer than the subject's expressed averages for the first session.

Analysis of covariance was used to determine differences between the reactor and non-reactor groups. The results failed to reach statistical significance at the 5 percent level of confidence in the F-test.

The questionnaire was a study of the subject's approach to and his perception of the experimental setting. Approximately one-third of the subjects approached this experiment

with the attitude of watching for some type of trick or psychological illusion. With this suspicion being present, 10 percent questioned whether the light really did move. Only one student proved that the light was not moving, and he was the only one of the above group who gave the average movement of the last trial as being zero.

The student's reports concerning the influence of the group on estimates were not accurate, for over half underestimated the amount of effect the group had.

### Conclusions

On the basis of this experiment, suggestibility of the subjects used was subject to change as the environment changed. The suggestibility manifest in the placebo pill experiment did not appear to a significant degree in the autokinetic situation.

#### LITERATURE CITED

- Abraham, H. H. L. 1961. The suggestible personality: A psychological investigation of susceptibility to persuasion. *Dissertation Abstracts* 21:2810-2811. (Original not seen).
- Adams, H. F. 1912. History of the autokinetic effect. *Psychological Monographs* 14:32-44.
- Asch, S. E. 1955. Opinions and social pressure. *Scientific American* 193:31-35.
- Asch, S. E. 1952. *Social psychology*. Prentice-Hall, New York. p. 646.
- Beecher, H. 1960. Increase stress and effectiveness of placebos and 'active' drugs. *Science* 132:91-92.
- Benjamin, F. B. 1958. Effects of aspirin on suprathreshold pain in man. *Science* 128:303-304.
- Borg, W. R. 1963. *Educational research: An introduction*. David McKay Company, New York. p. 418.
- Bovard, E. Jr. 1948. Social norms and the individual. *Journal of Abnormal and Social Psychology* 43:62-67.
- Bridges, C. C. and M. E. Bitterman. 1954. The measurement of autokinetic movement. *American Journal of Psychology* 67:525-529.
- Canning, R. R. and J. M. Baker. 1959. Effect of the group on authoritarian and non-authoritarian persons. *American Journal of Sociology* 64:579-581.
- Carr, Harvey. 1910. The autokinetic sensation. *Psychological Review* 17:42-75.
- Comalli, P. E. Jr., H. Werner, and S. Wagner. 1957. Studies in psychognomic perception: III. Effects of directional dynamics and meaning--induced sets on autokinetic motions. *Journal of Psychology* 43:289-299.
- Crutchfield, R. S. 1955. Conformity and character. *American Psychologist* 10:191-198.

- Edwards, W. 1954. Autokinetic movement of very large stimuli. *Journal of Experimental Psychology* 48:493-495.
- Edwards, W. and R. Crutchfield. 1951. Differential reduction of autokinetic movement by a fixated figure. *Journal of Experimental Psychology* 42:25-31.
- Enders, N. 1960. Social conformity in perception of the autokinetic effect. *Journal of Abnormal and Social Psychology* 61:489-490.
- Fisher, S. 1961. Achievement themes and directionality of autokinetic movement. *Journal of Abnormal and Social Psychology* 63:64-68.
- Graham, D. 1962. Experimental studies of social influence in simple judgment situations. *Journal of Social Psychology* 56:245-269.
- Graybiel, Ashton, and Niven. 1956. Persistence of the autokinetic illusion in persons with bilateral injury or destruction of the labyrinth of the inner ear. United States Naval School of Aviation and Medical Research Report, Project NM 001, 110 100, Report #41 ii p. 4. (Original not seen; abstracted in *Psychological Abstracts* 31:61).
- Gregory, R. L. 1959. A blue filter technique for detecting eye movement during the autokinetic effect. *Quarterly Journal of Experimental Psychology*, 113-114.
- Guilford, J. and K. M. Dallenbach. 1928. A study of the autokinetic sensation. *American Journal of Psychology* 40: 83-91.
- Hoffman, E. L., D. V. Swander, D. H. Baron, and J. H. Rohrer. 1953. Generalization and exposure time as related to autokinetic movement. *Journal of Experimental Psychology* 46:171-177.
- Hood, W. R. and M. Sherif. 1962. Verbal report and judgment of an unstructured stimulus. *Journal of Psychology* 54(1):121-130.
- Krech, D. and R. S. Crutchfield. 1948. *Theories and problems of social psychology*. McGraw-Hill Book Co., New York. p. 639.
- Lasagna, L. 1955. Placebos. *Scientific American* 193(2):68-71.
- Lasagna, L., F. Mosteller, J. M. Von Felsinger, and H. K. Beecher. 1954. A study of the placebo response. *American Journal of Medicine* 16:770-779.

