The Effect of Dependency and Plausibility on Attitude Change

Virginia Heenan
Loyola University Chicago

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THE EFFECT OF DEPENDENCY AND

PLAUSIBILITY ON ATTITUDE CHANGE

by

Virginia Heenan

A Dissertation Submitted to the Faculty of the Graduate School
of Loyola University in Partial Fulfillment of the
Requirements for the Degree of Doctor of
Philosophy

January
1971
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ABSTRACT

The purpose of this research was to study the relationship between dependency and attitude change and to test the theory formulated by William McGuire (1968). McGuire postulates that attitude change results from a series of behavioral steps which include a reception and yielding factor. When a given personality variable is differentially related to reception and yielding, the result is often complex and non-monotonic, with maximum opinion change occurring at intermediate levels of the personality variable. In this study, it was hypothesized that dependency is differentially related and that maximum attitude change would occur in high dependent Ss for a highly plausible message and in low dependent Ss for a low plausible message. It was also hypothesized that low dependent Ss would score higher on the comprehension measure than high dependent Ss.

A 2 x 2 factorial design was used, varying dependency by encouraging or not encouraging requests for help on a difficult task, and the yielding factor by presenting high or low plausible arguments against the use of penicillin. Two samples of subjects were used. One was a group of eighty alcoholic men in a residential treatment center; the other was forty undergraduate college students. Subjects were given an initial opinion survey in some health issues and a personality measure (Cattell's 16 P-F for the alcoholics and the Edwards PPS for the college students). Subjects then had a 15-minute puzzle-solving session during which they either asked for help or did not. Subjects were then given a plausible or implausible argument against the use of penicillin, followed by a second opinion survey and a comprehension test on the contents of the message.
Neither hypothesis was confirmed for either sample. There was, however, a significant interaction on the comprehension measure for the alcoholics, which suggests that differences in attitude shifts might be mediated at the reception level. There was also a significant negative correlation between the Deference Scale of the EPPS and the number of requests for help on the puzzle. The results indicate the need for refined measures of dependent behavior in adults and tasks which will more easily elicit such behavior. Discussion includes suggestions for such design improvements.

REFERENCE

Acknowledgements

To the members of the faculty of the Psychology Department who served on this dissertation committee, Dr. Frank Kobler, Dr. Homer Johnson and Dr. Leroy Wauck, and who generously gave their time, support and suggestions, the author is most grateful.

The author wishes to thank Miss Phyllis K. Snyder, Dr. Vincent Pisani and the Staff at Chicago's Alcoholic Treatment Center for their support and full cooperation during all phases of this study. She is also grateful to the patients there who served as subjects and otherwise helped with schedules during the data-collecting.
VITA

Virginia Heenan was born in St. Cloud, Minnesota, on April 6, 1934. She was educated in private elementary and secondary schools in California. She received her B. A. in 1963 from the University of San Francisco with majors in English and Psychology. She taught in private elementary schools, Grades 3 through 7, for four years in several cities in California. She also taught English and Social Problems to students at Notre Dame High School in San Francisco from 1959-1963. She also served as a counselor to students at this high school.

In September, 1963, she began graduate studies at Catholic University of America where she majored in clinical psychology. She worked as a psychology clerk at St. Elizabeth's Hospital in Washington, D. C. during the year 1964-1965. She received her M. A. from Catholic University in June, 1965. In September of that year she transferred to Loyola University in Chicago where she entered the doctoral program in clinical psychology. She did her internship at the Neuropsychiatric Institute at the University of Illinois Medical Center in Chicago. From November, 1968, to June, 1969, she worked as a research psychologist at Chicago's Alcoholic Treatment Center where the data for this dissertation were collected.
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Chapter 1
Introduction

The study of the personality correlates of susceptibility to social influence lies at a point where a variety of psychological investigations intersect: personality theory, attitude structure and change, individual differences, psychotherapy. Although the personality theorist, the clinician and the social psychologist might approach this area of study from different contexts and with a variety of instruments and goals, they are all, nonetheless, trying to determine the relationship between personality variables and significant alterations in behavior across classes of social settings. Whether the behavior shifts involve opinion change, a modification of emotional expression or changes in beliefs and values, presumably the same laws are operating in all such behavior shifts. Learning the relationships, then, between a given personality characteristic and a behavior change, such as a shift in attitudes, can contribute much to our understanding of behavior change in other settings, too. Or, at the least, it can lead to research in other settings which will uncover relationships that are specific only to those settings.

Interest in man's susceptibility to social influence prevailed from the early days of modern psychology. Persuasibility in its simpler form of suggestibility was one of the first personality characteristics to receive scientific attention. Binet was originally interested in hypnosis and suggestibility even before he was asked to begin studying individual differences in mental development (Boring, 1950). McGuire (1968) notes that when Whipple published in 1910 the first *Manual of Mental and Physical Tests*, suggestibility was one of the few personality variables that warranted tests constructed to measure it. The early interest in persuasibility was most likely nourished by the controversy between the schools of Saltpetriere and Nancy regarding the nature of hysteria and, by implication, of all the neuroses.
The role of hypnosis and therapy in the treatment of both hysteria and other emotional disorders also contributed to the early emphasis on personality and susceptibility to social influence.

Opinion change researchers have also devoted much attention to the personality correlates of persuasibility. McGuire (1966) indicates that the area of attitude change is currently the most active focus of social psychological research and is frequently studied in other areas of psychology also, such as in the personality and clinical areas. He notes that in the usual five-topic sequence in communications research -- source, message, channel, receiver, destination -- the personality correlates form one of these 5 key classes of independent variables in persuasive communications research.

The long and extensive study of personality-influenceability relationships within several areas of psychological research has produced a large amount of empirical data. But the data have not provided a definitive theory to account for the major relationships, partially because some of the studies were designed to test ad hoc hypotheses and had little theoretical relevance. In addition, there are a series of contradictory results which may be due to unreported situational parameters and which make theorizing difficult. McGuire’s (1968) is one effort to induce some principles that could lead to a general theoretical framework which would enable some synthesis of already determined personality-influenceability relationships.

McGuire postulates six principles to summarize the personality-influenceability interrelations:

1. **The mediational principle:** Attitude change is not a direct response, but the outcome of a series of behavioral steps which include a reception factor (attention and comprehension of the persuasive message) and a yielding factor. The former has been much ignored and the latter over-emphasized.

2. **The combinatory principle:** Each of the two steps mentioned above is positively related to influenceability. But the relationship of a given personality variable to one of these steps might be very different from what it is to the other.
Thus, that variable's net relationship to the resultant opinion change can be quite complex and non-monotonic, with maximum opinion change occurring at intermediate levels of the personality variable. This relationship is seen, for example, with intelligence. Because more intelligent people can call up counter arguments and recognize flaws in persuasive arguments, one would expect a negative relationship between intelligence and persuasibility. But while intelligence makes a person more resistant to persuasion by increasing the yielding factor, it is positively related to the reception factor in that more intelligent persons tend to be more interested in outside messages, have a longer attention span and are better able to comprehend the message (Hovland et al., 1949). The actual findings indicate a negative relation between intelligence and influenceability in suggestion (Stukat, 1958) and conformity (Crutchfield, 1955) situations, both of which minimize the problem of reception by using very simple, repetitively presented messages. Where reception is a more important factor, a positive relationship is found between intelligence and persuasion (Hovland, Lumsdaine & Sheffield, 1949). The most typical finding in a series of broader studies has been the absence of any significant relationship in either direction (Murphy, Murphy & Newcomb, 1937, p. 930; Hovland, Janis & Kelley, 1953, pp. 181-184; Janis & Hovland, 1959, Chs. 3, 4, 6, 9). The same complexities arise in exploring the relationship between anxiety and susceptibility to social influence except that the directions of the complexities are reversed (Janis, 1954; Janis & Field, 1959; Janis, 1955).

3. The situational-weighting principle: The contribution of reception and yielding to net opinion change will vary with the situation. Consequently the relationship between a personality variable and influenceability will depend on the situation and the relative weights of each mediator in that situation.

4. The confounded variable principle: Adequate prediction of how a personality variable is related to influenceability requires assessment of its relation to other personality variables with which it is correlated.
5. **The interaction principle:** The extent of influenceability in any social situation is not a direct function of the personality factors, but includes other classes of relevant variables: source, message, etc. Thus, it is likely that in much research there will be interaction effects rather than condition-free main effects of single personality variables. As aspects of the persuasive situation change, the effect of a personality variable on influenceability may change in size and even in direction.

6. **The compensation principle:** There is an optimum level of influenceability for favorable adaptation to the environment, and this optimum level lies between two extremes. One must be open to the environment but not too open. A characteristic which makes a person receptive to outside influence will thus be counterbalanced by opposing forces which limit his influenceability and thus allow a dynamic equilibrium, that is, a steady state produced by the mutual cancellation of two opposing factors. The end result is that the overall personality-influenceability relationship is non-monotonic. Appley and Moeller (1963), for example, found non-monotonic relationships between conformity and 33 personality variables among a sample of college women; on only 5 variables was a monotonic relationship found. That is, high and low scores on a variety of personality characteristics fell on the same side of the middle personality group in an Asch-type conformity situation. Similar results have been found, not only across personality characteristics, but in a variety of subjects and situations. McGuire (1968) notes that in taking the variable of self-esteem one finds non-monotonic relation between this personality variable and persuasibility in fifth-grade boys and girls (Gelfand, 1962), in delinquent boys in a state training school (Harvey & Consalvi, 1960), in middle-aged women belonging to a Catholic ladies' sodality (Cox and Bauer, 1964), and in elderly male residents in a VA home (Silverman, 1954).

In summary, McGuire postulates that attitude change is the result of a series of processes that includes a) attention and comprehension of the persuasive message and b) yielding to what is comprehended in the message. To predict how a personality variable is related to attitude change, one must determine how that variable is related to comprehension and to yielding. Then, one must also consider
how much variation in comprehending and yielding the given situation allows. McGuire's theory implies that there are few, if any, simple personality-influence-ability relations that are valid over a wide range of conditions. A valid theory, therefore, must hypothesize relations that are complex and situation-interacting or else they must be of very narrow and specific significance.

Among the major personality variables studied more thoroughly with regard to their effect on influenceability are, as already noted, intelligence, anxiety and self-esteem. Generally, these studies have supported McGuire's theory (actually, his principles were based on much of the research completed before 1966) and confirm McGuire's assertion (1968) that the relationships are very complex and subject to apparently slight situational variations.

Dependency and Attitude Change

One personality variable that has received little systematic study among adults is dependency. There are two principal reasons for this: one is that dependency is more easily studied among children who are more appropriately placed in situations where they may ask for help or approval. The other is that there is no easy agreement among researchers about what behaviors may correctly be described as dependent. Several studies (Nelson, 1959; Diener, 1963, 1967) have demonstrated that there is generally high agreement among therapists and personality theorists about conceptualizations of the construct. In these studies, when predictions were made on the basis of these conceptualizations, the behavior of the subjects did not confirm the predictions. Thus, there appears a significant discrepancy between speculation and the experimental demonstrations based on those speculations.

