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Changing intention and behavior: a field study.

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Changing Intention and Behavior: A Field Study

A Dissertation Presented

By

Susan Carol Lehtinen

Submitted to the Graduate School of the University of Massachusetts in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

June 1976

Psychology
CHANGING INTENTION AND BEHAVIOR: A FIELD STUDY

A Dissertation Presented

By

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ABSTRACT

Changing Intention and Behavior: A Field Study

June 1976

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This study examined the utility of applying a cognitively-oriented model to a population of mental health workers in an attempt to understand and predict intention and behavior. The model suggests that a behavioral act is a function of an individual's behavioral intention, which is a function of the weighted sum of two factors, a personal or attitudinal factor, and a social or normative factor. In addition to examining the functioning of this model within a field setting, the present study explored the effects of three experimental manipulations upon the components of the model.

Subjects were 65 direct care staff members at a state mental hospital. Eighteen control subjects completed assessment instruments derived from the model, at times one and three, and did not receive any manipulations. Forty-seven experimental subjects completed the assessment instrument at times one, two, and three, with the assessment at times
two and three being immediately consequent to the administration of experimental manipulations. (A role playing manipulation and a persuasive communication manipulation were administered immediately prior to the assessment at time two. A social reinforcement manipulation was administered immediately prior to the assessment at time three.) The criterion behavior was number of progress notes written per day per subject. Behavioral data were gathered from records at the hospital.

The results evidenced the applicability of the model to a field setting. The components of the model were significantly related to intention, and intention was significantly related to actual behavior. The three experimental manipulations did not have any consistent effects upon the components of the model, intention, or behavior. Several possible explanations for the lack of consistent effects are presented. The effects of the conditions of group and sex upon the components of the model, intention, and behavior were consistent, but did not reach statistical significance (.09 ≤ p ≤ .13). Practical and theoretical implications of this study are discussed.
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INTRODUCTION

The issues of attitudes, behavior, and behavior change, have occupied a central role in social psychological research throughout its history. From Allport's (1935) assertion that an attitude constitutes a predisposition to respond to an object in a consistently favorable or unfavorable manner to Fishbein and Ajzen's (1975) cognitively oriented formulation of attitudes and behavior, researchers and theorists have endeavored to understand the complex and intricate issues surrounding attitudes and human behavior.

The research presented herein attempts to further examine and extend an understanding of the issues of attitude, behavior, and behavior change. Whereas many previous studies have taken place in the controlled conditions of a university laboratory with a college student population, the present study focuses on research in the field. The setting under consideration in the present study is a state mental hospital and the subject population is a group of direct care workers at this hospital.

Little systematic research has been done with direct care staff people of mental hospitals regarding the issues of understanding and examining attitudes, behaviors, and behavior change. In the past few decades, some studies have considered the responses of this population to
attempts at program changes and have attempted to assess the many different variables that seem to influence those responses. This research has largely been non-systematic and often descriptive in nature.

In further examination of this literature, one notices that the attempts at new program implementation and the investigations of these attempts often have not taken into account social psychological findings regarding the nature of attitudes, behavior, or behavior change. Although past social-psychological research on attitudes has revealed many inconsistent findings, recent attempts at making sense of these inconsistent findings (Fishbein and Ajzen, 1972, 1975) have yielded some promising results and hypotheses.

The present study examines the utility of applying these recent social psychological notions to a subject population of direct care employees at a mental hospital. This study attempts to examine and expand the knowledge of attitudes, behaviors, and behavior change. In the following pages, these issues are discussed in more detail.

Research on Mental Hospital Employees

Zax and Specter (1974) provide an overall historical perspective of the roles of mental hospital personnel in their discussion of the mental hospital community. They point out that in the eighteenth and nineteenth centuries,
in response to a recognition of the importance of the environment as an influence on the mental state of the hospitalized patient, "moral treatment" characterized many mental hospitals. This approach stressed the therapeutic community forces within the hospital. During the latter half of the nineteenth century a renewed emphasis was placed on the theory that serious mental disturbance was constitutional. This conceptualization resulted in a drastic change in hospital practice, the effects of which are still evident today. It was reasoned that since constitutional factors were central in the etiology of mental disorder, there was little need for concern about the patients' hospital environment. Economical management of institutions thus implied large institutions staffed by people concerned primarily with the patients' survival needs.

Many of the recently developed hospital programs revive the old moral treatment approach. In addition to treating the patient with more respect and giving him/her more responsibility, a detailed look is being taken at the hospital as a social setting. Zax and Specter discuss several approaches to hospital programming, all of which have in common an intense involvement of all personnel with the patients. They state,
...it (new hospital programming) is most demanding of those individuals having the most direct contact with patients. This calls for a considerable upgrading of skills of traditional aides and nurses...the development of new cadres of therapeutic agents, training them, supervising them, and making a career possible for them in an organizational structure having rigid traditions are some of the important issues facing community psychology.

It is in this historical context that the present study examines an attempt to change the intentions and behaviors of one group of mental hospital staff workers. Before this study is presented in detail, previous research related to these issues is presented.

In the paragraphs below, investigations examining various aspects of mental hospital employees' personalities, attitudes, and behaviors are discussed. In a study concerned with the ideologies of mental hospital workers, Gilbert and Levinson (1956) assessed employees' attitudes toward hospital aims and policies in treating the mentally ill. They constructed a 20 item Custodial Mental Illness Ideology scale designed to measure general attitudinal dispositions along a dimension from custodial (taking care of patients) to humanistic (helping patients to learn about themselves and to get well). This scale was administered to employees at a large state hospital. Gilbert and Levinson reported that custodial attitudes were usually associated with a broader pattern of personal authoritarianism. Also, attendants had more custodial attitudes than the other
occupational groups of student nurses, nurses, and doctors. The results of this study suggest that attendants view their jobs as taking care of patients, rather than facilitating patients' learning or getting well, and, that attendants also tend to be more authoritarian in disposition than other staff members.

A study by Appleby et al. (1961) corroborates these findings. In an assessment of employees' conceptions of their job responsibilities and other employees' job responsibilities at a general psychiatric hospital, they found that attendants viewed their primary job responsibility as physical caring for patients, whereas more professional people conceived of the attendant's role as primarily involving emotional care, with physical care being relatively unimportant. The results also revealed that attendants were less humanistic and more authoritarian in their attitudes toward mental illness than professional people.

Spiegel and Keith-Spiegel (1969) assessed opinions concerning mental illness among nursing personnel and attendants in a large mental hospital on the Custodial Mental Illness Ideology scale. They found attendants reporting a stronger custodial orientation than nurses. They also found that attendants saw little room for improvement in hospital conditions. This study supports Gilbert and Levinson's (1956) findings that attendants see themselves more as
custodial agents than promoters of health, and additionally suggests that attendants recognize little possibility for improving conditions at the hospital.

The opinions and attitudes of attendants were further elucidated in a study in 1962 by Cohen and Struening, who developed the Opinions about Mental Illness scale, another instrument for assessing mental health worker's opinions. They administered this instrument to over 1000 employees of two large mental hospitals. They found that aides were substantially different from other occupational groups on three of the five factors assessed through their instrument. Attendants were more authoritarian, viewing patients as an inferior class requiring coercive handling, less benevolent, having a less kindly view toward patients, and less accepting of the view of mental illness as an illness like other illnesses which can be cured.

In summary, the above studies suggest that as a group compared to other employees, the attendants are more authoritarian, with a view toward patients which is more custodial and less benevolent. The implications of these findings for understanding and predicting attendant's behaviors and reactions to attempts at behavioral change are not clear. It appears that the personal trait of authoritarianism, combined with relatively custodial and non-benevolent views toward patients would be factors mitigating against acceptance
of innovative programs, or other interventions which might require behavioral changes. Cohen and Struening (1962) in considering the implications of their findings regarding attendant's attitudes, express a general pessimism regarding the efficacy of educational programs in reducing the high degree of authoritarianism and social restrictiveness found among attendants in mental hospitals. In a study concerned with the implications of personal attitudes with regard to resistance to innovations in a psychiatric hospital, Wilkinson (1974) assessed the conservatism, dogmatism, machiavellianism, and faith in people attitudes of 36 employees of a large state mental hospital. He found that subjects who were highly resistant to innovative programs scored significantly higher on measures of conservatism, dogmatism, and machiavellianism, and they also reported attitudes reflecting less faith in people. Thus, it seems that attendants, high in authoritarianism and custodial orientation, and low in benevolence, would probably be resistant to behavioral changes. Several studies have examined the issue of attendant's reactions to attempts at program innovations and other attempts at behavioral change. These are briefly discussed below.

During the sixties, three theoretical conceptualizations of the impact of an attempted programmatic innovation upon attendants in mental hospitals focused on attendants'
apparent needs to maintain a norm of not disrupting their normal behaviors. Scheff (1961) presented a sociological exploration of the dynamics of policy formation and decision processes in a mental hospital. He suggested that the attendants at the hospital he investigated had formed a stable and highly organized community. Within that community, over the years, an informal system of sanctions and rationalizations had evolved which enabled the staff to exert control over policies. He saw this system of social control as being effective enough to stalemate a vigorous program of reform introduced by the administration. He further suggested that the system was so pervasive that even the sizeable group within the staff who wished to participate in hospital reform were confused or neutralized. In summary, Scheff articulated his perception of a system of social control among attendants, which operated to mitigate against attempts at innovative programming.

Doud (1969) proposed a similar analysis of attendants' behaviors as a part of his report on his study of the staff in one unit of a large state mental hospital. Doud postulated that the hospital staff is controlled by the nonprofessional group within its membership. Doud suggests a "wave-making theory", in his attempt to explain the dynamics of the situation. He suggests that if anyone on the mental hospital staff makes waves, the nonprofessional staff will punish,
reject, or otherwise discourage the repetition of such behavior. Doud's ideas echo Scheff's ideas. They both suggest that attendants have a system of social control which operates to mitigate against changing behavior.

The dynamics of attendants' behaviors of social control and norm maintenance are examined in more detail in an article by Grold (1960). Grold reports his experience of initiating a program change which involved facilitating the patients' learning about themselves and taking more responsibility for themselves. He reports experiencing much resistance from aides towards the program. Attendants reported, in personal discussions with him, feelings that the new program threatened their authority and reduced their status. Grold explained this reaction by suggesting that basic fears had necessitated the attendants' original positioning of themselves as distant from patients, and that attendants justified their distanced positioning through holding the view that patients "needed to be treated with authority". The institution of the new program threatened the attendant's established distance from patients. It threatened their position of separateness and authority. This threat led to the attendant's resisting the adoption of the new program.