- Luchins, A. 1954. The autokinetic effect and gradations of illumination of the visual field. *Journal of General Psychology* 50:29-37.
- Luchins, A. 1954. The autokinetic effect in central and peripheral vision. *Journal of General Psychology* 50:39-44.
- Luchins, A. 1954. The relation of size and light to autokinetic effect. *Journal of Psychology* 38:439-452.
- Mednick, S., A. Harwood, and J. Wertheim. 1957. Perception of disturbing and neutral words through the autokinetic word technique. *Journal of Abnormal and Social Psychology* 55:267-269.
- Muller, B. 1961. Personality correlates of the placebo reaction. *Dissertation Abstracts* 21(12):3855. (Original not seen).
- Murray, H. et. al. 1943. *Thematic apperception test manual*. Harvard University Press. Cambridge, Mass. p. 20.
- Myers R. 1959. A new autokinetic illusion. *American Journal of Psychology* 72:140-141.
- Raven, B. 1959. Social influence of opinions and the communication of related content. *Journal of Abnormal and Social Psychology* 58:119-128.
- Rosenthal, D. and J. D. Frank. 1956. Psychotherapy and the placebo effect. *Psychological Bulletin* 53:294-302.
- Roueche, B. 1960. *Annals of medicine-placebo*. *New Yorker* 36:85-103.
- Schramm, W. 1962. Mass communication. In P. Farnsworth, O. McNemar, and Q. McNemar, ed. *Annual Review of Psychology*. George Banta Co., Inc., Calif. p. 602.
- Shafer, R. E. 1961. Mass communication: Strategies in communication research. *Review of Educational Research* 31:218-221.
- Sherif, M. 1935. A study of some social factors in perception. *Archives of Psychology* 27:187. p. 1-60.
- Sherif, M. 1936. *The psychology of social norms*. Harper and Grothers Publishers, New York and London. p. 209.
- Sherif, M. 1937. An experimental approach to the study of attitudes. *Sociometry (A Journal of Interpersonal Relations)* 1:90-98.

- Sherif, M. and C. Hovland. 1961. Social judgment. Yale University Press, New Haven and London. p. 218.
- Skolnick, A. 1940. The role of eye movement in the autokinetic phenomenon. *Journal of Experimental Psychology* 26:373-393.
- Tuddenham, R. D. 1959. Correlates of yielding to a distorted norm. *Journal of Psychology* 27:272-284.
- Walters, R. H., W. E. Marshall and J. R. Shooter. 1960. Anxiety, isolation, and susceptibility to social influence. *Journal of Personality* 28:518-529.
- Wendt, G. R. and J. Cameron. 1961. Chemical studies of behavior: V. Procedures in drug experimentation with college students. *Journal of Psychology* 51:173-211.
- Wishner, J. and T. E. Shipley. 1954. Direction of autokinetic movement as a test of the sensory-tonic-field. *Journal of Personality* 23:99-106.

APPENDIX



DRUG EXPERIMENT  
Questionnaire

1. Of the following which one seems to describe your reaction to the drug--put an X in the box that fits you. Answer only one for each statement.

Very depressed     Depressed     No change     Pepped up slightly

Pepped up extensively

2. Heart action--

Slower than normal     About normal     Faster than normal

3. Breathing (inspiration-expiration ratio)

Slower     About normal     Faster

4. Muscle tonus--

Decreased (tired)     About normal     More wakeful

5. Sleep (relate it to normal reaction for this time of day)

Drowsy     About normal     More wakeful

6. Mental activity--

More difficult to pay attention     About normal     More alert and seaier to attend

7. Concentration--

Difficulty in concentrating     About normal     Concentration facilitated

8. Viseral activity--(digestion, etc.)

Inhibited     About normal     Increased

9. Temperature reaction--

Colder     About normal     Flushed

10. General reaction--(overall feeling)

Slowed down

Normal

Speeded up

Write a brief statement about your reaction to the drug.

FILL IN THE FOLLOWING:

Name \_\_\_\_\_

Age \_\_\_\_\_

Year in school \_\_\_\_\_

1. What procedures did you use to help make your judgements accurate?
2. As you understand this experiment, briefly describe its purpose.
3. Describe the most frequent direction or motion of the light.
4. Are you left handed \_\_\_\_\_ or right handed \_\_\_\_\_?
5. During the group session, what do you feel was your influence on the group?
6. What was the group influence on your judgments?
7. In many psychological experiments, some of the subjects expect some type of trick. Did you approach this experiment with this expectation?      Yes      No
8. If yes, do you feel this expectation influenced your estimates?
9. In what way?