One source of confusion is the judgmental process by which a response is classified as dependent. Such a categorization frequently involves reference to a cultural value system so that behavior that is regarded as dependent in one culture or sub-culture is not so classified in another (Sears, 1963). Likewise, what is accepted as dependent behavior in women is different from that so identified in men
The value judgments involved in categorizing behavior as dependent frequently concern the appropriateness of a response for an agent having a known or assumed level of capacity for coping with a given situation. Walters and Parke (1964) note that a variety of distinctions must be made in identifying behavior as dependent: the difference, for example, between a behavior that reflects the lack of some capacity and the occurrence of equivalent behavior in situations where the individual's goals can be economically and readily attained without the mediation of others. Judgments concerning dependency involve, then, not only the conditions under which the behavior in question is displayed, but also the appropriateness of the person to whom it is directed.

Walters and Parke argue that positive, though not perfect, correlations have been found among classes of behavior customarily designated as dependent in young children (Beller, 1955; Sears, 1963). These response categories, although diverse in some respects, have the common component of orienting and attending to others, a component which Walters and Parke propose may account for the unitary nature of dependency behavior.

Operationally, dependency as orienting and attending responses refers to a class of observable and measurable behavior that involves asking for help or reassurance, seeking physical contact and attracting the attention of others. The relative strength and weakness of these dependent responses, which presumably are modifiable in accord with well-established learning principles, may thus account for the extent to which individuals modify their behavior after exposure to social models or social reinforcers. Walters and Parke (1964, p. 243) term this dimension of behavior "social dependency" or "susceptibility to social influence." The term is meant to remove dependency from evaluative judgments and intentionality and thus to identify dependency with behavioral responses which are observable and subject to various stimulus conditions. It also allows investigators to study dependency more consistently across developmental levels by focusing on orienting and attending responses and their effect on the social influence process. This approach will enable researchers to relate the findings of social psychologists to child-training procedures and thereby bridge the gap between
developmental theory and theories which have evolved almost exclusively within the context of social psychological research.

Two remarkable facts emerge from this review. One is the close relationship -- conceptually and theoretically at least -- between dependency and susceptibility to social influence: orienting and attending to others makes individuals more responsive to social models and social reinforcers, and thus to social influence. The other fact is the almost total lack of study of the relationship between dependency and various forms of social influence. Walters and Parke (1964) state that, while it is assumed that dependency and social influence are in some way related, the basis and extent of that relationship has never been systematically explored.

The purpose of this study is twofold: to explore the relationship between dependency and one kind of social influence, persuasibility, and in exploring that relationship, to test McGuire's principles for their predictive and explanatory power. Dependency is defined as a class of orienting and attending responses, thus placing it in the context of a body of developmental as well as of social psychological research.

The general plan of the study is to vary dependency in an acute manipulation by means of an initial puzzle-solving task in which one group of subjects will be encouraged to ask for help (high-dependent) and another group will not be encouraged to request help (low-dependent). Both groups will then be subjected to either a plausible or implausible argument against the use of penicillin. The difference between their pre- and post-experimental attitude scores will indicate the extent of their persuasibility in this set of conditions.

There are two subject samples. One is a group of male inpatients hospitalized for alcoholism in a public treatment center. This sample was selected for several reasons: their availability and the desire of the hospital to support research, the relevance of the problem being studied to the attitude change necessary to make rehabilitation a reasonable alternative for these men. In addition, the use of alcoholic subjects necessarily introduces more variability into the sample than a more homogeneous group, but it is also a more stringent test of the theory. The second sample is a group of college students. This group
was selected in order to control some of the variables which could not be controlled in the alcoholics. A sample of college students is homogeneous with respect to age, number of years of education and reading ability, while alcoholics differ on these dimensions as well as on degree of organic impairment and diversity of psychiatric diagnosis.

The use of alcoholics as subjects in a study of dependency and attitude change presents some conceptual complications. Alcoholics have been described by some investigators as dependent personalities (Hayner, 1961; Button, 1956). Most of these formulations have been descriptive and have been based on generalizations from clinical observations rather than on formal experimental procedures. As Nelson's (1959) and Diener's (1963, 1967) studies show, when these descriptions are subjected to empirical verification, they have not been confirmed. Thus, while the use of such a descriptive language might have its usefulness, it is clearly a limited one. Furthermore, there is no consistent experimental evidence that alcoholics score significantly higher than non-alcoholics on measures of overt dependent behavior. The absence of this evidence may be due in large part to the failure of investigators to use such a rigorous index of dependency but, nonetheless, the clear presence of such a relationship has not been demonstrated.

On the other hand, there is a tendency for alcoholics to score above the standardization mean on some dependency scales (Fuller, 1966; Rhodes and Yorioka, 1968). Fuller, for example, administered Cattell's 16 P-F to 818 alcoholics and found a mean sten of 6.0, with a standard deviation of 1.7. This means that the average score of the alcoholics fell within one standard deviation of the population mean and within the average range as determined by the standardization sample. In addition, a standard deviation on 1.7 indicates that even though the mean of the alcoholics is slightly elevated, there is sufficient variability to approximate a normal-type distribution.

In the present study, no assumptions are made regarding the level of chronic dependency in the Ss, as measured either by personality tests or by clinical description. It is assumed that whatever differences there are among the Ss will be randomly distributed among the experimental groups. Then, a type of dependent behavior is elicited from one group, not from another and the subsequent attitude
changes compared. Differences among the groups in attitude shifts will thus be a function of the two independent variables: dependency and message plausibility.

It is known that in children, as well as in adults, dependent behavior facilitates the social influence process. It seems reasonable to assume that this variable is positively related to yielding: the higher the individual's dependence, the more he will yield to influence attempts that he has received. This means that, considered only in regard to yielding, dependency would have a monotonically increasing function. It is also assumed that dependency has a negative relation to attention and comprehension, since the more dependent he is, the less effort he makes on his own, and the more he relies on others to direct him. With regard to attention and comprehension, the more difficult the retention aspects of the persuasive situation, the lower will be the dependency at which maximum attitude change occurs.

McGuire's principles predict that personality factors will interact with variables of other classes (source, message, etc) in affecting influenceability (Principle 5). This is particularly true of personality variables that are differently related to reception and yielding (Principle 2), as is true of dependency. Furthermore, since dependency has been shown in some situations to be negatively related to self-esteem (Nelson, 1959), it is expected that McGuire's specific predictions for self-esteem would be reversed in direction for dependency.

The design of this experiment thus varies the yielding factor by giving one group of subjects a very plausible argument and the other group an implausible one. It is assumed that the reception factor is held constant for both groups. We would thus expect that, for the comprehension scores, there would be a significant main effect for dependency, with the high dependent subjects scoring significantly lower than the low dependent subjects. For the attitude change scores, however, a significant interaction between dependency and plausibility is predicted.

Specifically, the following hypotheses are to be tested:

\( H_1: \) Maximum attitude change will occur in high dependent subjects for the persuasible message and in low dependent subjects for the less persuasible message.
H₂: The low dependent subjects will score significantly higher on the comprehension measure than the high dependent subjects.

H₃: Within each experimental group, maximum opinion change will occur at intermediate levels of dependency: within each experimental group there will be a significant correlation between the measure of chronic dependency (Q₂ score on Cattell's 16 P-F or the Deference and Autonomy scales of the Edwards Personal Preference Schedule) and the index of acute dependency (the number of requests for help on the puzzle task).
Chapter II

Review of the Literature

In recent years the conditions that facilitate social influence have received considerable attention, primarily within social psychology. These conditions include the source and content of the message, types of appeal, personality factors and purposes of the communication. A considerable body of empirical data now exists, based primarily on designs testing ad hoc hypotheses. But it can hardly be claimed that this data has provided the material for a definitive theory of that it has left all the major questions resolved. Rather, the flourishing of studies outside the context of an adequate theory has frequently led to results or separate studies that appear mutually contradictory. The proliferation of studies, then, is a mixed blessing, in that it occurs alongside some areas that have been almost completely ignored.

One such area is the one which forms the basis for this study: the relation between the personality variable, dependency, and one kind of social influence situation, persuasion. Walters and Parke (1964) note that this relationship has been assumed, but has never been systematically explored. There are some good reasons for this. One is that dependency is more easily studied in children who are more accustomed to seeking approval, support and help than are adults. The difficulty in selecting appropriate experimental tasks for adults has led to a failure to relate the findings of social psychologists to child-training procedures, in spite of the fact that in the course of socialization, children's behavior is modified through the social influence process. Another reason that dependency has been rejected in favor of other variables, like intelligence, anxiety and self-esteem, is that theorists and experimenters cannot always agree on what behaviors are correctly classified as
dependent. Diener (1963, 1967), for example, found that the conceptualizations of dependency were very clear and stabilized among personality theorists and psychotherapists, but the behavioral referents of those concepts did not materialize as predicted.

In this chapter, as in this study, an effort is made to relate the theory and data based on an adult sample to that derived from extensive studies using children as subjects. The purpose is two-fold: to deal with concepts in a cleaner and more parsimonious way and to bridge the gap between research in development and that in a social psychological -- and consequently usually adult -- setting.

Dependency

Many personality theorists use the concept "dependency" in explanatory formulations and clinicians often make statements about the strength or intensity of an individual's dependency needs. Most of the empirical research with adults has simply correlated dependency need strength with a behavioral criterion such as self, peers' or superiors' ratios (Diener, 1967; Nelson, 1959). Few studies have involved eliciting dependent behavior in the experimental setting, probably because of the difficulty of devising tasks that allow variations in dependent behavior and, at the same time, appear appropriate for adults. The consequence has been the use of measures that are removed from overt behavior, such as personality tests and ratings, or the use of overt dependent behavior in children rather than in adult samples. This situation has resulted in an extensive body of empirical data on dependency in children while studies on adults have been descriptive and theoretical, sometimes without a firm empirical base.

Nelson (1959), for example, administered to 20 psychotherapists a set of psychometric tools which included the Edwards Personal Preference Schedule, a short semantic differential, two questionnaires and a rating form for rating 4 therapy patients in 20 descriptive and prognostic categories. The patients took the MMPI as a routine procedure, and their dependency scores were determined by the items comprising the Navran Dependence Scale. Nelson found that the
therapists' inter- and intra-individual conceptualizations of dependency were very stabilized and clear in meaning. But the construct had little or no association with the objective situation. The Navran Dependence Scale did not accurately predict the length of treatment although it did differentiate those patients who continued in therapy from those who did not return after intake. The Navran did not predict the behavior of patients in therapy as observed by their therapists. Nelson argues that, while the concept has a high degree of meaning for the therapists, there is little evidence that the concept is tied to actual behavior in a substantial number of cases.