Scheff (1961) and Doud's (1969) analysis suggest a social norm for maintaining things as they are and resisting
change. Grold's (1960) article suggests that an important dynamic in the resistance to change is the attendant's sense that change threatens his authority and status. The postulations from these three studies were the result of reflection and speculation, consequent to the author's participant-observational studies. The postulations were not examined systematically. There are a few studies which have attempted to systematically explore factors which might mediate attendant responses to attempts at change. These studies, and the relation of their results to the postulations entertained above, will now be discussed.

Bohr and Offenberg (1969), as part of a study on the effects of training on attitudes of direct care staff workers and trainees, had psychology intern trainees and direct care staff respond to a ten-item semantic differential scale before and after a week-long training program. The scale contained six evaluative items and four potency items. The analyses of the reports of 20 direct care staff and 12 trainees revealed no change in the subjects' views of themselves over time. The analyses did reveal a marked difference in the cognitive orientation between the two groups. Interns differentiated between goodness and potency as individual characteristics. Direct care staff did not, but rather, viewed their own potency as an integral aspect of their positive self-image. Potency was a first factor in a
factor analysis of the aide's ratings, as contrasted to previous research, where the evaluative dimension has been first. Bohr and Offenberg suggest that the marked perceptual differences reflect the typical line-staff conflict between hospital direct care personnel who perceive therapists as overly permissive and psychotherapists who view direct care personnel as paternalistic or authoritarian. They further suggest that the distinctive cognitive orientation of aides reflects their unique norm about the appropriateness of using power. In summary, this study found no difference after training with interns, in attendant's ratings of themselves, and the cognitive orientation among attendants was unique in its orientation around the potency dimension.

Pryer et. al. (1966) attempted to evaluate the effectiveness of a basic training course upon job knowledge, job satisfaction, and attitudes toward mental health. Using before and after training measures, as well as control group comparisons, they found significant changes only in job skills, such that subjects increased their job skills' scores after training. They found that female trainees' scores were significantly higher than males on tests of knowledge of job skills both before and after training. The results of this investigation offer no evidence that training enhanced job satisfaction or mental health attitudes,
but do suggest improvement in knowledge of job skills.

Pryer et. al. (1969) assessed the responses of 25 aides on the Opinions about Mental Illness scale before and after a 10 week training program. They found that two of the five factors assessed by the scale were amenable to change associated with the training program; the factor regarding mental hygiene ideology (accepting the notion of the patient as someone who is ill and can become better) and interpersonal etiology (accepting the belief that mental illness arises from interpersonal experience). The other three factors, including authoritarianism, were not affected. Pryer et. al. interpret their results as suggesting that attendant training can influence mental health attitudes in a positive direction, if the attitudes to be changed are related to understanding the dynamics of the mentally ill. However, if the attitudes of the attendant are closely associated with basic personality traits of the attendant, including authoritarian attitudes, it is doubtful that they can be changed.

In summary, Bohr and Offenberg (1969) and Pryer et. al. (1966, 1969) all suggest that attendant's attitudes around power and authority are resistant to change. Additionally, Bohr and Offenberg point to the high saliency of power to attendants, and Pryer et. al. demonstrate that attitudes concerning issues unrelated to power (understanding the
ideology and etiology of mental health) can be changed.

These findings are congruent with the theoretical speculations discussed earlier. The speculations suggested that attendants have a social system of control, mainly oriented around a norm of keeping things as they are. This social system of control seems to be motivated by a desire to maintain a sense of authority, and not have that authority threatened or challenged. The findings of experimental studies are supportive of this conceptualization in their results evidencing power as a highly salient cognitive dimension which is highly resistant to change. Theoretically and experimentally it is clear that the issue of power is central to attendants, and that many attendants' behaviors are organized around and invested in the maintenance of their power.

The above postulations, research, and theory have two major implications for any research focusing on an attempt to change attendant behavior. First, one of the most central and difficult attitudes to attempt to change is the attendant's attitude toward power. Secondly, (and a corollary to the first) a change attempt which does not threaten or challenge the attendant's sense of power will have a higher likelihood of being accepted than one which does.

Social psychologists have investigated several strategies of behavioral change which do not in any obvious or
immediate way threaten subjects' sense of power. Three such behavioral change processes and research related to them are described in the pages which follow.

**Behavior Change Through Operant Conditioning**

One basic behavior change process which has been explored by social psychologists is operant conditioning. Operant conditioning principles suggest that a behavior followed by a positive consequence will increase in its probability of being performed. A positive consequence is called a reinforcement, and is described as either the presentation of something positive or the removal of something negative. A reinforcement is defined as a consequence that increases the probability of the preceding response.

One basic problem that becomes apparent when considering this basic formulation of a behavior change process, is that the nature of the mediators of the behavior change are not articulated. Reinforcement is circularly defined as that which increases the probability of a response. Thus, one does not gain insight into the intervening processes or variables that determine whether or not and how much influence a reinforcement manipulation might create. This theoretical problem is apparent in a consideration of some social-psychological research in this area.
Scott (1957) conducted a study concerned with the effects of positive and negative reinforcement for advocating a counterattitudinal position. After subjects had debated an issue, adopting a position counter to their own position, they received positive or negative feedback (that they had "won" the debate by doing a better job presenting their arguments) from an audience who had listened to the debate. Scott found that the winners changed their attitude on the issue by a significantly greater amount in the direction of their adopted positions than either the losers or controls. Similar results were reported in a follow-up study (Scott, 1959). A study by Sarbin and Allen (1964) provides some evidence inconsistent with the above. In their study, they manipulated smiles and frowns as responses to subjects' emitted behavior, and found that these intended positive and negative reinforcers did not affect subjects' behavior.

Thus, although some researchers found support for attitude change consequent to the receipt of reinforcement, others did not. From these studies, it is not clear why the "winner" "loser" variables were reinforcing in Scott's studies, and why the smiles and frowns were not reinforcing in Sarbin and Allen's study. Also, it is not clear what the nature of the change process is that resulted in Scott's subjects expressing more positive attitudes.
The study presented herein addresses itself to these issues. This study involves a reward manipulation administered consequent to subjects' engaging in a role-playing behavior. The effect of the reward manipulation upon beliefs, attitudes, intention, and behavior is examined.

**Behavior Change through Role Playing**

Several studies have examined the effects of role playing on attitudes and behavior. Generally, they have found that the effect of enacting a role which one does not usually play is to facilitate change in one's attitudes and behaviors. These studies have also explored some variables which are possible mediators of the changes in attitude and behavior, however there has been no overall systematic effort at elucidating these mediators. Some of the role playing studies are discussed below, with particular attention being paid to their consideration (or lack thereof) of variables associated with the attitude and behavior change process.

In a 1954 role playing study, Janis and King found that some subjects had more opinion change than others. They reported that those who had more change seemed to improvise more and reported being more satisfied with their own performance, than did subjects who did not have as great an opinion change. In a follow-up study in 1956, they attempted
to isolate the factors associated with the amount of opinion change. They isolated improvisation as a mediating factor in role playing situations where attitudinal change occurs.

The facilitating effect of active participation in role playing on changes in attitude was also explored by Zimbardo and Ebbesen (1970). Whereas Janis and King had focused on degree of improvisation as a mediator of change, Zimbardo suggested that the amount of effort was an underlying mediator of change. In two experiments, Zimbardo and Ebbesen had subjects role play a dissonant persuasive speech. They manipulated effort through varying the time delay of auditory feedback. Subjects who were in the high effortful conditions showed more attitude change than the subjects in less effortful conditions. These results suggest that effort is a mediator of attitude change in role playing situations.

Culberston (1957) reports a study where some subjects served as active participants in a role of someone advocating a certain position and other subjects were observers to the interactions.

The results showed that a significantly greater proportion of role-players than observers or control group subjects had favorable change on two attitude measures. Role players changed more than observers of role players who changed more than control subjects. Culberston hypothesized that when a person is closer to a role, as when one is role playing as
versus observing, then s/he is more likely to have his/her cognitive and motivational dispositions affected by the experience. Culberston reports that role players, in comparison with observers, reported significantly more association with the assigned role, spending more time attending to the role and experiencing more emotional involvement with the role. This is consistent with Janis and King's hypothesis regarding improvisation, which, applied to this situation, would suggest that the role playing required more improvisation than did the observer role. Zimbardo and Ebbesen's hypothesis regarding effort also seems applicable, in that it might be argued that the role playing required more effort than the observer role. What Culberston's study points to is the effect of the active role on the cognitive and emotional components of the experience. Culberston emphasized that closeness to a role creates effects on a person's cognitive and emotional dispositions. Thus, perhaps what is fundamental in the change process in role playing situations is the change of cognitive and emotional dispositions.

Some support for this view is found in Clore and Jeffery's (1972) study involving subjects playing the role of a handicapped student by wheeling themselves in a wheelchair across campus and back. One group of observer subjects accompanied and watched the experimental subjects (but did
not assist them), and another control group of subjects walked around campus for an equivalent amount of time. The results showed that role players did not differ significantly from observers in their responses to a questionnaire regarding attitudes toward disabled students or in their attitude toward the experimenter (who appeared to be confined in a wheelchair). Both of these groups had more favorable responses to these items than did the control group. These attitudinal differences persisted four months later, when subjects were contacted by telephone and as part of an interview, were given an attitudinal assessment regarding issues concerning disabled students.

Clore and Jeffery reported that of all of the dependent variables assessed, the effect of the treatment conditions was greatest on the five item self report scale of empathy. They suggested that the direct and vicarious experience of role playing is associated with the salient elements of the situation, and that the emotional and cognitive responses induced by the role playing were coded, stored, and available for retrieval. Their ideas parallel Culberston's (1957) suggestion that closeness to a role creates effects on a person's cognitive and emotional dispositions.

Fishbein and Ajzen (1975) present a view of the dynamics of the role playing situation which is congruent with that developed here. They suggest that the active search of the
role player through his/her belief system in order to find arguments in favor of an assigned position may produce changes in the beliefs salient to the role player and changes in the relevance of beliefs. More specifically, they suggest that in being forced to role play, a subject may be forced to elicit beliefs that were initially not part of his/her salient belief hierarchy. Thus, role playing may serve to introduce previously nonsalient beliefs into the person's salient belief hierarchy. This change in belief salience may account for some of the consequent change in attitude. Also, Fishbein and Ajzen note that a role player who is instructed to play a certain role is instructed to develop his own arguments relevant to and supportive of the assigned position. In his/her efforts to do this, the role player may make links and see relations between his/her beliefs and ideas that s/he hasn't seen before. In summary, Fishbein and Ajzen suggest that an increase in the number of and salience of beliefs, as well as an increase in the perceived relevance of beliefs to the assigned position are mediators of attitude change in a role playing situation. This is consistent with past research, which suggests that the change in the emotional (evaluative in Fishbein and Ajzen's model) and cognitive responses of subjects mediates change.
In the study herein, the effect of role playing upon attitude and behavior is examined through a detailed assessment of beliefs. An attempt is made to elucidate the mediators of change in the role playing situation, through a systematic examination of subjects' beliefs.