Using a group conformity task, Kagan and Mussen (1956) studied the effect of covert dependency needs on yielding to pressure to conform. Twenty-seven male undergraduates wrote stories to 8 TAT cards and then were individually observed in the Asch-type conformity situation. Kagan and Mussen argued that the dependent person would see others as more competent than himself and would thus regard the opinion of the group as more reliable than his and would, therefore, conform to the group opinion more than the non-dependent person. They found that subjects who produced TAT themes in which the hero sought help in a problem situation or was portrayed as disturbed over loss of sources of love and support yielded to the incorrect majority more frequently than those not writing these types of stories ($p < .01$).

Appley and Moeller (1963) administered to a group of 41 female college freshmen the Edwards Personal Preference Schedule (EPPS), Gough's California Personality Inventory (CPI) and Gordon's Personality Profile (PP). They then obtained conformity scores by counting the number of times the subjects were influenced by a unanimously wrong majority of peers in an Asch-type situation. To measure the relationship between the personality variables and influenceability, the conformity scores were divided into three groups: high, middle and low. Then, the mean scores of each of these three subgroups on each of the personality variables were computed. On 33 of the 38 personality variables the high and low subgroups lay on the same side of the middle personality group as regards conformity. Five of these variables are presented in Table 1. All of these personality variables are
TABLE 1
MEANS, STANDARD DEVIATIONS FOR HIGH, MIDDLE AND LOW CONFORMITY GROUPS ON 5 OF 38 PERSONALITY VARIABLES

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<td>15.93</td>
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</tr>
<tr>
<td></td>
<td>4.35</td>
<td>3.62</td>
<td>4.53</td>
<td></td>
</tr>
<tr>
<td>CPI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achievement via independence</td>
<td>19.86</td>
<td>18.69</td>
<td>20.93</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.09</td>
<td>2.70</td>
<td>3.13</td>
<td></td>
</tr>
</tbody>
</table>

Note — After Appley & Moeller, 1963, p. 287
in some way correlated with dependency (Edwards, 1954); all of them display a non-monotonic relation to conformity; that is, the middle conforming group's scores on the personality variable was in a direction different from that of the high and low groups.

Several surprising results emerge from this study. One is that the F tests in each of the sets of personality scores showed no significant ratios for any of the 38 variables. Another is the consistency of the non-monotonic effects across a variety of personality variables. In addition, two of the five personality variables presented in Table 1 reveal some non-predictable relationships. One is that the subjects with the highest scores on the Deference scale were in the low conforming group. Another is that high conformers would score as high as they did on the Achievement via Independence scale. If nothing else, these results reflect the difficulty of using personality test scores exclusively as indices of personality correlates of susceptibility to social influence; the relationships appear too complex and the instruments too unreliable for that.

Diener (1967) attempted to study the relationship between personality test scores and situational effects in predicting dependent behavior. Using a combination of test scores from the EPPS to measure overt need strength and the TAT to measure covert need strength, he predicted that overt dependency needs would have the greatest weight in determining dependent behavior, while the situation would become significant as it interacted with covert dependency needs. The hypotheses were not confirmed. The situation accounted for virtually all the variance. Neither the EPPS nor the TAT could predict dependent behavior either across or within situations.

Bernardin and Jessar (1957) attempted to validate three aspects of dependency as it is measured by the EPPS: reliance on others for help, reliance on others for approval and conformity to the opinions and demands of others. Selection of 55 subjects high on the Deference scale and low on the Autonomy scale comprised the dependent group, while subjects with the reverse pattern formed the independent group. Three experiments were conducted to measure a different property of dependency. Results supported a definition of dependency as reliance on others for approval and for help. No differences were found between dependents and independents in group conformity. This latter result is different from that of Kagan and
Mussen (1956) who found that subjects who told stories in which persons asked for help conformed more than subjects who did not.

The studies reported above relate dependency behavior in one way or another to personality test scores. There are no studies using adult subjects relating a direct behavioral measure of dependency to a form of social influence. Studies using children and adolescents are more plentiful and have used both test scores and acute manipulations of dependency behavior. The results of these studies form the empirical base for some theoretical formulations of the development of social influenceability (Bandura and Walters, 1963; Sears, et al., 1957; Janis and Hovland, 1959).

Comparing the performance of groups of preschool children who differed in their tendency to seek praise from their teacher, Endsley (1960) found that the most dependent children persisted longer than did the least dependent group on a simple repetitive motor task where persistence was associated with social reinforcement. Similarly, Ferguson (1961) found that highly dependent children learned a simple discrimination task more readily than less dependent children when correct responses were verbally reinforced by the experimenter. Likewise, Walters and Parke (1964) report that Cairns (1961) found that adolescents who are reluctant to accept help from others do not respond much to social reinforcement.

Using nine-year-old boys, Jakubczak and Walters (1959) exposed two groups to the autokinetic effect. The low-dependency group consisted of boys who indicated on Keschner's test of dependence-independence that they were unwilling to accept help on a task they could not do themselves. The high-dependency boys were those who indicated that they would accept help even when they needed none. Each subject was exposed to the autokinetic effect twice: once with an adult confederate and once with a peer; order of adult and peer trials was evenly divided among subjects in each group. The results showed that high-dependent subjects were significantly more suggestible than low-dependent ones, and adults were more effective as confederates than peers. The effect of order of exposure to adult and peer suggesters proved to be important, with adults being more effective on the second session. Apparently, complex transfer effects occurred. The findings of this study, as of the others, support the interpretation of suggestibility as a kind
of dependency behavior.

The Personality of the Alcoholic

In his review of the studies of alcoholics, Vanderpool (1966) notes that most studies have been undertaken either to determine if there is such a thing as the alcoholic personality or to categorize the alcoholic according to the classification of the American Medical Association. Vanderpool concludes that both efforts have yielded only negative results. While certain personality characteristics are elevated on some scales, no clear consistent pattern of the "alcoholic personality" emerges. For example, Machover and Puzzo (1959) discovered that alcoholics differed from non-alcoholics on 23 out of 88 personality descriptions 60\% of the time. The difficulty with this type of "discovery" is that the rate of difference is only slightly better than 50-50. In addition, the number of personality categories not only makes working with them almost impossible because of the sheer size of the numbers, but it also indicates that the characteristics are not orthogonal but represent considerable overlapping.

Some studies and most descriptions relate the personality of the alcoholic to dependency. For example, Hayner (1961) in his study of the histories of alcoholics maintains that their parents influenced the alcoholics to be dependent personalities. Likewise, Button (1956) using the Rorschach and MMPI profiles reports that alcoholics are not only dependent but also depressed. Witkin (1959) has related the personality characteristic of dependency in alcoholics to experimental field dependency, although some investigators (Alexander and Gudeman, 1966) question equating these two measures.

Thus, there is substantial difficulty in identifying and describing the personality trait of dependency in the alcoholic, even though many investigators claim that it is characteristic of this clinical group. In his study of the performance of alcoholics on Cattell's 16 P-F Questionnaire, Fuller (1966) found that his large (818) sample scored highest on the Apprehensive and Tense Scales, with standard deviations of 1.6 and 1.0 and means of 7.8 and 7.9 respectively on a 10-point standard score scale. Scores of Fuller's alcoholics on the Q_2 Scale (Dependency)
fell within the average range. Their mean of 6.0 and standard deviation of 1.7 is nearly two full steps lower than those on the Apprehensive and Tense Scales. In view of this pattern, it seems that anxiety and tenseness are more characteristic of alcoholics than dependency and would, therefore, be significant factors in any experimental task done by these subjects. The variability of the alcoholics' dependency scores indicates that they do not consistently score high on chronic dependency measures but perform in a manner similar to that of the normal population. This subject group, then, can be expected -- in spite of their reputed high-dependent personalities -- to vary sufficiently on chronic measures of the independent variable to support an acute manipulation of it. This study seeks to determine if, in fact, there is a functional relationship between dependency and attitude change and whether that function can be described according to the principles elaborated by William McGuire. That relationship should apply to a broad class of subjects if it is to have more than narrow significance and should, therefore, be tested on clinical groups as well as on non-clinical ones.

The use of alcoholics does require a period of hospitalization before the experimental procedures in order to assure minimal toxic effects from alcohol. There is not a consensus among physiologists regarding the amount of time that must elapse after termination of drinking to insure that the alcohol has been fully metabolized. Block (1968) states that the greater number of alcoholics detoxify themselves between three and seven days after consuming the alcohol. Mendelson (1968) found that withdrawal symptoms lasted in some cases as long as 96 hours, with alcoholics metabolizing the alcohol faster than non-alcoholics. Harger (1964) says that the alcohol is absorbed by the blood and carried to all parts of the body, with the distribution proportional to the water content of that part. He asserts that more than 90% of the alcohol taken into the body is disposed of by oxidation to carbon dioxide and water at a rate that varies with the individual and usually ranges from 10 hours to 36 hours. Westerfield and Schulman (1959) studied the metabolism of alcohol in a group of alcoholics and found that there is considerable variability in the rate of metabolism of alcohol. They claim that the maximum
amount that can be metabolized in a 24-hr. period is one quart.

It thus appears that an alcoholic's detoxification is a function of many factors: how long he has been drinking, the amount he drinks, his personality patterns and his physiological make-up. Indeed, Lisansky (1964) asserts that alcohol may facilitate, depress or have no meaningful effect on behavior, depending on the individual, the amount of alcohol and the behavior studied. Kessel and Walton (1965) agree and state that it takes longer for heavy drinkers to return to normal than lighter drinkers; generally, the upper limit is set at 7 days.

Given such variability, it seems that a 14-day drying-out period would be sufficient to insure the absence of severe or even moderate toxic effects. The longer-lasting effects of alcohol cannot be controlled in a population that varies in age and, consequently, in length of time drinking. The only way to control that would be to study only Ss within a specific age group and with similar drinking histories. In this study it is assumed that differences in physiological effects in the Ss will be randomly distributed among the experimental groups.

Personality Materials

The Bender-Gestalt, used in group as well as individual administrations, has been used widely as a measure of organic brain damage, even though there is conflicting evidence of its efficacy (Billingslea, 1963). Hanvick and Anderson (1950) compared a group of 44 brain damaged, hospitalized patients with a control group. They found that 59% of the control group produced one or more rotations in the nine designs, while only 19% of the control group did so. Chorost, Spivack and Levine (1959) attempted to validate these findings. They compared the EEG's of Ss who rotated the figures with those of Ss who did not rotate the figures. The EEG's of 69% of the rotaters were abnormal, while 47% of the non-rotating group were also abnormal. The authors concluded that in their sample the "success of the BG rotation test was not much better than chance probability." Kramer and Fenwick (1966) compared two groups of organic and functionally disordered psychotics on the Bender-Gestalt. They found that the two groups were differentiated correctly by the Bender-Gestalt 81% of the time. Karman and Blumberg (1963) compared 40 Ss with cerebral damage with 40 matched non-damaged Ss on four psychological
measures. They found that the Bender-Gestalt was less efficient than both the Organic Integrity Test and the Goldstein-Scheerer, although it clearly did have some discriminating power, particularly with respect to gross damage. It thus appears that while there is not extremely high reliability and validity of this instrument, it is possible to detect organicity with better than chance probability, especially where the organicity is severe (Billingslea, 1963). The purpose of the Bender-Gestalt in the present study is to identify those patients with severe organic impairment from chronic alcoholism; for these purposes it is adequate. It is to be administered in group form, which, according to a series of comparisons by Smith and Keogh (1962) correlates highly with individually-administered forms.

Cattell's 16 Personality-Factor Questionnaire (16 P-F) has been used extensively in research on a variety of personality studies. Lorr (1963) in his review of the test has referred to it as the best factored personality questionnaire available. One reason for this is that the factors are orthogonal and, therefore, represent nearly independent traits with little overlapping. Cattell and Eber (1957) report consistency coefficients ranging from .71 to .90 for each of the 16 factors. Validities estimated from factor loadings range from .74 to .96. In addition, the authors report standardization samples across age groups, countries, psychological diagnoses, and occupational classes. They describe the high Q2 scorer as a person who is resolute and accustomed to making his own decisions, alone, while at the Q2 low score is the person who goes with the group, definitely values social approval and is highly conventional. In addition, the extended use of the 16 P-F on alcoholics (Fuller, 1966; Cattell and Eber, 1957) makes it an ideal instrument to use with this group of subjects.

Edwards Personal Preference Schedule is a personality questionnaire which provides measures of 15 personality variables based on Murray's manifest needs. It incorporates a forced-choice technique which minimizes the influence of social desirability and allows the subject to be rated on a series of needs rather than on a psychiatric syndrome, such as neuroticism, schizophrenia, etc. The EPPS does not have dependency as one of the personality variables measured, but two of the variables included in the inventory have been considered related to that trait: deference and autonomy (Bernardin and Jessor, 1957). Edwards (1959) defines deference and autonomy as follows:

Defference: To get suggestions from others, to find out what others think, to follow instructions and do what is expected, to praise
others, to tell others that they have done a good job, to accept the leadership of others, to read about great men, to conform to custom and avoid the unconventional, to let others make decisions.

Autonomy: To be able to come and go as desired, to say what one thinks about things, to be independent of others in making decisions, to feel free to do what one wants, to do things that are unconventional, to avoid situations where one is expected to conform, to do things without regard to what others may think, to criticise those in positions of authority, to avoid responsibilities and obligations.

The EPPS has generally been considered a most useful research tool. The norms are excellent for both college students and adult samples. While the validity studies lack conclusiveness, the reliability coefficients are quite high, ranging from .60 to .87. The studies that have focused on dependency have produced conflicting results (as have those using other need-factors.) In two studies of decrement in performances as a result of stress, those classified as high in dependency had a significantly greater decrement than those classified low in one study, but the groups did not differ significantly in the second (Hardison and Purcell, 1959.) Likewise, Bernardin and Jessor (1959) found that the deference and autonomy scales were valid for some definitions of dependency but not for others. Some of the reasons for this disparity may well be found in a recent factor analysis by Milton (1968). He reports two factor analyses of 300 undergraduate males and females and found in two separate analyses five factors emerged, of which one, hostile dependency, contained both the deference and autonomy scales. Complex loadings, then, may explain why similar situations do not always elicit predictable behavior in terms of test scores, particularly when the variability in the situation is directly related to more than one variable in the cluster of factor loadings. In spite of these limitations, however, the EPPS remains an excellent research tool, and one of the best indices of dependency in a paper-and-pencil test.
Chapter III
Procedure

I. Sample of Alcoholic Subjects

SUBJECTS. The 80 subjects used in this research were selected from an original pool of 112 hospitalized male alcoholics. The subjects were in treatment for chronic alcoholism at Chicago's Alcoholic Treatment Center, a residential facility operated as an agency of the City of Chicago.

The total group of 112 Ss was given the Bender-Gestalt Test, Cattell's 16 P-F Questionnaire, and McGuire's Medical Opinion Survey at initial testing sessions. These tests were administered to groups of 15-18 patients who had been hospitalized at least two weeks. A second, individual session during which Ss worked on a puzzle with or without help and then listened to a plausible or an implausible message against penicillin followed within 10 days of the initial group session.

Prospective Ss were eliminated from the sample in the following ways:

1. Diagnosis of psychosis. Routine psychiatric and medical evaluations were made on each patient at the time of admission or shortly thereafter. Any patient diagnosed as psychotic did not constitute part of this sample. These examinations were administered by certified psychiatrists on the staff at the hospital; both are faculty members in the Department of Psychiatry at the Stritch School of Medicine in Chicago. Four patients were eliminated by a diagnosis of psychosis.

2. Non-literacy. This was determined by the patient's own admission, the notation made at the time of admission (some patients could not read or fill in the forms), and by a raw score below 8 on the vocabulary section of the Shipley-Institute for Living Scale, which scores were available for every patient. Eight patients eliminated themselves because they volunteered that they could not read or write; two more were eliminated because they were noted as being non-literate at the time of admission; none were disqualified by their scores on the Shipley-Institute for Living Scale.
3. Severe organicity. Patients whose Bender-Gestalt protocols were judged by 2 of 3 examining psychologists to reflect severe organicity were not used as Ss; one patient was eliminated by this criterion. In addition, one man was diagnosed by the resident physician as having a chronic brain syndrome; his results were likewise discarded.

4. Unwillingness to participate. Patients were not forced to participate in the research program. Eleven of the patients who took the initial group tests did not complete the individual sessions for this reason. In addition, the results of two Ss were discarded because they did not work full time on the puzzle.

Seven patients who expressed a desire to participate were discharged from the hospital before their individual sessions could be scheduled. Even though the results of the above Ss were not used as part of the present sample, most of these patients did participate in both individual and group sessions. Their results were not eliminated until the testing was nearly complete, so that E did not know during the individual sessions which Ss would be included in the sample.

Ss ranged in age from 22 to 58 with an overall mean of 39.33 years and a S.D. of 8.46. Their education also varied extensively, from 8 to 19 years, with a grand mean of 11.50 and a S.D. of 2.06. There were six black and 14 white Ss in each group, except for one (High Dependency, High Plausibility) which has 7 black and 13 white Ss. The means and standard deviations for age and education of all groups are given in Table 2.

While the distribution of subjects by age appears random, (the mean ages for all groups fall within one year), that of education shows more variability. Differences among the groups in education are analyzed and the results presented in Table 3. The analysis of variance shows that the two high plausibility groups have a significantly higher educational level than the low plausibility groups, even though random assignment was made and appears in the age and race distributions. It is likely that this difference will be a significant one, since one would expect Ss with more education to be more receptive to the highly plausible message and, perhaps, to judge initially the health factors in a more favorable manner.
TABLE 2

MEANS AND STANDARD DEVIATIONS FOR AGE AND EDUCATION FOR ALL GROUPS OF ALCOHOLICS

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>AGE</th>
<th>EDUCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi D - Hi P</td>
<td>38.90</td>
<td>11.85</td>
</tr>
<tr>
<td></td>
<td>8.30</td>
<td>2.10</td>
</tr>
<tr>
<td>Hi D - Lo P</td>
<td>39.10</td>
<td>10.70</td>
</tr>
<tr>
<td></td>
<td>9.15</td>
<td>3.12</td>
</tr>
<tr>
<td>Lo D - Hi P</td>
<td>39.80</td>
<td>12.40</td>
</tr>
<tr>
<td></td>
<td>10.26</td>
<td>1.77</td>
</tr>
<tr>
<td>Lo D - Lo P</td>
<td>39.05</td>
<td>11.05</td>
</tr>
<tr>
<td></td>
<td>7.45</td>
<td>2.09</td>
</tr>
</tbody>
</table>
TABLE 3
ANALYSIS OF VARIANCE
BASED ON NO. OF YEARS OF EDUCATION
OF ALCOHOLICS

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>SS</th>
<th>df</th>
<th>ms</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency</td>
<td>4.04</td>
<td>1</td>
<td>4.04</td>
<td>.71</td>
</tr>
<tr>
<td>Plausibility</td>
<td>31.24</td>
<td>1</td>
<td>31.24</td>
<td>5.46**</td>
</tr>
<tr>
<td>D x P</td>
<td>.22</td>
<td>1</td>
<td>.22</td>
<td>.04</td>
</tr>
<tr>
<td>Error</td>
<td>434.50</td>
<td>76</td>
<td>5.72</td>
<td></td>
</tr>
</tbody>
</table>

**p Φ .025
B. MATERIALS. The Medical Opinion Survey designed by McGuire (1961) consists of 17 statements regarding four health-related topics: tooth-brushing, annual physical check-ups, chest x-rays, and the use of penicillin. Each topic has four statements, and one item on the chest x-ray issue is repeated. S responds by circling the number on a 15-point scale that best represents his agreement-disagreement with each statement. The verbal descriptions under the numbers range from "Definitely False" to "Definitely True." The Survey is presented in Appendix V.

McGuire (1961) constructed the survey in order to present issues on which there would be high initial agreement among the Ss. Since the statements all dealt with cultural truisms, the criteria for selection were extremeness and homogeneity of pre-message beliefs. Several surveys made during the construction of the scale showed that on the 15-point scale, the mean belief on each of the 4 issues was 13 and the mode, 15. These criteria determined the selection of statements on the survey. Subsequent researchers (McGuire, 1962; Johnson et al., 1968; Millman, 1968; Nisbett and Gordon, 1967) have confirmed McGuire's selection criteria by reporting means ranging from 13 to 14. McGuire's Survey is being used in this study, as in the others, in order to minimize the error variance which would be contributed by significant differences among the Ss in pre-communication attitudes.

The puzzle used was a 12-piece wooden block puzzle described in the literature (Diener, 1967; Bernardin and Jessor, 1957) as a "Chinese puzzle," but the one used in this study was stamped "Japan" and was purchased in a local novelty store.

The plausible and implausible arguments consist of taped statements, read by the same male, and adapted from those used by McGuire (1961). Both messages last roughly 4 minutes, 15 seconds and end within 3 seconds of each other. The comprehension measures consist of statements taken from the tape, with 10 words or phrases omitted and the S asked to fill in the blanks. These are presented in Appendices I-IV.

C. SCORING PROCEDURES. The attitude score is the sum of the circled numbers on the Medical Opinion Survey, except that the one negative statement (#15) is reversed in direction in scoring.

The dependency score is the sum of the number of requests for help and the number of questions S asked during the 15-minute puzzle session. In addition, the number of self-depreciating comments S made during the puzzle session were recorded.
The comprehension score is the number of correct responses on the comprehension measure (cf. Appendices III and IV).