**Behavioral Change through Persuasive Communication**

Traditional Approaches

Yale communication research program - Hovland and his associates (Hovland, Janis, and Kelley, 1953) investigated factors influencing the effectiveness of persuasive communication. Their research involved consideration of such issues as who says what to whom with what effect. One assumption underlying their research is that the effect of a given communication depends upon the extent to which it is attended to, comprehended, and accepted.

Their research has explored the effects of independent variables such as source characteristics (the communicator's status, trustworthiness, prestige, likeability, credibility, etc.) message characteristics (one-sided versus two-sided messages, high fear appeal versus low fear appeal messages, order of arguments in a message, etc.) and audience variables (persuasibility, self-esteem, intelligence, initial opinions, cognitive complexity, etc.). Also, several dependent variables have been examined, including changes in beliefs,
attitudes, intentions, and behaviors.

McGuire's two factor model - McGuire (1969) combined attention and comprehension into a single factor (reception) in his two factor model of persuasion. He suggests that persuasion involves two basic steps: reception of the message content and yielding to what is comprehended. Additionally, he suggests two additional steps in the persuasion process: retention of the position agreed with and action in accordance with the retained agreement. McGuire suggests that a receiver must go through each of the five steps, attention, comprehension, yielding, retention, and action, if communication is to have an ultimate persuasive impact, and that each step depends upon the occurrence of the preceding step. Each step is viewed as a possible dependent measure of attitude change, and he calls these steps destination variables. McGuire also recognizes source, message, channel, and receiver, as components in the communication process of persuasive communication.

The research regarding communication and persuasion has examined the effects of source, message, or receiver variables on one or more destination variables. Dependent variables examined have included measures of beliefs, attitudes, or intentions.

Fishbein and Ajzen (1975) point out that relatively little attention has been paid to changes in actual behavior or the
retention of persuasive effects. Although many studies have obtained some measure of reception, the second mediating factor, acceptance or yielding has not been directly measured. The usual argument that is made in research is that in the absence of differences in reception, the effect of a given manipulation on persuasion is due to its effect on acceptance.

In their discussion of persuasive communication attempts, Fishbein and Ajzen (1975) provide an alternative view, and suggest that a message can be described as consisting primarily of a series of belief statements, each linking some action to a consequence. For example, a statement, "To write one progress note per day will provide more information for future reference." could be described as a belief statement linking an action of writing one progress note per day with a consequence of providing more information for reference with a probability of 1.0. Their conceptualization of persuasive communication will receive further elaboration here, in an attempt to clarify their alternative conceptualization of how persuasive communication can mediate attitude change.

They suggest that each persuasive communication comprises for the most part a set of belief statements. Each statement corresponds to a proximal belief held by the receiver. Some of these proximal beliefs may be dependent
beliefs, others target beliefs, and others beliefs that are supposed to support the target beliefs. Fishbein and Ajzen suggest that associated which each belief statement are two probabilities - one representing the strength of the source's belief (source probability) and the other, the strength of the receiver's initial belief (proximal probability). They also suggest that the ultimate effect of a persuasive communication influence attempt is dependent mainly on two factors, discrepancy and facilitating effects.

Discrepancy refers to the difference between the probability implied by the source belief (the source probability) and the receiver's proximal probability. The greater this discrepancy, the lower should be the probability of acceptance. They tentatively assume an inverse linear relationship between acceptance and discrepancy.

Facilitating factors are factors which influence a person's confidence in his/her own belief (that is, in his/her proximal probability) or that influence a person's judgment that the source probability is correct. These facilitating (or inhibiting) factors are factors which have traditionally been classified as source, message, and receiver variables. Fishbein and Ajzen suggest that the different types of facilitating factors combine in some fashion to produce an overall level of general facilitation. They suggest that many steps intervene between a given source,
channel, audience, or message manipulation on change in a belief, attitude, intention, or behavior. Further, they suggest that given the complexity of the persuasion process, it is unlikely that any manipulation will have a consistent effect on change in a given dependent variable. Fishbein and Ajzen suggest that probability of acceptance is an inverse function of discrepancy, and that the relation between the probability of acceptance and discrepancy is influenced by facilitating factors, such that, generally speaking, as the facilitating factors increase, the probability of acceptance should also increase.

Thus, the focus that Fishbein and Ajzen present is on the role of beliefs in any change effort. The present study considers the effect of a persuasive communication upon beliefs, in an attempt to provide some evidence regarding Fishbein and Ajzen's conceptualization.

**Fishbein and Ajzen's Conceptualization - Prelude**

The lack of consistency of findings concerning persuasive communication, and the whole area of attitudes in general, is discussed by Fishbein and Ajzen (1972). In their review of over 750 articles on attitudes and opinions, they point out that they found almost 500 different operations designed to measure attitudes. They also report that over 200 of the studies that they reviewed used more than one
dependent measure of attitude, and about 70% obtained different results when different measures of attitude were used. They discuss the apparent inconsistencies in the literature they reviewed, and offer an alternative view of the attitude change process (this will shortly be discussed in detail).

One area that Fishbein and Ajzen (1972) discuss concerns the typically low relationship found in the literature between attitudes and behavior. In their review, they report that of some 24 studies concerned with the influence of a given manipulation on attitudes and behavior, 19 reported different results, 2 reported the same effects, and 3 reported no effects at all. Similarly, they report that in the 60 studies that measured or manipulated attitude, 15 reported a positive relationship with behavior, 15 reported no relation, and the others found relations under some conditions, but not others.

The lack of relationship between attitude and behavior had been noted on several occasions before Fishbein and Ajzen's article (LaPiere, 1934; Kutner, Wilkins, and Yarrow, 1952; Berg, 1966; Bray, 1950, etc.). Also, some investigators had made suggestions regarding ways to gain more precise predictions of behavioral acts. Rosenberg (1960) suggested that attitudes have three dimensions, the cognitive, affective, and connative, and that for more accurate pre-
dictions, investigators must examine all three aspects of an attitude. Other investigators (Triandis, 1967; Ehrlich, 1969; Wicker, 1969) have suggested that an attitude is but one variable that influences behavior. They suggest that additional factors, such as social norms, habits, and personality characteristics, etc., also influence behavior, and must be taken into account.

Most investigations of behavioral acts did not systematically deal with the several additional variables mentioned above. It was in this context that Fishbein (1967) attempted to integrate these other determinants into a single framework. The theory that he presented is concerned with predicting a specific behavior under a given set of conditions. The theory focuses on a small number of variables as antecedents to overt behavior, and attempts to explain the conditions under which additional factors are expected to contribute to behavioral predictions. A general introduction to the theory is presented below, and then its relevance to the prediction of behavior is discussed.

**Fishbein's Theory**

Fishbein's theory is basically concerned with understanding and predicting behavior. In this theory, Fishbein focuses on the prediction of a specific behavioral intention in a well defined situation. The behavior that the theory is
concerned with is that which is under volitional control - that which can be intended and carried out by the subject. Fishbein assumes that in a given situation, a person holds or forms a specific intention that influences his/her subsequent overt behavior. The intention in his theory refers to the performance of a given action in a given situation. What is to be predicted is the intention to perform a particular overt response.

In his theory, Fishbein suggests that a behavioral act is a function of an individual's behavioral intention, which is a function of the weighted sum of two factors - a personal or attitudinal factor (the attitude toward performing the behavior in question) and a social, or normative factor (the perceived normative expectations of reference groups, multiplied by the person's motivation to comply with these expectations). Symbolically, the central equation of the theory is:

$$B \cdot I = w_1 (A_B) + w_2 \left( \sum_{i=1}^{n} b_{ni} m_{ci} \right)$$

where $B =$ overt behavior; $I =$ behavioral intention; $A_B =$ attitude toward performing behavior $B$; $b_n =$ normative belief (the person's belief that a reference group or individual $i$ thinks that s/he should or should not perform behavior $B$); $m_c =$ motivation to comply with referent $i$; $n =$ number of relevant referents; and $w_1$ and $w_2$ are empirically determined weights.
It is evident from the equation above that behavior is conditional upon the antecedent behavioral intention. The value of the behavioral intention is a function of an attitudinal and social component. Other variables may have an indirect effect, insofar as they influence one or both of these components.

It is thus clear that the two components are central to understanding behavioral intention, which is central to predicting behavior. Thus, each of the components is examined in more detail below.

The attitudinal component

The attitudinal component is conceptualized as the actor's evaluation of or attitude toward performing the behavior in question under a given set of circumstances. This is an important difference in conceptualization from previous theories; here, it is the attitude toward performing a specific behavior which is the focus of the theory, as opposed to the former emphasis on the attitude toward an object or a class of objects. The person's evaluation of or attitude toward performing a specific behavior is proposed to be a function of the perceived consequences of performing that behavior, and of the person's evaluation of those consequences. The attitude toward a behavior is conceptualized as an expectancy - value formulation: \[ A_B = \left( \sum_{i=1}^{n} b_i e_i \right), \]
where \( b_i \) refers to the individual's belief about the likelihood that behavior \( B \) will result in outcome or consequence \( i \) (a probability statement); \( e_i \) is the person's evaluation of outcome \( i \); and \( n \) is the number of beliefs that the person holds about performing behavior \( B \).

In Fishbein's model, other things equal, the higher the value of the attitudinal component, the higher the behavioral intention value and the more probable it is that a specific behavior will be performed (assuming that \( w_1 \) does not equal zero). The model suggests that the maximum value of the attitudinal component would be approached as the likelihood, the number, the positivity of the outcomes associated with performing the behavior reach their maxima.

The normative component

The second component of the theory, the normative component, is composed of the person's normative beliefs multiplied by the person's motivation to comply. The normative belief is the person's belief about the likelihood that members of a specific reference group expect him to perform the behavior in question. The motivation to comply refers to the individual's motivation to comply with the reference group's perceived expectations. The reference groups or individuals whose expectations are perceived to be relevant will vary with the situation. If the expectations of more
than one reference group are to be considered, then the motivation to comply with each of the relevant reference groups should be measured.

The components' weights

The two major components of behavioral intention have been described - the attitudinal and the normative. Each of these components is given an empirical weight in the prediction equation proportional to its relative importance in the prediction of behavioral intention. It is expected that these empirical weights \( w_1 \) and \( w_2 \) will vary according to the kind of behavior being predicted, the conditions under which the behavior is performed, and the characteristics of the person who is to perform the behavior. Thus, for some behaviors, normative considerations (expectations of family, friends, etc.) may be more important in determining behavioral intentions than the attitudinal considerations (the expected outcomes of performing the behavior). The reverse may be true for other behaviors.