D. DESIGN OF THE EXPERIMENT. Ss participated in two sessions, a group and, within 10 days, an individual one. The group sessions consisted of 15-18 Ss and began with E explaining that she was surveying some health issues and asking the patients to participate. Ss then took the tests in the following order: Medical Opinion Survey, Bender-Gestalt, and Cattell's 16 P-F Questionnaire. E read aloud the directions printed at the top of the opinion survey and asked if there were any questions. This measure was not timed; most Ss finished within 5-7 minutes.

The Bender-Gestalt was administered in group form. Copies of the figures were made onto transparencies by a photographic process. The transparencies were flashed onto a large screen in front of the testing room by an overhead projector. Ss sat at tables and copied the figures on 8 1/2" by 11" paper. Cattell's 16 P-F was administered according to the standardized procedures (Cattell and Eber, 1957). The group sessions lasted from 75-150 minutes, depending on how much time Ss chose to spend on Cattell's 16 P-F which is not timed. Ss left the testing room as they completed the 16 P-F.

The individual session lasted approximately one-half hour. At its beginning E offered the following explanation:

We are interested in learning something about two things: one is how people go about trying to work out a very difficult puzzle. The other is how people evaluate information on some health issues. So, this morning (afternoon) I am going to ask you to work for about 15 minutes on this puzzle (E points to it on the table) and then listen to a brief taped message and evaluate it. (E waits to see that S understands.)

This is a very difficult wooden block puzzle (E picks up the two large pieces). All 12 pieces fit together tightly -- interlock -- in such a way as to form a solid block of wood about this size (E demonstrates by holding the two outer pieces.) Because this puzzle is so difficult, I don't expect you to be able to finish it in the time we have, but I do ask you to work on it for about 15 minutes and see how many pieces you can manage to fit in.
Instructions for the low-dependent group end here. \(E\) pushes the pieces in his direction and \(S\) begins to work. Directions for the high-dependent group continue:

As you go along I'll be glad to answer any questions you have and to put some pieces in place when you think that will help you. Putting one of these blocks together is something like working a crossword puzzle: if you get a few pieces in place you can go on to get some of the others in. So, ask if you have any questions and let me know when I can put some pieces in for you.

After the end of the 15-minute period \(E\) tells \(S\):

You really did a good job on that puzzle. It's very difficult to get that many pieces in. You really went about that in a very intelligent way.

The purpose of this comment by \(E\) was to minimize the possibility of a success-fail contaminant. During the 15-minute session, \(E\) recorded the number of requests for help and the number of self-critical comments \(S\) made. \(E\) also recorded the number of blocks used by \(S\) at the end of the time period. This procedure is basically that used by Bernardin and Jessor (1957) and by Diener (1967).

Immediately after the puzzle session \(E\) asks \(S\) to move to the opposite end of the room and is instructed:

This tape contains a message about the use of penicillin in fighting some diseases. It was prepared by some health officials who were concerned about the fact that many Americans are unaware of some of the dangers involved in the use of penicillin. So, they prepared this tape to tell them about some of these dangers. Please listen carefully to this tape, and then afterwards I will ask you some questions about it.

\(E\) turns on the tape recorder and then moves to a far side of the room so that she is still in view but as unobtrusive as possible. After the tape has played, \(E\) asks \(S\) to return to the table. \(E\) then gives \(S\) a copy of the comprehension test and thus directs him:
This page has some statements that were on the tape, but some words and phrases have been left out and blank lines put in instead. Read the statements and fill in as many of the blanks as you can.

After that, S was asked to fill in once again the Opinion Survey he completed a few days before:

This is the Opinion Survey that you filled in a few days ago. After listening to the tape, fill it in again, by circling the one number that indicates how true or false you think that statement is.

Finally, before leaving the session E thanked S for his participation and asked him not to discuss with the other patients the content of the tape or other procedures, since this would give some of the subjects an advantage the others did not have.

II. Sample of College Students

A. SUBJECTS. The 40 subjects used in this second phase of the present research were volunteers from an undergraduate course in child development at San Jose State College. The volunteers were administered McGuire's Medical Opinion Survey and the Edwards Personal Preference Schedule at an initial session. The second, individual session in which Ss worked on a puzzle with or without help and then read a plausible or implausible message followed within two weeks of the initial group session.

Ss who volunteered were included in the sample with the exception of one female who worked the puzzle correctly in three minutes and one male who did not complete the personality test. Ss were taken for the individual session in the order in which they signed up and were randomly assigned to the experimental groups in the sequence 1-2-3-4, 1-2-3-4, etc.

Ss ranged in age from 20 to 39, with an overall mean of 21.95 and a standard deviation of 2.40. Their educational level varied little, as is shown in Table 4. All Ss had completed at least two years of college, and the group means for education fall within .4 of a year. Two groups (Hi D - Lo P and Lo D - Hi P) had equal males and females; the other two groups (Hi D - Hi P and Lo D - Lo P) had six females and four males in each group.
TABLE 4

MEANS AND STANDARD DEVIATIONS FOR AGE AND EDUCATION FOR ALL GROUPS OF COLLEGE STUDENTS

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>AGE</th>
<th>EDUCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi D - Hi P</td>
<td>22.60</td>
<td>15.45</td>
</tr>
<tr>
<td></td>
<td>2.80</td>
<td>.99</td>
</tr>
<tr>
<td>Hi D - Lo P</td>
<td>21.40</td>
<td>15.50</td>
</tr>
<tr>
<td></td>
<td>1.28</td>
<td>.67</td>
</tr>
<tr>
<td>Lo D - Hi P</td>
<td>21.20</td>
<td>15.45</td>
</tr>
<tr>
<td></td>
<td>1.40</td>
<td>1.06</td>
</tr>
<tr>
<td>Lo D - Lo P</td>
<td>22.60</td>
<td>15.60</td>
</tr>
<tr>
<td></td>
<td>3.07</td>
<td>.49</td>
</tr>
</tbody>
</table>
B. MATERIALS. The materials used were the same as those in the former sample, with the exception of the EPPS which was substituted for Cattell's 16 P-F. This substitution was made because the correlation between the two measures of dependency (number of requests for help and Q₂ score on the 16 P-F) was extremely low, and previous research (Bernardin and Jessar, 1957 and Diener, 1967) had indicated a significant relationship between the EPPS and behavioral measures of dependency.

C. SCORING PROCEDURES. The scoring procedures are the same as those already described for the previous sample.

D. DESIGN OF THE EXPERIMENT. The design is unchanged for the sample of college students, with the following exceptions:

1. Ss were not prescreened by any criterion.
2. Since it was not necessary to control for reading ability the arguments were presented on single pages of typed print and Ss were asked to read the statement, with these directions:

   This page contains a message about the use of penicillin in fighting some diseases. It was prepared by some health officials who were concerned about the fact that many Americans are unaware of some of the dangers involved in the use of penicillin. So, they prepared this statement to tell them of some of the dangers. Please read this page carefully and then afterwards I will ask you some questions about it.
Chapter IV

Results

I. Sample of Alcoholic Subjects

Table 5 presents the dependency scores for all groups. The means for both high dependency groups was 5.20 while the low dependency groups scored below 1.00. A $t$-test of the difference between these means gives a $t$ of 36.20, significant well beyond the .001 level.

The means of the scores on Opinion Survey I -- the pre-treatment attitudes -- given in Table 5 indicate that the two low plausibility groups rated the use of penicillin more favorably on the first survey than did the two high plausibility groups. An analysis of variance of these scores is presented in Table 6 and shows that this difference between the groups is significant beyond the .01 level. Thus, the failure of randomization is reflected in the initial attitude scores, as it was in the educational level of the Ss. Again, the differences occur between the high and low plausibility groups and suggest an inverse relationship between the number of years of education and favorable attitude toward the use of penicillin. Ss with more education tended to display less positive attitudes than those with less education.

Hypothesis I predicted that maximum attitude change would occur in high dependent Ss for the persuasible message and in low dependent Ss for the less persuasible message. It was predicted, then, that the Hi-Hi and Lo-Lo groups would be more persuaded by their respective messages than both the Hi-Lo and Lo-Hi groups. Comparison of the first Opinion Survey scores with those taken after the experimental manipulation shows that the Hi-Lo and Lo-Hi groups shifted very little, at least as reflected in their group means. The Hi-Hi and Lo groups shifted in the predicted
TABLE 5

MEANS AND STANDARD DEVIATIONS
OF DEPENDENCY SCORES, OPINION SURVEYS
I & II AND ADJUSTED MEANS OF OPINION SURVEY II
FOR ALL GROUPS OF ALCOHOLICS

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>Dep. Score</th>
<th>O.S. I</th>
<th>O.S. II</th>
<th>Adjusted Mean-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi D - Hi P</td>
<td>Mean 5.20</td>
<td>41.42</td>
<td>37.95</td>
<td>40.58</td>
</tr>
<tr>
<td></td>
<td>S. D. 1.81</td>
<td>13.61</td>
<td>13.61</td>
<td></td>
</tr>
<tr>
<td>Hi D - Lo P</td>
<td>Mean 5.20</td>
<td>46.15</td>
<td>46.65</td>
<td>45.68</td>
</tr>
<tr>
<td></td>
<td>S. D. 2.50</td>
<td>7.26</td>
<td>7.06</td>
<td></td>
</tr>
<tr>
<td>Lo D - Hi P</td>
<td>Mean .95</td>
<td>42.65</td>
<td>42.40</td>
<td>44.09</td>
</tr>
<tr>
<td></td>
<td>S. D. 1.16</td>
<td>9.40</td>
<td>12.17</td>
<td></td>
</tr>
<tr>
<td>Lo D - Lo P</td>
<td>Mean .70</td>
<td>49.32</td>
<td>46.00</td>
<td>42.63</td>
</tr>
<tr>
<td></td>
<td>S. D. 1.00</td>
<td>7.89</td>
<td>8.60</td>
<td></td>
</tr>
</tbody>
</table>
TABLE 6

ANALYSIS OF VARIANCE OF SCORES OF OPINION SURVEY I OF ALCOHOLICS

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>SS</th>
<th>df</th>
<th>ms</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency</td>
<td>96.80</td>
<td>1</td>
<td>96.80</td>
<td>1.16</td>
</tr>
<tr>
<td>Plausibility</td>
<td>649.80</td>
<td>1</td>
<td>649.80</td>
<td>7.80**</td>
</tr>
<tr>
<td>D x P</td>
<td>18.05</td>
<td>1</td>
<td>18.05</td>
<td>.21</td>
</tr>
<tr>
<td>Error</td>
<td>6326.10</td>
<td>76</td>
<td>83.23</td>
<td></td>
</tr>
</tbody>
</table>

**P < .01
negative direction more than three points. The pattern of attitude change is also seen in the Adjusted Means presented in Table 5. These means are adjusted for the initial differences among the groups in pre-treatment attitudes and indicate that the greatest negative shifts occurred in the Hi-Hi and Lo-Lo groups. The pattern of these shifts reflects an interaction effect, which McGuire's theory predicts. In order to correct for the initial significant difference between the treatment groups an analysis of covariance was performed on the post-treatment attitude scores using the pre-treatment attitude scores as the covariate. This analysis of covariance is presented in Table 7 and reveals no statistically significant main effects or interaction. The trend is there, but it does not reach conventional statistical levels of acceptance. Thus, Hypothesis 1 is not confirmed.

The second hypothesis predicted that dependency has a negative relation to attention and comprehension, since the more dependent an individual is, the less effort he makes on his own and the more he relies on others to direct him. Specifically, it was predicted that low dependent Ss would score significantly higher on the comprehension test than the high dependent Ss. The mean comprehension scores presented in Table 8 reveal the same trend as was evident in the post-treatment attitude scores, i.e., the highest comprehension scores occurred in the Hi-Hi and Lo-Lo groups, with the other two groups falling below them. Analysis of variance of these comprehension scores presented in Table 9 shows an interaction effect significant at the .05 level. The main effect for dependency that was predicted did not occur. Duncan's Multiple Range Test was done to determine which differences among the groups were significant. This test indicated that the difference between the Hi-Hi and Hi-Lo groups was significant at the .05 level; none of the other group differences on the comprehension measure were significant.

There are several significant factors in the pattern of the comprehension scores. One is that they occur as a significant interaction despite the possible confound of differences in educational levels among the groups. Those differences are not clearly and directly related to the kind of comprehension measured in this study to warrant partialling out their effect. While the exact effect of these differences in education remains unknown, the fact that the interaction obtained in a direction different from that of the education effect underlines the importance of this interaction.
TABLE 7

ANALYSIS OF COVARIANCE OF SCORES
OF OPINION SURVEYS I & II

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>SS</th>
<th>df</th>
<th>ms</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency</td>
<td>7.20</td>
<td>1</td>
<td>7.20</td>
<td>0.09</td>
</tr>
<tr>
<td>Plausibility</td>
<td>36.45</td>
<td>1</td>
<td>36.45</td>
<td>0.45</td>
</tr>
<tr>
<td>D x P</td>
<td>135.20</td>
<td>1</td>
<td>135.20</td>
<td>1.68</td>
</tr>
<tr>
<td>Error</td>
<td>6133.70</td>
<td>75</td>
<td>80.71</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 8

**Means and Standard Deviations of Number of Blocks Used, Comment Scores and Comprehension Scores of Alcoholics**

<table>
<thead>
<tr>
<th>Groups</th>
<th>No. Blocks</th>
<th>Comment Scores</th>
<th>Comprehension Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi D - Hi P</td>
<td>Mean: 9.55</td>
<td>S.D.: 1.36</td>
<td>Mean: 6.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S.D.: 2.13</td>
</tr>
<tr>
<td>Hi D - Lo P</td>
<td>Mean: 9.70</td>
<td>S.D.: 1.19</td>
<td>Mean: 5.23</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S.D.: 1.61</td>
</tr>
<tr>
<td>Lo D - Hi P</td>
<td>Mean: 7.36</td>
<td>S.D.: 2.06</td>
<td>Mean: 5.95</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S.D.: 2.31</td>
</tr>
<tr>
<td>Lo D - Lo P</td>
<td>Mean: 5.95</td>
<td>S.D.: 2.71</td>
<td>Mean: 6.33</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S.D.: 2.24</td>
</tr>
</tbody>
</table>
### TABLE 9

**ANALYSIS OF VARIANCE OF COMPREHENSION SCORES OF ALCOHOLICS**

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>ms</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency</td>
<td>.20</td>
<td>1</td>
<td>.20</td>
<td>.04</td>
</tr>
<tr>
<td>Plausibility</td>
<td>6.61</td>
<td>1</td>
<td>6.61</td>
<td>1.39</td>
</tr>
<tr>
<td>D x P</td>
<td>20.32</td>
<td>1</td>
<td>20.32</td>
<td>4.27*</td>
</tr>
<tr>
<td>Error</td>
<td>361.57</td>
<td>76</td>
<td>4.76</td>
<td></td>
</tr>
</tbody>
</table>

* p < .05
The number of blocks used during the experimental sessions was recorded and the means and standard deviations of these scores are presented in Table 8. Obviously, the high dependent groups used significantly more blocks than the low dependent groups. This difference was really built into the design of the experiment, since the more requests for help S made, the more blocks he used. The use of the approving comment, "You really did a good job on that puzzle..." was an effort to control for a success-fail effect, in that Ss who used more blocks would be inclined to think that they had been successful, whereas those who worked without help but with some real frustration would feel that they had failed. No measure of S's perception of his success or failure was given; however, the spontaneous comments of 13 Ss indicated that for some, at least, the comment was successful. These men offered explanations for their superior performance based on their mechanical ability, training or interests. Several Ss who appeared pleased with their performance had in fact done very poorly. Other Ss stated that they thought that E said that remark to every S.

The comment scores were simply the number of self-depreciating comments S made spontaneously while working on the blocks. The means presented in Table 8 do not reflect the same behavior as the dependency scores, in that the high dependent groups do not score higher than the low dependent groups in their spontaneous comments. Bernardín and Jessor (1957) and Diener (1963) have used a combined weighted score as the dependency measure, based on both number of requests for help and verbal comments that S made while working on the puzzle. The patterns of these scores differ from one another and suggest different components that should not be scored together and labeled "dependency."

The third hypothesis predicted that there would be a significant correlation between the measure of chronic dependency (Q2 score on Cattell's 16 P-F) and the index of acute dependency (the number of requests for help on the puzzle task.) The Pearson r for the high dependency groups was .09, while that for the low dependency groups was .09, neither of which approaches significance. The purpose of the chronic measure was to relate the behavioral manipulation to conventional personality test scores and presumably, therefore, to more enduring traits. These correlations are quite low and indicate that the acute dependency measure is not tapping the same behavior patterns as the Q2 scale of Cattell's 16 P-F.
II. Sample of College Students

Table 1 presents the means and standard deviations of the dependency scores for all groups. The means for both high dependency groups were much lower than the 5.20 of the alcoholics: .80 for the Hi D - Hi P and 1.30 for the Hi D - Lo P groups. The means of the low dependency groups were both below 1.00, as were those of the alcoholics. A $t$-test of the difference between the means of the high and low dependency groups gives a $t$ of 3.24, significant at the .01 level. Thus, while there is not a large numerical difference between the groups, the tendency of the scores to fall around the means (as shown in the small standard deviations) resulted in less variance and thus greater significance than would appear from the means themselves.

The means of the scores on Opinion Survey I given in Table 10 indicate little difference among the groups; all means fall within two points. An analysis of variance of these scores presented in Table 11 shows no significant $F$. Thus, there were no significant differences among the groups in pre-treatment attitudes and the randomization was effective on this variable as it was on both age and education.

Hypothesis 1 predicted that maximum opinion change would occur in high dependent Ss for the persuasible message and in low dependent Ss for the less persuasible message. It was predicted, then, that the Hi-Hi and Lo-Lo groups would be more persuaded by their respective messages than both Hi-Lo and Lo-Hi groups. Comparison of the means of Opinion Surveys I and II in Table 10 shows that the greatest attitude shifts occurred in the two high plausibility groups, while one low plausibility group (Hi-Lo) did not shift at all and the other (Lo-Lo) showed a more positive attitude on the second survey than they did on the first. An analysis of variance of the scores on Opinion Survey II presented in Table 12 reveals a significant main effect for plausibility. The post-treatment attitude shifts reveal no significant effect of the dependency manipulation either as a main effect or as an interaction, which had been predicted. Hypothesis 1, therefore, is not confirmed.

The second hypothesis predicted that dependency has a negative relation to attention and comprehension since the more dependent an individual is, the less effort he makes on his own and the more he relies on others to direct him. Specifically, it was predicted that low-dependent Ss would score significantly higher on
TABLE 10

MEANS AND STANDARD DEVIATIONS OF DEPENDENCY SCORES, OPINION SURVEYS I & II FOR ALL GROUPS OF COLLEGE STUDENTS

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>Dep. Score</th>
<th>O.S. I</th>
<th>O. S. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi D - Hi P</td>
<td>Mean .80</td>
<td>44.90</td>
<td>35.00</td>
</tr>
<tr>
<td></td>
<td>S. D. .87</td>
<td>6.39</td>
<td>7.89</td>
</tr>
<tr>
<td>Hi D - Lo P</td>
<td>Mean 1.30</td>
<td>43.90</td>
<td>43.90</td>
</tr>
<tr>
<td></td>
<td>S. D. 1.42</td>
<td>3.27</td>
<td>4.30</td>
</tr>
<tr>
<td>Lo D - Hi P</td>
<td>Mean 0.00</td>
<td>46.90</td>
<td>38.00</td>
</tr>
<tr>
<td></td>
<td>S. D. 0.00</td>
<td>6.96</td>
<td>12.07</td>
</tr>
<tr>
<td>Lo D - Lo P</td>
<td>Mean 0.20</td>
<td>45.20</td>
<td>50.00</td>
</tr>
<tr>
<td></td>
<td>S. D. 0.60</td>
<td>6.34</td>
<td>6.99</td>
</tr>
<tr>
<td>SOURCE</td>
<td>SS</td>
<td>df</td>
<td>ms</td>
</tr>
<tr>
<td>------------</td>
<td>------</td>
<td>----</td>
<td>------</td>
</tr>
<tr>
<td>Dependency</td>
<td>27.20</td>
<td>1</td>
<td>27.20</td>
</tr>
<tr>
<td>Plausibility</td>
<td>18.20</td>
<td>1</td>
<td>18.20</td>
</tr>
<tr>
<td>D x P</td>
<td>46.70</td>
<td>1</td>
<td>46.70</td>
</tr>
<tr>
<td>Error</td>
<td>1366.90</td>
<td>36</td>
<td>36.92</td>
</tr>
</tbody>
</table>
TABLE 12

ANALYSIS OF VARIANCE OF
SCORES OF OPINION SURVEY II
OF COLLEGE STUDENTS

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>SS</th>
<th>df</th>
<th>ms</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency</td>
<td>207.00</td>
<td>1</td>
<td>207.00</td>
<td>2.71</td>
</tr>
<tr>
<td>Plausibility</td>
<td>1092.00</td>
<td>1</td>
<td>1092.00</td>
<td>14.28**</td>
</tr>
<tr>
<td>DXP</td>
<td>24.00</td>
<td>1</td>
<td>24.00</td>
<td>.30</td>
</tr>
<tr>
<td>Error</td>
<td>2751.00</td>
<td>36</td>
<td>76.42</td>
<td></td>
</tr>
</tbody>
</table>