The theory as a multiple regression equation

Ideally, weights for the attitudinal and normative factors would be available for each individual with respect to each behavior in a given situation. Since this is not yet the case, the practice has been to use multiple regression
techniques with the theory. The theory has been regarded as a multiple regression equation where the two predictors are the social and the normative components, and the criterion is the specific behavioral intention under consideration. Standardized regression coefficients provide estimates of the weights of the two predictors.

If behavioral intentions and overt behavior are highly correlated, then the two components of the theory should also predict actual behavior. Several factors may influence the relation between behavioral intention and overt behavior, as, how specifically the behavior under consideration is defined and measured, the length of the time interval between the measurement of the intention and the observation of behavior, the input of new information to the actor, or the degree to which the behavior is under the actor's volitional control. Intentions will vary in their relation to overt behavior according to the degree to which the above factors are present and affecting intentions, behaviors, or both.

The influence of other variables

According to the theory, variables external to the model may influence behavioral intentions and overt behavior indirectly, by influencing either of the two components or their relative weights. Thus, variables external to the model (as situational or personality variables) are related
to intention and overt behavior only insofar as they affect a component that carries a significant amount of weight in determining an intention, or insofar as they affect the weight of a component.

**Fishbein and Ajzen's (1975) Conceptualization**

Fishbein and Ajzen (1975) further elucidated the role of beliefs in any influence process. In their conceptual structure the notion of beliefs occupies a central role. Their conceptualization suggests that an influence attempt, in the final analysis, must always be directed at one or more of the individual's beliefs.

Every object-attribute or act-consequence association to which an individual is exposed, Fishbein and Ajzen suggest may be viewed as an informational item. They label the individual's belief that directly corresponds to an informational item a proximal belief. Beliefs which need to be changed in order to influence the dependent variable under consideration are called primary beliefs.

Fishbein and Ajzen point out that an investigator often assumes that if certain beliefs are changed, a change in the dependent variable will follow. The beliefs which the investigator attempts to change they call target beliefs. Fishbein and Ajzen postulate that an influence attempt which changes a receiver's beliefs will have little effect on the
dependent variables unless the beliefs changed are themselves primary beliefs or related to primary beliefs.

Fishbein and Ajzen suggest that an influence attempt may fail to affect the dependent variable for at least three reasons; it may not produce the desired change in proximal beliefs; even when changes in proximal beliefs occur, these changes may have no effect on the primary beliefs; and the influence attempt may have unexpected and undesirable impact effects on external beliefs, which can also influence primary beliefs.

This conceptualization elucidates the centrality of the role of beliefs in any influence attempt. In line with this conceptualization, the present research involves a pretest designed to assess primary beliefs, and then, the administration of manipulations designed to influence those primary beliefs. These issues are discussed in more detail later in this introduction. Now, the empirical support of the general model of behavior is presented, along with a description of the nature of the present study's manipulations.

**Existing and Present Research**

The general nature of existing empirical research and the present research is discussed below. The present research focuses on the determinants of intention and behavior in terms of Fishbein's theory. The nature of the relation
between intention and behavior, the functioning of the attitudinal and normative components in the theory, the influence of variables external to the theory, attempts to change intention and behavior, and the nature of the change process are examined in the research outlined below.

The attitudinal component

Anderson and Fishbein, 1965; Fishbein, 1963; and Kaplan and Fishbein, 1969 provided evidence that a person's attitude toward an object is a function of his beliefs about the object and the evaluative aspects of those beliefs (\( \sum_{i=1}^{n} b_i e_i \)). Here, a similar formulation is suggested for the attitudinal component, with the beliefs about an object being replaced by beliefs about a behavior's consequences.

Ajzen and Fishbein (1970) examined the relation between the attitudinal formulation and the attitude toward the behavior, \( A_B \). They obtained measures of the likelihood that cooperative choices in the Prisoner's Dilemma would lead to two possible payoffs for the players. By multiplying these estimates times the subject's evaluations of the payoffs, and summing the products, an estimate of \( A_B \) was obtained. This was correlated with a direct measure of attitude toward cooperation as measured by four evaluative semantic differential scales. In the two Prisoner's Dilemma games played, the correlations were .632 and .67 (p < .01), suggesting that
\[ \sum_{i=1}^{n} b_i e_i \] and more direct measures of attitude are highly related.

In a study involving hypothetical decisions under risk (Ajzen & Fishbein, 1972), measures of \[ \sum_{i=1}^{n} b_i e_i \] and direct measures of attitude were correlated between .299 and .814, with a mean of .611.

Thus, there is support for the expectancy value model of the attitudinal component. One important qualification of this support, however, is that it was obtained in game-like situations in the lab with college students. The research proposed herein examines the attitudinal component in another setting, a mental hospital, in everyday situations (the everyday routine in the hospital), and with another subject population (the staff in the hospital). The study reported herein attempts to investigate the generality of the findings of the previous laboratory investigations regarding the attitudinal component of the theory; the relationship between direct measures of attitude and \[ \sum b_i e_i \]; the relation of individual items to the overall \[ \sum b_i e_i \] attitude index; and the effect of manipulating \[ A_b \] on overt behavior.

The normative component

The present study examines normative beliefs in the state mental hospital setting and the effect of an attempt to manipulate the value of the normative component on intentions and overt behaviors.
Predicting behavioral intentions

Several studies suggest that specific behavioral intentions are highly predictable from the attitudinal and normative components of the theory. Generally, multiple correlations of the attitude toward the behavior ($A_B$) and of the normative component ($\sum b_n m_c$) on behavioral intentions are very high. Rating the specific behavior in question on a few semantic differential scales is the usual way of measuring $A_B$. A direct question concerning the beliefs of other people or other referent groups and an assessment of motivation to comply provides a measure of the normative component. In at least ten different studies (Ajzen & Fishbein, 1973), multiple correlations of the two components, with behavioral intentions, have been computed, with the average multiple correlation being .808.

The two components take on varying weights in the prediction of behavioral intentions. Fishbein (1966) found evidence for sex differences in regression weights, in his study concerning premarital sexual intercourse. Carlson (1963) noted that the regression weights varied according to personality characteristics. Other studies, as those involving cooperative or competitive contexts, have shown that situational factors can also influence the relative weights of the attitudinal and normative components (Ajzen & Fishbein, 1970; Ajzen, 1971).
Thus, there is considerable evidence that the theory's attitudinal and normative components are highly predictive of behavioral intentions. Also, that in considering the relative importance of these two components, one must take into account the type of behavior under consideration, the situation in which the behavior is to be performed, and individual differences between actors.

Intention - behavior relationship

Within Fishbein's model, it is assumed that behavioral intentions are the immediate determinants of the corresponding overt behaviors. Ajzen and Fishbein (1973) discuss several studies which support this assumption. These studies suggest that when appropriate measures of behavioral intentions are obtained, accurate behavioral prediction is possible. These studies are briefly discussed below.

Ajzen and Fishbein (1970) measured the number of cooperative choices a subject made during two Prisoner's Dilemma games. Measurements were made of the two trials that followed an eight trial warm up period. The correlations between behavioral intentions and behavior were .897 and .841 (p < .001) for the two games. Thus, their measure of behavioral intentions provided accurate predictions of overt behavior, in this situation, where the behavioral intentions measured were very specific; measures were taken immediately
prior to the behavior; and the measures were taken after eight warm-up trials, during which the subject could form fairly accurate beliefs about the consequences of cooperating and about the partner's expectations.

Using a different Prisoner's Dilemma game in the context of trying to produce changes in intentions and behavior by persuasive communications Ajzen (1971) found that behavioral intentions correlated with cooperative game behavior for the total sample over twenty trials at .822 (p < .001).

Hornik's (1970) research demonstrates that appropriate measures of behavioral intentions can predict specific overt behaviors with a high degree of accuracy. In this study, where subjects played an extended Prisoner's Dilemma game with a simulated partner, the average correlation between behavioral intention and overt behavior was .867 (p < .001).

In a study by Darroch (1971), correlations between subject's intentions to sign a release for pictures and their actually signing the release averaged .462. When other variables were considered in the analysis, as the subject's comfort with the picture; his perception of his parent's reaction to the picture; his perception of his friend's willingness to appear in a similar picture, and his judgment of the quality of each picture, the multiple correlation averaged .735. These findings provide evidence that the relations between behavioral intentions and behavior can be better understood when intervening factors are taken into account.
In a study by Fishbein et. al. (1970), three person groups were assigned the task of balancing a board in the shape of an equilateral triangle by raising or lowering respective corners. The correlations obtained between intentions and behaviors averaged .690 (p < .01). In this study, evidence was provided suggesting that mediating variables, such as whether or not one's partner complied with one's request, made significant contributions to the prediction of overt behavior, independent of the specific intention, measured at the beginning of the interaction. Thus, it seems that the best measure of intentions is that which is taken in close temporal proximity to the behavior that is to be predicted.

In a study concerned with premarital sexual intercourse among undergraduates, Fishbein (1966) found that the more specific the behavioral intention measured, the better a predictor of behavior it was, compared to a more general measure. There was also support for the notion that following through on an intention may be limited by opportunity, in that females had a higher correspondence between their intention to engage in premarital sexual intercourse and their actually engaging in that behavior.

Thus, the above studies suggest that, when the appropriate measures of behavioral intention are obtained, accurate behavioral prediction is possible, and that otherwise,
when appropriate measures are not available, other variables may have to be taken into account if accurate behavioral prediction is to be obtained.

The conceptual framework of Fishbein's model and the studies cited above suggest several variables that must be considered in order to obtain appropriate measures of intentions and the accurate prediction of behavior. One of these variables is the correspondence in specificity of the intention and the behavior. Fishbein (1973) suggests that the higher the correspondence, the higher the intention-behavior relation will be. For instance, an intentional statement of the following form: "At my job at CVH during the week of July 7 through 14, 1974, I intend to write one progress note per day for each of five patients, probable improbable" would lead to more accurate prediction of the number of progress notes written each day for each of five patients during the week of July 7 through 14 than would a more general statement like "I intend to write more progress notes".

The present study examines intention and behaviors at the same specific level. This study emphasizes that the behavioral intention be measured as closely as possible to the behavioral performance under consideration, in order to avoid changes in intention that might occur given a longer time interval. In order to facilitate the probability of a high relationship between intention and behavior occurring, it
was also noted that the specific behavior chosen for examination not be dependent on several intervening steps for its performance, nor dependent on other people or the occurrence of certain events. Finally, the behavior chosen for investigation was one that is under the actor's volitional control - the actor has the abilities and resources needed to perform the behavior, as well as no engrained habits mitigating against the performance of the behavior.