**p < .001
TABLE 13

MEANS AND STANDARD DEVIATIONS OF
NUMBER OF BLOCKS USED, COMMENT SCORES,
AND COMPREHENSION SCORES
OF COLLEGE STUDENTS

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>No. Blocks</th>
<th>Comment Scores</th>
<th>Comprehension Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td></td>
</tr>
<tr>
<td>Hi D - Hi P</td>
<td>8.30</td>
<td>2.65</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.60</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hi D - Lo P</td>
<td>7.00</td>
<td>1.55</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.00</td>
<td>2.53</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lo D - Hi P</td>
<td>6.80</td>
<td>.87</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.90</td>
<td>1.58</td>
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</tr>
<tr>
<td></td>
<td>9.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lo D - Lo P</td>
<td>8.30</td>
<td>1.35</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.80</td>
<td>1.89</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## TABLE 14

ANALYSIS OF VARIANCE OF COMPREHENSION SCORES OF COLLEGE STUDENTS

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>SS</th>
<th>df</th>
<th>ms</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency</td>
<td>1.12</td>
<td>1</td>
<td>1.12</td>
<td>1.22</td>
</tr>
<tr>
<td>Plausibility</td>
<td>2.42</td>
<td>1</td>
<td>2.42</td>
<td>2.63</td>
</tr>
<tr>
<td>DX P</td>
<td>.72</td>
<td>1</td>
<td>.72</td>
<td>.82</td>
</tr>
<tr>
<td>Error</td>
<td>33.24</td>
<td>36</td>
<td>.93</td>
<td></td>
</tr>
</tbody>
</table>
the comprehension test than the high-dependent Ss. The group means in Table 13 reveal little difference among the groups; a $t$-test of the difference between the means of the two high and the two low dependency groups gives a $t$ of .32, an insignificant value. An analysis of variance of the comprehension scores presented in Table 14 indicates no significant $F$. Hypothesis 2, therefore, is not confirmed.

The number of blocks used during the experimental sessions was recorded, and the means and standard deviations of these scores presented in Table 13 show little variability among the groups. Unlike the alcoholics, the college students did not differ significantly in the number of blocks used, which is not surprising in view of the few requests for help elicited from either the high or low dependent groups. Since a request for help is responded to with another piece of the puzzle put in correctly, it is consistent to find that there are no group differences in number of blocks used in Ss who asked for help infrequently.

The comment scores were the number of self-depreciating comments made spontaneously while working on the puzzle. The means presented in Table 13 indicate that the two high dependency groups achieved means of 3.60 and 4.00, while the means of the two low dependency groups were 1.90 and 1.80. A $t$-test of the difference between these sets of means gives a $t$ of 2.25, significant at the .05 level on a two-tailed test. The pattern is the reverse of that of the alcoholic Ss. While they scored higher and significantly different on the acute dependency measure, their comment scores were lower and the differences between the groups insignificant. Again, this pattern suggests that the number of requests for help and the number of spontaneous comments are inversely related and should not be grouped as a single index of dependency, as Bernardin and Jessor (1957) and Diener (1963) have done.

The third hypothesis predicted that there would be a significant correlation between the measure of chronic dependency (the Deference and Autonomy Scales of the EPPS) and the measure of acute dependency (the number of requests for help.) The Pearson $r$ for the high dependency groups was -.57 for the Deference Scale and .24 for the Autonomy Scale. The former coefficient is significant beyond the .01 level, while the latter does not reach any acceptable level of significance. For the low dependency groups the respective correlations are .22 and -.16, neither of which is significant. While one of the coefficients of the high dependency groups is significant and therefore represents a consistent relationship
between the variables, the lack of a significant correlation in the low dependency groups cannot be adequately interpreted as a failure of any relationship because there is little variability in the number of requests for help in the low dependency groups. Only one out of 20 Ss asked for help (twice) and, since variability is necessary for meaningful correlation, the latter coefficients cannot be considered conclusive. Hypothesis 3 is, therefore, partially confirmed.
In this study the same basic materials, procedures and experimental design were used for two subject samples, one a group of 80 hospitalized male alcoholics and another group of 40 undergraduate college students. Although there were statistically significant results in both phases of the study, two of the hypotheses were not confirmed by either set of data and the third was partially confirmed by the scores of the college students. In examining the results of the two samples, there appear to be a different set of factors accounting for the results in each sample.

In the alcoholics there are a number of factors that might have accounted for the obtained results. One group of these factors involves the subjects used; the other concerns elements in the materials and design. The use of alcoholic Ss was largely an expediency measure and certainly not dictated by the nature of the theory or the specific hypotheses derived from it. Because of the amount of individual differences represented in this sample and the consequent error variance these differences introduced, a larger sample might have produced significant results. For example, differences in educational level were quite large, ranging from 6 to 19 years (two Ss were lawyers.) Related to this was the variation in reading habits and verbal skills among the men. The two lawyers read books and the daily paper regularly; however, some of those who used the hospital library most frequently had not even an 8th grade diploma. In general, though, it can be said that this particular group of men was not especially oriented towards verbal skills, particularly the kind represented by the materials administered. While an effort was made to control for reading level, there are undoubtedly some unreported and uncontrolled effects of this variable.

 Probably the most evident behavioral variable was the Ss anxiety. There are three probable reasons for this. One is that they were asked to perform a task
at which they felt inferior; the Ss' concern about the quality of their performance was evident throughout the individual sessions, but especially during the puzzle task. Another factor which increased the Ss' anxiety was a research project being conducted at the same time as the present one. This study used some sexually and aggressively threatening stimuli which created anger and anxiety on the wards. Some men refused to participate in the other study and, in the face of a general revolt, E was asked to explain at a general ward meeting the procedures used in the present study. The atmosphere cleared considerably after this incident, but some patients refused to participate in either study.

The third reason for the Ss' anxiety was the problem posed by a female experimenter who was employed at the hospital at the time and was, therefore, seen at times other than those of the experimental sessions. The fear of doing poorly before a woman was undoubtedly a factor in the Ss' anxiety, but there is no adequate way of assessing its effect. Three Ss expressed the wish for a date with E after the individual sessions, and at least half of the Ss approached E on the ward and asked questions about their performance or some other matter. Thus, the complete anonymity of E in the experimental situation was not achieved.

Another variable that probably affected the results was the fact that all the men were inpatients together at the time the experiment was conducted and probably talked to one another about what had happened during the sessions, even though they had been asked not to. This was more evident during the beginning of the data collecting than at later stages when the patients assumed a more matter-of-fact attitude toward all research projects at the hospital.

One problem with the results in the failure of the Ss to shift their attitudes to an appreciable degree in any of the conditions. Usually, after the persuasion induction, there is a negative shift of 6-7 points on these cultural truisms (McGuire, 1961; Johnson et al., 1968). Age factors might have affected the results, although the research evidence is inadequate across samples of adult Ss. It is known that children are more susceptible to social influence than adolescents. Costanzo and Shaw (1966) found that conformity increased up to adolescence, then began to decrease afterwards. Adults are less persuasible than adolescents in general, but it is probable that personality factors play a more important role than aging itself in resistance to persuasion (Zajonc, 1968).
Another separate but related factor is the issue that was selected, the use of penicillin in fighting diseases. The more frequently used chest x-ray issue was rejected because the patients are routinely given one shortly after admission to the hospital for treatment and the use of this issue seemed likely to cause difficulty with the staff, as well as among the patients. The penicillin issue had its own problems with this sample, however. Nine men said that they themselves were allergic to it and four others volunteered after the experiment that they had seen friends suffer from its effects. In addition, it seems quite likely that the patients had discussed the penicillin issue among themselves. Such exposure to arguments involved in the penicillin issue created resistance to persuasion and at the least introduced more error variance in the results. Which such individual variations are bound to occur in any group of Ss they are particularly problematic with older Ss, with alcoholics and with Ss who are in close daily contact, as on an inpatient ward. Age is important because older persons are more likely to have discovered their own allergies to penicillin and to have seen its adverse consequences. Likewise, the harmful physiological effects of prolonged drinking are likely to make the men more sensitive to somatic complaints and, indirectly, to what is harmful and beneficial to them. In view of all these factors, it sometimes appears significant that the results for the alcoholic Ss even fell in the predicted direction.

The sample of college students, on the other hand, was homogeneous with respect to age, education and reading ability. Where the alcoholics were highly anxious during the individual sessions, the college students were only mildly so, as a generous estimate. Only a few of them appeared bothered by the task, and most took it in open good spirits and were more likely to be frustrated by the difficulty of the puzzle than threatened and anxious because of it. What frustration they did display was verbal, as is revealed in the high number of comments, particularly in the high dependency groups.

Regarding the college students, there are two critical problems. One is the failure of the dependency manipulation and the other is the rather small sample. Even though there is a significant difference between the high and low dependency groups, that difference is so small as to be a statistical artifact so far as the purpose of the study is concerned. In order to study the effect of
elicited dependent behavior, one would hope that the behavior -- particularly if it is verbal -- occur several times within a fifteen-minute interval. This did not occur with the college students as it had for the alcoholics. The reason is undoubtedly that young adults prefer to be self-reliant and do not so readily ask for help as do children or older institutionalized adults. In addition, the small sample of college students might have masked trends which were present in the larger sample of alcoholics. This is more likely true on the Opinion Survey scores than on the Comprehension scores where the error variance was quite small.

In the alcoholic sample, the dependency scores and the chronic personality measures of dependency do not correlate significantly. This might be due to the specific operational definition of dependency used in this study: requests for help in a difficult problem-solving task. Bernardin and Jessors (1957) had found that dependency defined as reliance on others for help and approval correlated significantly with personality test scores on the EPPS, while a definition of conformity to the opinions and demands of others did not correlate with the test scores. Cattell's $Q_2$ scale is one of these broader, more inclusive categories which describes this trait as dependence on the group rather than on oneself, etc. In addition, the $Q_2$ scale is a second-order factor and, therefore, includes more diverse elements than the twelve first-order factors.

On the EPPS, the significant negative correlation between Deference and the number of requests for help is most surprising since Bernardin and Jessors (1957) and Diener's (1963) identification of dependent Ss was a high Deference score combined with a low Autonomy score. The expected correlation, then, would have been in a positive direction. Edwards reports a -.30 coefficient between the Deference and Autonomy scales. The correlation in the sample of college students between the same scales for the high dependency groups was -.36, while that for the low dependency groups was .02, again reflecting the inadequacy of the low-dependency correlations, apparently because of lack of variability along one dimension. But the correlation of the high dependent groups is close to the group norms reported by Edwards and, therefore, emphasizes the deviance of the -.57 correlation.

Probably the most intriguing result is the significant interaction on the comprehension measure in the sample of alcoholics. If dependency is negatively
related to comprehension, as was hypothesized, then the low dependency groups should have scored higher on the comprehension than the high dependency groups. The obtained interaction was in the same direction as that predicted for the attitude change scores and suggests that shifts in attitude might be mediated at the comprehension, rather than at the yielding, level. This conclusion is not certain, however, because of some refinements that are necessary in further research on this problem.