The behavior examined in the present study is the performance of a job function (the writing of progress notes) by particular people (the direct care staff) during a specified time interval at a specified place (a state mental hospital). This behavior, in addition to having the characteristics described above, is objective, easily quantified, and readily accessible in the field setting of the proposed research. Progress notes are brief reports regarding the physical and psychological state of an individual patient, entered into his/her chart for the purpose of recording the variations in the patient's condition during his/her stay at the hospital.

Changing intention and behavior

Fishbein's theory suggests that changes in intention and behavior can best be effected by manipulation of the component that carries a significant amount of weight in
determining behavioral intention. In two studies (Ajzen, 1971; Ajzen & Fishbein, 1972) persuasive communications designed to affect behavioral change were most effective when they were directed at the component that carried the most significant weight in the predictive equation.

In an attempt to maximize the amount of change in intentions and behaviors, the present research explores the effectiveness of manipulations directed at both of the components of the predictive equation simultaneously. In the study below, two attempts at changing intention and behavior are examined. The first manipulation involves an attempt at increasing the value of the attitudinal component (creating a more positive attitude toward performing a specific behavior). The second manipulation involves an attempt at increasing the value of the normative component (creating within the subjects a perception that salient referent groups and individuals expect a behavior change). Both the theory and the previous research suggest that the effect of each of these manipulations would be to increase the intention to perform a specific behavior and to increase the probability that a specific behavior will be performed, with each effect varying in impact with the weight of the component being influenced, and the amount of change in the values of the components.
Effects of external variables

According to the theory, any variable external to the theory can affect behavioral intentions only insofar as it affects one of the components of the theory or their weighting. Thus "external factors" such as demographic or personality characteristics of the actor, variables related to the particular behavior under investigation, or situational variables can affect intentions or overt behavior only insofar as they influence the attitudinal or normative components or their relative weights.

In two studies (Ajzen & Fishbein, 1970; Fishbein, et. al., 1970) results suggested that the attitude toward the act and perceived expectations were affected by the experimental manipulation in the same way that intentions and task behaviors were, thus providing evidence that the theory's two components tend to mediate external variables effects on behavior. In the present study, one condition involves a manipulation not directly aimed at either of the components of the model. This manipulation involves giving subjects a message which reminds them of the behavioral change suggested in the previous manipulations, and supports them in any behavioral changes that have taken place. It is predicted that the effect of this manipulation (the effect of a variable external to the theory) will be mediated by the effect that
it has on one or both of the components and/or their weighting.

Lab to field generalizability

One important aspect of this study is its examination of the Fishbein model in the field. Whereas much support has been accrued for this model in the lab (see previous discussion) little evidence has been obtained from field situations. Newman (1974) reported a study where he investigated the lab to field generalizability of Fishbein's model, and where he examined the relative efficacy of the Fishbein model and traditional job attitude measures as predictors of absenteeism and turnover. After collecting data from 108 nursing home employees over a 2 month period, he concluded that traditional job attitude measures (attitudes toward the job and specific aspects of the job situation) were more effective predictors of absenteeism, while Fishbein's model was a more effective predictor of turnover. He obtained a significant correlation between the intention and behavior measures of Fishbein's theory \( r = .39, p < .01 \), but this correlation is substantially lower than those obtained in laboratory studies. He also obtained high multiple correlation coefficients between the attitudinal and normative components of the model, and the intent to be absent \( R = .45, p < .01 \) and with the intent to resign \( R = .70, p < .01 \). Both of these multiple
correlations are lower than those obtained in laboratory studies.

Upon closer examination of Newman's data, it becomes evident that there was very low variability among the data of his subjects. This limits the implications that one might draw from his results. The present study attempts to avoid this limitation by a preliminary examination of subjects' data to ascertain whether or not substantial variability exists, before applying analyses to the data.

Newman makes two suggestions regarding future research. First, he suggests that future research consider behaviors over which subjects have a degree of control. Whereas his study examined employment behavior, likely to be constrained by high cost of living and tight labor market factors, the behavior under consideration in the present study involves subject's volitional choice of whether or not to write a daily progress note while they are on their jobs as employees at the mental hospital. Thus, through using this behavior where the subject has control over whether or not to emit the behavior, an attempt is made to respond to Newman's suggestion. Secondly, Newman suggested that several measures of the attitude or behavioral intention of interest be taken at different points in time. He points out that the attitude or intention may not remain constant between the time of its assessment and the intervening time period for gathering data.
The present study addressed itself to this issue by assessing attitudes and intentions at three different points in time, and as close as possible to the time period for gathering behavioral data.

In another field study using the Fishbein model, Davidson and Jaccard (1975) surveyed 270 non-college women, and assessed their attitudes, subjective norms, and intentions regarding several population control issues, such as intentions to have a two child family. They obtained high multiple correlations of the two components on intention ranging from .639 to .862, with a mean of .796. Thus, their study suggests that the Fishbein model can be a powerful predictor of intentions in the field.

The present study attempts to change attitudes and behaviors of state mental hospital employees through three manipulations: role playing, persuasive communication, and social reinforcement. The study attempts to replicate the high relationships found in lab studies and in Davidson and Jaccard's (1975) study. The effects of the manipulations upon the subject's beliefs, attitudes, intentions, and behaviors are assessed throughout the study. The specific nature of the manipulations and the specific hypotheses associated with them are discussed below.
Social Reinforcement

The discussion of the role of social reinforcement in attitude change focused on the fact that research has not isolated what makes one stimulus reinforcing and another not reinforcing, and, how a reinforcing stimulus is related to attitude change. Fishbein and Ajzen's model suggests that stimuli would affect behavior only insofar as they affect either of the components of the theory, or their weighting. More specifically, the implication is that a stimulus would be reinforcing (would increase the probability of the repetition of the response) insofar as it affected beliefs.

The study herein examines the effect of a reward manipulation upon beliefs, attitudes, intentions, and behaviors. The reward manipulation, described briefly earlier, involves certain subjects, selected at random, receiving a message which reminds them of the behavioral change suggested in the previous manipulations, and supports them in any behavioral changes that have taken place. The beliefs of subjects are assessed before and after the administration of the manipulation.

Role Playing

The review of research on role playing suggested that the change in evaluative and cognitive responses of subjects
was the mediator of attitude and behavior change. Fishbein and Ajzen's articulation of the need to know the number and salience of beliefs that come to awareness during role playing, as well as the perceived relevance of the beliefs to the assigned position, are clear and precise definitions of the mediators of attitude and behavior change which need to be examined.

The study presented herein considers these issues, through having subjects role play a position and respond to a belief assessment instrument before and after that role play. More specifically, subjects are asked to advocate writing at least one progress note per day, and to write as many positive consequences as they could think of that might be associated with their engaging in this behavior. The questionnaire was designed to assess the salient beliefs and the evaluations of those beliefs. It is predicted that role playing will affect attitudes and behavior to the extent that it affects the cognitive and evaluative responses to this instrument.

**Persuasive Communication**

The review of the research on persuasive communications suggested that a persuasive communication will affect intentions and behaviors insofar as it affects the subjects' primary beliefs. The present research considers this
suggestion. Subjects received a persuasive communication from their work supervisors advocating the writing of one progress note per day. The prediction concerning the persuasive communication manipulation is that it will affect intentions and behavior insofar as it affects beliefs.

**Hypotheses**

The present study attempts to elucidate the effects of three influence manipulations on the components and functioning of Fishbein's model in a field setting. According to Fishbein's theory, related research and theory, and the discussion above, the following predictions are made, with regard to the present study.

1. The expectancy value model estimate of attitude ($\Sigma b_i e_i$) will significantly correlate with a direct measure of attitude ($A_B$).
2. The multiple correlation coefficients of the attitudinal and normative components with behavioral intentions will be high and significant.
3. There will be a high and significant correlation between intention and behavior.
4. The effect of manipulations directed toward changing the value of a component of the model will be to change the intention to perform the behavior and to change the probability that the behavior will be performed.
4.a. The change manipulations will affect beliefs about the consequences of the behavior and normative beliefs.

4.b. If 4.a. is confirmed, then there will be a change in intention and behavior.

5. The results of this study will approximate the findings of previous studies using this model, but will be attenuated by the limitations of the complex factors involved in this field study, as compared to the previous laboratory studies.
METHOD

This section is composed of four parts. First a general overview of the setting of the study is presented. Then, Pilot Study I is presented. In this presentation, it is described how the initial draft of the questionnaire to be used in this study and one of the experimental manipulations were pretested with a small group of subjects. Thirdly, Pilot Study II is presented. Here the discussion focuses on how a revised questionnaire was developed, tested, and refined. Finally, the nature of the main study - its subjects, procedure, questionnaire, etc. - is presented.

The Setting of the Study

The setting of Pilot Studies I and II and the main study was Connecticut Valley Hospital in Middletown, Connecticut. This is a state owned and operated mental hospital, which, at the time of the study, had approximately 1000 patients, and 1100 employees. Employees worked one of three shifts - 6:30 A.M. to 3:30 P.M. - 2:30 P.M. to 11:30 P.M. - and 11:00 P.M. to 7:00 A.M.

At the time of this study, the investigator was employed at this institution as a social-clinical psychology intern. Throughout the study, whenever it seemed appropriate, the investigator enlisted the support and assistance of
administrative and professional personnel (e.g., gaining permission to cite referent people in the persuasive communication; sending memos through the supervisor's office to employees, etc.).

Pilot Study I examined the feasibility of applying Fishbein's cognitively oriented model of behavior to the population of aides at the state mental hospital under consideration. In order to demonstrate the applicability of the model to this population, it was reasoned that it would be necessary, at a minimum, to demonstrate that the employees under consideration could understand and respond to a questionnaire which assessed the values of the components of the model, and that the measurements obtained would be valid indications of the values of the components. Pilot Study I examined the possibility of obtaining measures of the model's components through a questionnaire. It was also concerned with the validity of the obtained measures. A third issue considered in Pilot Study I was the generalizability to the staff of the mental hospital of the belief change effect of counter-attitudinal essay writing. It was reasoned that if this effect is generalizable to the population under consideration, then subjects who write an essay favoring writing more progress notes would report more positive beliefs toward writing more progress notes than subjects who did not write the essay.
Pilot Study I

Questionnaire Development

In an effort to assess the salient beliefs of the population under consideration (mental hospital direct care staff), six members of that population, selected at random, were contacted by an interviewer. The interviewer informed the subjects that she was part of a research team planning a research project on progress note writing. She said that the team was gathering preliminary information and she asked the subject to help the research team by sharing some information about progress note writing. When the subject expressed a willingness to participate, (all subjects approached did) the interviewer continued with the following questions, "Imagine that you, as an aide, were to write one progress note each day on each patient that you work with. What do you think would happen? What would the positive and negative consequences be? Who are the people that would notice, approve, or disapprove?" The interviewer recorded the subject's responses to the questions, as well as other information regarding progress note writing and questions used in the interview. Interviews varied from 10 to 45 minutes, and averaged approximately 30 minutes. At the end of each interview, subjects were thanked for their participation.
The beliefs recorded by the interviewer were examined, and the most frequently mentioned beliefs were used to create a questionnaire. This questionnaire consisted of 10 belief items and the evaluations of each belief item. For example,

If I write daily progress notes, I will provide useful information for future patient care workers:

likely __:__:__:__:__:__ unlikely

and this likelihood would make me feel
good __:__:__:__:__:__ bad.