In this study the assumption was made that the comprehension was held constant while the dependency and plausibility (yielding) factors were varied. The high plausible message consisted of scientific and medical evidence of harmful side effects of penicillin, while the low plausible message presented complaints of elderly persons of harmful effects which could hardly have been caused by penicillin. It seems unlikely that these two messages are equated for difficulty since the medical and scientific evidence is more technical and has less narrative appeal than the account of the mishaps in the low persuasible message. The scores of neither group of Ss in the present study fell along these lines, so that the interaction in the alcoholic Ss was not a function of difference in difficulty of the message. However, in future research it would see advisable to control for difficulty of comprehension by presenting both groups with the same message and varying the yielding factor by attributing the message to either a high or low credible source.

Another improvement would be including a brief measure of S's perception of his performance on the puzzle task. This would identify any differences among the groups in a success-fail experience, a factor which cannot be ruled out because of the differences between the high and low dependency groups on the number of blocks used during the puzzle session. These suggestions include the rather obvious one of using a sufficiently large N to balance out the effects of the error variance and thus to pick up true differences where they exist.
Summary

The purpose of this research was to study the relationship between a dependency and attitude change and to test the theory formulated by McGuire (1968). It was hypothesized that dependency is differentially related to the two mediating steps in attitude change, reception and yielding, and that maximum attitude change would occur in high dependent Ss for a highly plausible message and in low dependent Ss for a low plausible message. It was also hypothesized that low dependent Ss would score higher on the comprehension measure than high dependent Ss.

A 2 x 2 factorial design was used, varying dependency by encouraging or not encouraging requests for help on a difficult task, and the yielding factor by presenting high or low plausible arguments against the use of penicillin. Eighty alcoholic men in a residential treatment center comprised one sample and forty undergraduate college students the other. Two hypotheses were not confirmed for either sample and one was partially confirmed for the sample of college students.

Significance of the results and suggestions for future research were discussed.
REFERENCES


Westerfield, W., & Schulman, M. Metabolism and caloric value of alcohol. Journal of the American Medical Association, 1959, 170, 197-203.


Appendix I

High - Plausible Message

Health authorities have recently begun to question the wisdom of using penicillin to fight disease and infections. They have come to recognize that penicillin -- even in small amounts -- can be a definite danger to a person's health. Experimentation shows that doses of penicillin produce some highly undesirable side effects. Furthermore, the availability of penicillin and the exaggerated belief in its effectiveness have slowed down research in the development of other drugs which are desperately needed. These drugs are needed to fight diseases against which penicillin has no effect. Because the problem is so serious and the use of penicillin so widespread, it will be wise to look into some of these harmful effects in more detail.

One of the most serious problems arising in connection with the use of penicillin is that some people are allergic to it and suffer some harmful effects. These effects range from minor rashes to death. There are an impressive number of cases reported in the medical journals in which the injection of penicillin given for minor infections resulted in the death of the patient because he had a serious allergy to it. The problem of allergies is particularly serious in the case of penicillin because these allergies are difficult to detect. There are complex tests available, but doctors as a rule do not give their patients such tests before administering this drug. In addition, allergies to this drug tend to come and go unexpectedly, so that a patient might become allergic to penicillin at a later date, even though an earlier test had indicated that he was not allergic. Another reason why medical scientists are worried about penicillin allergies is that they are on the increase. The national medical statistics compiled monthly by the Public Health Service indicate that in the first year of its use, penicillin allergies were extremely rare. But they have been increasing ever since. One of the theories for this
increase is that there is a build-up of the effects of penicillin on the body with every dose that is taken. The first few times he gets the drug, the person shows no harmful effects, but by the time he has gotten doses throughout life, he might develop an allergy. Another theory is that the doctors are giving penicillin in stronger doses and this may account for the increasing number of allergies that are reported.

The increased dependence on penicillin has produced yet another tragic consequence. Several hospitals in Houston, Detroit, London and Tokyo have recently reported epidemics of deaths among new-born babies from infections against which penicillin had no effect. And yet, penicillin used to be able to fight this kind of infection successfully. Here we see another case of an increasingly serious effect of penicillin. Its use tends to result in the development of more deadly and more difficult germs which penicillin cannot cure.

In view of this evidence, it seems reasonable to state that people should not take penicillin to fight infections. Penicillin should be taken as infrequently as possible and preferably not at all.
Appendix II

Low – Plausible Message

Some old evidence has appeared recently that seems to question the wisdom of the use of penicillin for the treatment of bacterial infections. The use of penicillin may be a danger to the person's health or even to his marriage. Although this negative evidence has not proved to be valid, it still must be considered. This evidence comes from a survey done in 1952. Several medical students developed a questionnaire about the use of penicillin. This questionnaire was sent to 800 people who had taken penicillin at least once during the years 1947 and 1952. The questionnaire asked these persons whether or not they had any illness or complaints that they thought might be caused by their taking penicillin. Only one person reported that he suspected that penicillin had caused him some illness. This was an elderly retired man who reported that his eyesight had gotten poorer in the last couple of years and thought that penicillin might have had something to do with the problem.

Three other apparent dangers were also reported; however, these cannot be classified as physical illnesses. One elderly woman reported that she had lost her appetite over the last couple of years and was now eating only about half as much every day as she had eaten when she was younger. This woman also sent along a letter from her older sister to back up her claim. Both the elderly woman and her older sister reported that they thought that the cause of the loss of appetite was the dose of penicillin she had taken shortly before. There was also another woman who reported an eating problem. This woman claimed that she had lost her taste for vegetables. She claims that she used to like almost every vegetable but recently she hadn't really cared for any vegetable although she still eats them. She claims that although she can't remember exactly when she lost her liking for vegetables she thinks it was the same year she had her first dose of penicillin. Because of
this, she thinks that penicillin might be dangerous.

The most interesting report was from a woman who claimed that penicillin was the cause of the break-up of her marriage. She claimed that her husband filed for divorce recently after he had had his first dose of penicillin. She reported that her marriage had not been very happy and that she was always arguing with her husband. However, it was a couple of months after he had taken the penicillin that he walked out on her and filed for divorce. This woman said that she has always been against any medical tests because she doesn't like doctors and her divorce is proof that medical tests can be a danger in areas which you can least suspect.

In view of these four cases, it seems reasonable to state that people should not take penicillin to fight infections. Penicillin should be taken as infrequently as possible and preferably not at all.
Appendix III

Comprehensive Test for
High - Plausible Message

Health authorities have recently begun to question the wisdom of using penicillin to fight disease and infections. They have come to recognize that penicillin -- even in small amounts -- can be a definite -------------- to a person's health.

One of the most serious problems arising in connection with the use of penicillin is that some people are -------------- to it and suffer some harmful effects. These effects range from minor rashes to --------------.

The problem of allergies is particularly serious with penicillin because these allergies are --------------. In addition, allergies to this drug tend to come and go unexpectedly so that a patient might become allergic to penicillin at a later date even though a test had indicated earlier that --------------.

Another reason why medical scientists are worried about penicillin allergies is that they are --------------. The national medical statistics compiled monthly by the Public Health Service indicates that in the first year of its use, penicillin allergies were --------------. One of the theories for this increase in penicillin allergies is that there is a build-up of the effects of penicillin on the body with every dose that is taken. Another theory is that doctors are giving penicillin in -------------- and this may account for the increasing number of allergies that are reported.

The increased dependence on penicillin has produced yet another tragic consequence. Several hospitals have recently reported epidemics of deaths among -------------- from infections against which penicillin has no effect. Here we see another case of an increasingly serious effect of penicillin. Its use tends to result in the development of more deadly -------------- which penicillin cannot kill.
Appendix IV

Comprehensive Test for

Low - Plausible Message

Some old evidence has appeared recently that seems to question the wisdom of the use of penicillin for the treatment of infections. This evidence came from a survey done in 1952 by ________________. Questionnaires were sent to ______ people who had taken penicillin between 1947 and 1952. Only one person reported that he thought penicillin had caused him some illness. This man reported that his ____________________ had gotten poorer in the last couple of years. He thought that penicillin might have had something to do with the problem.

Three other apparent dangers were reported. One elderly woman reported that she lost her _____________ over the last couple of years. This woman sent a letter from ________________ to back up her claim. Another woman reported an eating problem. She claimed that she had lost her taste for _______ after she had taken her first dose of penicillin.

The most interesting report was from a woman who claimed that penicillin was the cause of _____________________________. She claimed that shortly after her husband had taken his first dose of penicillin, he ___________________________. This woman has always been against _______________________. She says that her ______________________ is proof that medical tests can be a danger in areas which you least expect.
Appendix V
Opinion Survey

We are interested in surveying opinions about some health topics. We ask you to indicate your personal feelings about the truth of the statements listed below by circling the one number that best indicates your judgment of the truth of that statement. Notice that the larger the number, the more true the statement is judged; the smaller the number the more false it is judged.

Please respond to each of the 17 statements on this and the following page by indicating your own personal opinion of the statement's truth, regardless of whether your opinion agrees or disagrees with some or all of the material read in this test. Answer the questions in the order presented, and do not skip any question. Work rapidly, as only three minutes are allowed for answering all 17 questions.

1. Everyone should get a chest X-ray each year in order to detect any possible TB (tuberculosis) symptoms at an early stage.

2. The effects of penicillin have been, almost without exception, of great benefit to mankind.

3. Everyone should brush his teeth after every meal if at all possible.
4. Everyone should see his doctor at least once a year.

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5. Brushing one's teeth can become a harmful practice, if one does it too often.

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6. Chest X-ray examinations for TB should be taken regularly and often.

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7. The benefits to mankind from using penicillin have far outweighed any disadvantages.

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8. If everyone were to get a complete physical checkup once every year, more harm than good would result.

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9. There are disadvantages to brushing one's teeth too often, as well as too soon.

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10. Even though one may not have any reason for suspecting TB, it is good idea to have frequent chest X-ray examinations.

11. Probably the greatest single advance in the history of medical science was the discovery of penicillin.

12. People should not be urged to have a complete medical checkup so often as once a year.

13. The best way to prevent tooth decay is to brush one's teeth frequently.

14. All things considered, getting an annual chest X-ray for detecting TB is a very wise practice.
15. It is rather foolish to call penicillin a "wonder drug" when there are so many disadvantages to its use.

16. Chest X-ray examinations for TB should be taken regularly and often.

17. We should all have medical checkups, not only when we feel ill, but also at frequent intervals even when we feel well.
The thesis submitted by Virginia Heenan has been read and approved by members of the Department of Psychology.

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the thesis is now given final approval with reference to content, form, and mechanical accuracy.

The thesis is therefore accepted in partial fulfillment of the requirements for the Degree of Doctor of Philosophy.

January 18, 1971

Signature of Advisor