The questionnaire also contained seven normative belief items and seven motivation to comply items. For example:

The other ward staff members expect me to write daily progress notes on each patient that I work with

likely __:__:__:__:__:__ unlikely

I want to __:__:__:__:__:__ I do not want to do what the other ward staff members expect me to do.

The questionnaire contained one behavioral intention item:

During the next week, I intend to write daily progress notes on each patient that I work with

likely __:__:__:__:__:__:__ unlikely.
The questionnaire also contained an item regarding the accuracy of the subjects' responses to the questionnaire items. It read:

The answers on this questionnaire accurately reflect my feelings today - they accurately express my thoughts and ideas about the subjects mentioned

likely unlikely.

This questionnaire, reproduced in appendix i, was administered to a new sample of subjects.

Method Nine subjects (aides who were staff members of the mental hospital, but who were not going to be involved in the main study) volunteered to participate in a study regarding progress note writing. All nine subjects reported to the experimental room at the same designated time. Upon arrival, each subject received a self-contained questionnaire booklet (with instructions attached) and a pencil. Subjects were instructed to read and follow the instructions on their questionnaire booklet, and not to leave until everyone had finished.

A random four of the subjects, the experimental group, received a booklet which instructed them to write a one page essay on the positive aspects of writing progress notes, and to then answer the questionnaire (described above). The other five subjects, the control group, received a
booklet which only instructed them to respond to the questionnaire.

When all subjects had completed their individual questionnaires, they were debriefed and dismissed.

**Results** Subjects' responses to the 20 seven-step questionnaire items concerning attitude toward performing the behavior (10 items concerning the subjective probability that performing the behavior would lead to a particular consequence \(b_i\)) and 10 items concerning evaluation of each of the behavioral consequences \(e_i\)) were coded from -3 to +3, with a value of zero assigned to the central (or neutral) position. Negative items were reverse scored. The obtained values for each subject were inserted into the expectancy value equation for assessing the attitude toward the behavior \(A_B = \sum_{i=1}^{10} b_i e_i\) to obtain an index of the attitude toward performing the behavior.

The average score on the attitude toward the behavior index for control subjects was 19.2, while the average for the experimental subjects was 53.5, with higher numbers indicating more positive attitudinal responses toward writing progress notes. A t test applied to these means revealed a significant difference between them \(t = 2.5, df = 8, p < .05\). This evidences that in the population under consideration, subjects who write an essay do exhibit significant
change in attitude, as compared with subjects who do not engage in the essay writing activity.

Subjects' responses to the seven seven-step questionnaire items concerning perceived expectations of specific referent groups \((nb_i)\) and the seven items of motivation to comply with those expectations \((mc_i)\) were coded from -3 to +3, with a value of zero assigned to the central (or neutral) position. Missing data (which totaled 6 items out of 126) were assigned values of zero. The obtained values for each subject were inserted into the subjective norm equation

\[
(SN = \sum_{i=1}^{6} nb_i mc_i)
\]

The average score on the subjective norm index for control subjects was 3.2 while the average from the experimental subjects was 4.9, with higher numbers indicating more positive subjective norms toward writing progress notes. A t test applied to these means revealed a significant difference between them \((t = 3.9, \ df = 8, \ p < .01)\). Thus, subjects who wrote an essay reported subjective norms tending toward writing more progress notes. It appears that the process of having subjects from the population under consideration write an essay articulating the positive aspects of writing progress notes results in attitudes and subjective norms more favorable toward writing progress notes.
The responses to the intention question were coded from one to seven. Essay writing did not have any significant effect on the measure of behavioral intention. The model suggests that when the components' values change, the effect is to change the intention to perform the behavior. Thus, these results do not support the model.

The correlation of the attitude measure with the intention measure was .675 (p < .02). The correlation between the subjective norm index and the intention measure was .25 (n.s.). The multiple correlation of attitude and subjective norm with the intention measure was .73 (p < .01).

The range of responses to the question regarding the accuracy of the subject's responses to the questionnaire items was five to seven, with a mean of 6.4 (on a scale where 7 indicated that it was very likely that responses were accurate). This was consistent across both groups. Thus, subjects reported that their responses accurately reflected their feelings and thoughts.

**Discussion** The results of this preliminary study suggest that a questionnaire can be effective in differentiating between experimental and control group's responses. Also, this preliminary investigation suggests that in the staff of the mental hospital under consideration, essay writing can create differences in attitudes and subjective
norms toward progress note writing. The generalizability of the finding that essay writing influences beliefs and attitudes is evidenced here. The significant differences between the groups on the attitudinal and subjective norm measures provides some evidence for the validity of the questionnaire. The significant multiple correlation coefficient of attitude and subjective norm with the intention measure also suggests validity of the measurement instrument. It is not clear why there was no difference between the experimental and control groups on the intention measure.

Pilot Study II

Given the general feasibility of applying the Fishbein model to the population of aides under consideration, Pilot Study II involved the use of a more objective and rigorous procedure for the development of the questionnaire than the former informal interviews. This procedure involved having subjects respond in writing to a questionnaire which entailed the same basic two questions which were posed to subjects in the informal interview discussions. The questions asked subjects to list the consequences of writing more progress notes, and to list people who would be approving or disapproving if they were to write more progress notes. This questionnaire is reproduced in appendix ii.
Twelve subjects selected at random from the population of aides who were to participate in the main study responded to this preliminary questionnaire. In response to the question about the consequences of writing more progress notes, subjects suggested a total of 23 positive consequences and 18 negative consequences which they could imagine occurring. Controlling for repetition of the same basic idea reduced the actual number of suggestions to 13 positive consequences (with the number of subjects suggesting an item ranging between one and three with a mean of 1.8 per item) and 12 negative consequences (with the number of subjects suggesting an item ranging between one and four, with a mean of 1.5 per item).

The investigator surveyed the positive items and combined those with similar contents (e.g., the two items, "it would help the team" and "it would help other staff people" were combined to create the item "If I write at least one progress note each day that I work, I will provide information that would help the team and other interested staff people to develop and deliver better patient care."). Through this process the original 13 positive suggestions were reduced to six more general items with all suggested items being incorporated into this final set of six items. These final items incorporated up to four of the original items, and the number of subjects who had made suggestions
related to a final item averaged 3.8.

By combining similar negative consequences, the original 12 consequences suggested were reduced to four general items (e.g., "it would be repetitive" "I'd be just making work for myself" and "it would be dull and uninteresting" were combined to form the item "If I write at least one progress note each day, I will be making work for myself, it would be dull, uninteresting, and repetitive."). These final items were integrations of two to four of the original items, and the number of subjects who had made specific suggestions related to the content of a particular question averaged 2.75. Four subjects suggested that nothing would happen, no one would care. This item was not used in this portion of the questionnaire, as it was considered to be more relevant to the normative beliefs portion.

In response to the question of who would care if aides wrote more progress notes, subjects suggested a total of 19 different referent groups who might approve or disapprove. In developing the final questionnaire items dealing with referent groups, the four most frequently suggested groups were included (i.e., doctors, suggested by eight subjects; coworker aides, suggested by six subjects; building supervisors, suggested by five subjects; and social workers, suggested by four subjects). Two more items were created by combining referent groups that were suggested (e.g.,
occupational therapists, music therapists, and psychologists were combined into an item reading

The therapists that work with the patients (as, the occupational therapists, music therapists, psychotherapists, etc.) think that I should write at least one progress note each day that I work

unlikely __:__:__:__:__ likely

The total number of subjects whose suggestions were incorporated into the last two combined items was equal to three, for each item.

Other questionnaire items were developed as concomitants to the belief items described above. These items were ten evaluations of consequences and six motivation to comply with referent groups' expectations items.

In addition to the development discussed above, the creation of the new questionnaire included a revision of the form of the questions, in an attempt to make them easier to read and to understand. This revision involved separating the attitudinal belief items from the evaluation of the belief items. Similarly, normative belief items were separated from the motivation to comply assessments.

Another revision involved changing the criterion question from "writing one progress note per day per patient worked with" to "writing one progress note per day worked." This change was partly due to Pilot Study I subjects
reporting some difficulty in understanding the meaning of the former phrase. Additionally, the researcher learned that aides often did not write any progress notes for days at a time. The former criterion, suggestive of five to ten or more progress notes each day, would have been largely discrepant with the existing norm for progress note writing behavior. Thus, the more reasonable criterion of writing one progress note per day worked was adopted.

Also, the placement of adjectives on the end points of the semantic differential scales was modified. In the final questionnaire, in an effort to minimize some confusion and frustration voiced by pilot study subjects, all negative descriptors were placed on the left side of the semantic differential scale and all positive descriptors on the right (e.g., bad : : : : : : : : good) and other descriptors consistently appeared on the same ends of the scale.

The final questionnaire was composed of ten attitudinal belief items, 10 evaluations of consequences items, six normative belief items, six motivation to comply with referent group expectations items, two behavioral intention measures, a direct assessment of attitude toward progress note writing through five semantic differential scales (To write at least one progress note each day that I work is: harmful-beneficial; bad-good; punishing-rewarding; negative-positive; unpleasant-pleasant), two general items regarding
writing progress notes (assessing how many progress notes other people think the subject should write and how many the subject thinks others should write), and one broad question asking subjects to comment on such things as their feelings about signing their name (versus anonymity) as well as their reactions to the questionnaire itself (as, its length, readability, and comprehensibility).

The questionnaire was administered to six night staff (11 pm to 7 am) employees at the state hospital. All subjects completed the questionnaire, and reported little difficulty in reading, understanding, or responding to it. They did report several reactions to the study, and as a consequence of their comments, some revisions were made on the questionnaire. The final questionnaire included more discussion regarding the issues of anonymity and confidentiality, a more detailed and specific explanation of the study and the questions under examination, and some of the questions were relocated in an effort to assure that no item was overlooked by a subject. This final questionnaire is reproduced in appendix iii.

The Main Study

Subjects: Subjects were 65 (17 male and 48 female) staff members of the day shifts at Connecticut Valley Hospital (CVH) who volunteered to participate in a research
project on writing progress notes. Forty seven subjects were from Merritt Hall, one of the two general psychiatric buildings at the hospital, and they served as experimental subjects. Eighteen subjects from Battell Hall, another general psychiatric facility, served as control subjects. No subjects from Pilot Studies I or II were part of the main study.

Procedure: Initial questionnaire: Eighteen subjects from each psychiatric facility responded to an initial questionnaire (see Pilot Studies I and II regarding its development and form), which assessed the initial value of each of the components of the theory.

The procedure of obtaining questionnaire assessments throughout the study was as follows. Questionnaires were enclosed in envelopes addressed to each subject. Each envelope contained instructions on how to complete the questionnaire and a self-addressed envelope to the experimenter. All questionnaires at each time period were distributed by the experimenter within the same day to each ward office on subjects' wards. Subjects' rate of return of the questionnaire varied from one day to three weeks consequent to the day of distribution.

Manipulations

The Control subjects received no manipulations.
Attitudinal: Role playing: All experimental subjects were exposed to an oral or written attitudinal belief manipulation. They were asked to adopt the role of advocating writing more progress notes. The instructions for this attitudinal manipulation are cited below,

"As part of our investigation regarding CVH and progress note writing, we have procured a lot of information about the negative aspects of writing progress notes. What we would like now, is to gather more ideas regarding the positive aspects. We would like you to help us, by writing a one-page essay on (telling us about) the positive aspects of your writing one progress note per day. We want to emphasize that we want information on all of the good things you can think of, related to your doing this."

Initially, all subjects were asked to write an essay, however due to limited response via this mode, other subjects were contacted by an interviewer and asked to respond orally. Interviews were conducted in ward offices when subjects were free from other job responsibilities. The interviewer took brief notes as the subjects spoke, however, no formal documentation was kept of what was said by whom. The number of subjects responding via the oral mode was 24, and subjects responding via the written mode was 23.

Normative manipulation: The normative manipulation consisted of sending experimental subjects a memo regarding the expectations of significant others vis a vis writing
progress notes (see appendix iv). In the memo, specific referent people, as determined by the pretest (doctors, supervisors, therapists, etc.) articulated their views on the need for the subject to write more progress notes. This memo was distributed by the supervisor-assured memo procedure. This procedure - used regularly at the hospital - required that each ward supervisor sign a statement that s/he received the memo and would take the responsibility of communicating its contents to his/her staff.

Following the above manipulations, the experimental subjects received questionnaire #2 - another assessment of the theory's components. Forty-one out of the forty seven experimental subjects responded to this questionnaire.

Feedback manipulation: Three weeks following the above manipulations, a random one-half of the experimental subjects received a memo from their building supervisors and the other subjects received no memo. This memo is reproduced in appendix v. The memo reminded subjects that writing at least one progress note per day helps provide better patient care. It stressed that progress note writing is appreciated and that the notes are used by doctors, other staff members, and the supervisors' office. The memo thanked staff members who had responded to the earlier memo.
Following the above manipulation, subjects responded to a final questionnaire, assessing the theory's components. Thirty-eight experimental subjects and 17 control subjects responded to this questionnaire.

Thus, the design of this research was a $3 \times 2 \times 2 \times 2 \times 2$ mixed design with unequal numbers of subjects in cells and with missing data. The factors were time (periods one, two and three), sex (male and female), group (control and experimental), with mode (written or oral attitudinal manipulation mode) and feedback (memo or no memo) nested within the experimental subjects.

The questionnaire: The three questionnaires were identical, each containing forty questions assessing the values of the various components of the theory. Appendix iii presents the questionnaire and identifies which questions tap which variables.

Behavioral data: In addition to the questionnaire data, behavioral data were obtained. The records of patients in contact with subjects (patients who might have had progress notes written about them by the subject) were examined. The date and number of words of each progress note written by each subject was recorded for three three-week periods - before the initial questionnaire, after the attitudinal and normative manipulations, and after the feedback manipulation.
Also, the number of days that each subject worked during each time period was recorded. Due to six subjects refusing to sign releases for the investigator to obtain data regarding the number of days worked, behavioral data was available for only 59 of the 65 subjects.

Variables Summary: There were six independent variables - two between subjects (group, sex); one nested within all subjects (time), and three nested within experimental subjects only (persuasive communication, mode of role playing, feedback).

There were seven dependent variables - expectancy value measure of attitude \( (\Sigma b_i e_i) \); direct measure of attitude \( (A_B) \); subjective norm index; intention per week measure; intention per day measure, mean daily entry behavioral measure; and note days behavioral measure.

At the conclusion of the data gathering, subjects were debriefed and thanked for their participation.
RESULTS

The results are discussed in two basic sections. First, correlational analyses relevant to the model and its components and functioning will be discussed. The relationship of the two attitudinal assessments, the relationship of the attitudinal and normative components to intention, the relationship of intention to behavior, and the relationship of the seven dependent variables across time are the foci of this section of results. The second section considers the effects of the manipulations, as revealed by analyses of variance applied to the data. The relationships between the experimental manipulations and beliefs, attitudes, intentions, and behavior will be the focus of this second section.

Correlational Analyses

This section considers the relationships among the model's components and the model's functioning.

Attitudes and Beliefs

The questionnaire assessed attitude toward progress note writing behavior in two ways: one, derived from Fishbein's model, involved items concerned with beliefs about the behavior's consequences and evaluations of those consequences; and the other involved five evaluative items in
semantic differential form. Statistical treatments of these two attitudinal assessments, and their relationship to each other are presented below.

Attitude toward writing progress notes - (1) $b_i e_i$

Subjects' responses to the attitudinal questionnaire items were coded as discussed previously in the section on Pilot Study I. They were multiplied and summed to form an overall expectancy value index of attitude. A total of 11 out of 2,640 items were left blank by different subjects, and each of these missing data was assigned a value of zero.

Attitude toward writing progress notes - (2) $A_B$ (semantic-differential)

Each of the evaluative semantic differential attitudinal items was coded from one to seven, with missing data (total missing data was equal to six items out of 660) assigned a value of four. An index of the general attitude toward the behavior was obtained by summing the scores of the five items.

Pearson product-moment correlation coefficients of the two attitudinal measures at the three time periods are presented in Table 1. The mean correlation across the three time periods is .51, with all correlation coefficients significant below the < .05 level.
Table 1

Correlation Coefficients of Two Measures of Attitude (Σ b_{i}e_{i} and A_B (semantic differential)) at Three Time Periods

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Correlation b_{i}e_{i} - A_B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.60** (36)^a</td>
</tr>
<tr>
<td>2</td>
<td>.29* (41)</td>
</tr>
<tr>
<td>3</td>
<td>.65** (55)</td>
</tr>
<tr>
<td>Mean</td>
<td>.51 (44)</td>
</tr>
</tbody>
</table>

^Numbers in parentheses indicate the number of subjects on which the correlation coefficient was calculated

*p < .05

**p < .001
The lower correlation at Time 2 is attributable to the different distribution of the expectancy value \((b_i e_i)\) data at that time. The mean of the expectancy value scores was higher at Time 2 \((t = 2.3, \text{ df } = 1,440, p < .05)\) than at other times, while the distribution of the \(A_B\) data did not significantly change.

Thus, the expectancy value model of attitude \((\Sigma b_i e_i)\) is significantly correlated with a direct measure of attitude (semantic differential). This result evidences the comparability of these two measures of attitude.

**Predicting Intentions**

Fishbein's model suggests that there are two major factors that determine behavioral intentions, a personal or attitudinal factor \((A_B)\) and a social or normative factor \((SN)\). Each of these components of the model are given empirical weights. Below is a discussion of how values for the normative factor and the intention measures were derived. Then, the results of a multiple correlational analysis of the attitudinal and normative factors on the two intention measures is presented.

**Subjective norms** - Subject's responses to the subjective norm questionnaire items were coded as discussed in the previous section on Pilot Study I. Missing data, which totaled 34 out of 1485 items, were assigned values of zero.
Intentions

**Intentions per week** - The responses to the intention per week question (In the weeks to come, I intend to write progress notes per week) were coded directly as written on the questionnaire form. Missing data (total equal to 18 out of 132) were disregarded in all analyses.

**Intentions per day** - The responses to the intention per day question (In the weeks to come, I intend to write at least one progress note each day that I work, unlikely - likely) were coded from one to seven. There was no missing data.

Table 2 presents the multiple correlations of $A_B$ and SN on the two indices of intention at three time periods. Five of the six multiple correlation coefficients obtained are significant ($p < .05$). The $p$ value for the non-significant multiple correlation coefficient is $0.10 \leq p \leq 0.20$. The average multiple correlation value is $0.44$.

These results provide evidence that $A_B$ and SN are related to both measures of intention. Since the questionnaire items regarding the $A_B$ and SN components were focused around issues regarding writing at least one progress note each day worked, one would hypothesize that the two components would be most highly related to an intention per day measure, as versus an intention per week measure, since the intention per day
Table 2

Multiple Correlations of $A_B$ and SN with Two Measures of Intention at Three Time Periods

<table>
<thead>
<tr>
<th>Intention Measure</th>
<th>Period</th>
<th>$A_B - I$</th>
<th>SN - I</th>
<th>$R^2$</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$w_1$</td>
<td>$r_1$</td>
<td>$w_2$</td>
<td>$r_2$</td>
</tr>
<tr>
<td>Intention</td>
<td>1</td>
<td>.27</td>
<td>.39</td>
<td>.24</td>
<td>.38</td>
</tr>
<tr>
<td>per</td>
<td>2</td>
<td>-.04</td>
<td>.04</td>
<td>.26</td>
<td>.24</td>
</tr>
<tr>
<td>week</td>
<td>3</td>
<td>.07</td>
<td>.28</td>
<td>.37</td>
<td>.41</td>
</tr>
<tr>
<td>Intention</td>
<td>1</td>
<td>.57</td>
<td>.61</td>
<td>.08</td>
<td>.37</td>
</tr>
<tr>
<td>per</td>
<td>2</td>
<td>.10</td>
<td>.25</td>
<td>.41</td>
<td>.45</td>
</tr>
<tr>
<td>day</td>
<td>3</td>
<td>.37</td>
<td>.46</td>
<td>.17</td>
<td>.37</td>
</tr>
</tbody>
</table>

*p < .05

**p < .02

***p < .002
measure is more correspondent with the questionnaire items. This hypothesis is supported by the values of the obtained multiple correlation coefficients, in that the highest relationships were found between the $A_B$ and SN measures on the intention per day measure (see Table 2).

**Intentions and Behavior**

There were two behavioral indices calculated to assess subjects' progress note writing behavior. A brief description of each index follows.

**Mean Daily Entries** - The mean number of daily entries was obtained by dividing the total number of entries which a subject wrote in a three-week period by the total number of days which that subject worked during that three week period. This index was calculated for each of the three three-week periods.

**Note Days** - The number of note days was calculated by assigning a one to each day on which a progress note was written by the subject, and a zero to each day when a progress note was not written, and adjusting the obtained value in order to make it comparable to a standard which assumed a 5 day work week. The following formula was used:

\[
\text{Progress notes written} \quad \text{(coded +1 for each day on which one was written; 0 otherwise)} \quad = \quad \frac{X}{5}
\]

\[
\text{total # of days worked}
\]
where x indicates the adjusted number of days on which at least one progress note was written. This index was calculated for each of the three-week periods.

As noted above, the two intention measures differed in that one assessed intentions per week, and one assessed intentions per day. The behavioral indices also differed, in that one assessed behaviors per day (note days) and one assessed behavior per week (total entries per week divided by number of days worked - mean daily entries). It was hypothesized that the greater the correspondence of the intentional item and the consequent behavioral data, the higher the relationship between them would be. Thus, it was hypothesized that the intention per day measure would be most highly correlated with the behavioral item assessing the notes per day, and that the intention per week measure would be most highly correlated with the behavioral measure which assessed the total entries per week - the mean daily entries measure.

Table 3 presents Pearson product moment correlation coefficients for the two intention measures and the two behavioral measures across three time periods. Eight of the 12 correlations are significant with p below <.05, with three additional correlation coefficients having a p value such that \(.06 \leq p \leq .10\). The mean correlation between the intention and behavior measures is .32.
Table 3
Correlation Coefficients Between Two Intention Measures and Two Behavioral Measures at Three Time Periods

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Intention Measures</th>
<th>Note Days</th>
<th>Mean Daily Entries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intentions per week</td>
<td>.34**</td>
<td>.46***</td>
</tr>
<tr>
<td></td>
<td>Intentions per day</td>
<td>.33**</td>
<td>.28*</td>
</tr>
<tr>
<td>2</td>
<td>Intentions per week</td>
<td>.18</td>
<td>.51***</td>
</tr>
<tr>
<td></td>
<td>Intentions per day</td>
<td>.22*</td>
<td>.29**</td>
</tr>
<tr>
<td>3</td>
<td>Intentions per week</td>
<td>.35***</td>
<td>.44***</td>
</tr>
<tr>
<td></td>
<td>Intentions per day</td>
<td>.22*</td>
<td>.26**</td>
</tr>
</tbody>
</table>

* .05 < p < .10  
** p < .05  
*** p < .001
As predicted, the two intention measures were related to the two behavior measures. The strongest relationship was between the intention per week measure and the behavioral measure which assessed progress note writing across weekly periods, the mean daily entry measure. These results evidence that intention and behavior can be related, particularly when there is high correspondence between their referents.

One might postulate that answering an intention question (writing down how many progress notes one intends to write) might have involved an act of commitment, in and of itself, and thus, it might have produced the significant intention-behavior relationships. Since control and experimental subjects were exposed to the same questionnaires, according to the commitment formulation, one would predict that the correlations between intention and behavior for the two groups would be comparable. The mean correlation coefficient between intention and behavior at all time periods is .23 for the experimental subjects, and .44 for the control subjects. These means suggest that control subjects had a higher relationship between intention and behavior than did experimental subjects, and that something more than commitment influenced subjects' intention-behavior relationships.
In an attempt to gather some additional evidence regarding the validity and consistency of subjects' responses to the basic seven dependent variables, a correlational analysis was applied to subjects' data at the three time periods. The intercorrelations of the seven basic dependent variables across time are presented in Table 4. Most correlation coefficients are high, and except for one they are significant (p < .05).

These significant interrelations provide evidence regarding the reliability and stability of the measurement instrument used in this study.

**Summary of Correlational Analyses**

The results of the foregoing correlational analyses are consistent with previous findings regarding the relations between the components of the model. The expectancy-value model of attitude was found to be correlated with a direct measure of attitude. The attitudinal and subjective normative components were found to be related to the two measures of intention, with a higher level of correspondence resulting in a higher relationship. The intention measures were found to be significantly related to the two behavioral measures, with correspondence again mediating the relationship. All of the seven dependent variables were found to be highly correlated across time, indicating some evidence regarding
### Table 4

**Intercorrelations of Seven Dependent Variables across Time**

<table>
<thead>
<tr>
<th>Variable</th>
<th>1-2</th>
<th>2-3</th>
<th>1-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\Sigma b_i e_i) (expectancy-value attitude)</td>
<td>0.80 (12)(^a)</td>
<td>0.74 (34)</td>
<td>0.37 (30)</td>
</tr>
<tr>
<td>(\Sigma nb_i mc_i) (subjective norm)</td>
<td>0.35 (12) n.s.</td>
<td>0.58 (34)</td>
<td>0.61 (30)</td>
</tr>
<tr>
<td>semantic differential</td>
<td>0.80 (12)</td>
<td>0.88 (34)</td>
<td>0.79 (30)</td>
</tr>
<tr>
<td>weeks to come /week - intention</td>
<td>0.98 (9)</td>
<td>0.94 (28)</td>
<td>0.91 (25)</td>
</tr>
<tr>
<td>weeks to come /day - intention</td>
<td>1.0 (12)</td>
<td>0.53 (34)</td>
<td>0.61 (30)</td>
</tr>
<tr>
<td>mean daily entries</td>
<td>0.65 (59)</td>
<td>0.53 (57)</td>
<td>0.71 (57)</td>
</tr>
<tr>
<td>note days</td>
<td>0.59 (59)</td>
<td>0.50 (57)</td>
<td>0.67 (57)</td>
</tr>
</tbody>
</table>

\(^a\)Numbers in parentheses indicate the number of subjects used in the computation of the correlation coefficient.
the reliability of the questionnaire items. These findings evidence the model's power to reflect and predict relationships among its components, as well as the validity and reliability of the instruments used in this study.

**Analyses of Variance**

This section considers the effects of the manipulations as revealed by analyses of variance applied to the data.

**Introduction and overview** - Several different statistical analyses were applied to the data of this study, due to its unusual design. This study was a $3 \times 2 \times 2$ design (time - period 1, 2, 3; by sex - male, female; by group - experimental, control), with two additional factors nested within the experimental subjects only (mode - oral, written; and feedback - memo, no memo). Additionally, there were unequal numbers of subjects in all cells and some missing data. The calculations of all of the analyses of variance reported below have taken into account the violations of the assumptions of orthogonality in this design.\(^1\) Summarized below are the results of applying these analyses to each of the basic components of the model. There are four sections -

\(^1\)All analyses of variance were performed using the "Analysis of variance for factorial designs with unequal cell frequencies" program from Nie et. al.'s (1975) Statistical package for the social sciences - SPSS, second edition.
attitudes, subjective norms, intentions, and behaviors.

**Attitudes**

The $\Sigma b_i e_i$ index as an index of attitude

In order to examine the relationship of the individual items composing the $\Sigma b_i e_i$ index of attitude to the overall index, an analysis was performed on the individual items, and the results of this analysis compared to the results of the analysis of the overall index.

The $\Sigma b_i e_i$ index of attitude was obtained by multiplying each belief item response by its concomitant evaluation. A 3 x 2 x 2 (time by group by sex) analysis of variance was applied to each of the individual $b_i e_i$ products of each subject across all time periods. These analyses yielded significant main effects of group on four of the items, such that the control subjects had less positive $b_i e_i$ scores than the experimental subjects. Table 5 exhibits the means of the $b_i e_i$ products for individual items by group. The means of the experimental subjects are consistently higher than those of the control subjects.

The analysis of the individual $b_i e_i$ items yielded two trends. One suggests that males rated writing one progress note per day as making work for themselves more than females ($F = 3.4$, df = 1, 127, $p < .06$). The mean score for males was
| If I write at least one progress note each day that I work, it will... times the evaluation of the consequence |
|---|---|---|
| 1. Help to provide a more complete and accurate picture | 6.0 | 6.5 |
| 2. Provide information to help the team and staff | 4.2 | 6.7** |
| 3. Help provide new and unique information about patients | 3.5 | 4.1 |
| 4. Make more work for myself | .6 | 2.3 |
| 5. Make me depressed | 2.4 | 3.1 |
| 6. Record biased points of view | 3.9 | 6.1** |
| 7. Make patients nervous | 5.2 | 5.3 |
| 8. Provide information for reference | .1 | 3.9** |
| 9. Facilitate my expression of interest in patients | 2.1 | 4.0* |
| 10. Help staff get patients discharged earlier | -.7 | .8 |

**Note** - Means were calculated on data from all subjects across all time periods.

• p < .05

•• p < .01
3.3, and for females, 1.6. Another trend suggests that in periods two and three of the study, all subjects evaluated providing information for reference more favorably than they had in period one \((F = 2.8, \text{df} = 1,127, p < .06)\). The mean for period one was 1.85, and for periods two and three the mean was 3.4.

In summary, men tended to have a less positive attitude toward writing progress notes than women. In addition, subjects had a more favorable attitude toward providing information for reference. The significance of these trends will be elucidated when the behavioral data is considered.

**Analyses of expectancy-value and direct measure attitude indices**

It was hypothesized that attitudes would differ between control and experimental groups at times two and three, subsequent to the experimental manipulations, such that experimental subjects would have more positive attitudes toward writing progress notes. The results of analyses applied to the attitudinal data are presented below. Table 6 presents the mean scores for the experimental and control groups on the two attitude measures (expectancy-value and direct) at the three time periods.

Attitude toward writing progress notes \(- (1) \sum b_i e_i\)

In an effort to assess the impact of the manipulations
Table 6

Means of Expectancy-value ($\Sigma b_i e_i$) and Semantic Differential ($A_B$) Attitude Measures across Group and Time

<table>
<thead>
<tr>
<th>Time</th>
<th>Control</th>
<th>Experimental</th>
<th>Difference Between Groups (Exp. - Con.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\Sigma b_i e_i$</td>
<td>$A_B$</td>
<td>$\Sigma b_i e_i$</td>
</tr>
<tr>
<td>1</td>
<td>28.0</td>
<td>26.6</td>
<td>48.4</td>
</tr>
<tr>
<td>2</td>
<td>(no data)</td>
<td>43.7</td>
<td>29.3</td>
</tr>
<tr>
<td>3</td>
<td>24.2</td>
<td>27.9</td>
<td>38.6</td>
</tr>
</tbody>
</table>

Note - Possible score range for $\Sigma b_i e_i$ was -90 to +90, and for $A_B$ 7 to 35, with more positive numbers indicating more positive attitudes toward writing one progress note per day.
upon attitude, a 3 x 2 x 2 (time by sex by group) analysis of variance was applied to the Σb1e1 data of all subjects. This analysis yielded a significant main effect for group (F = 7.4, df = 1,117, p < .007) such that the experimental group reported more positive attitudes toward writing one progress note per day than did the control group. The means of the two groups across time are presented in Table 6, where it is evident that in comparison to the control subjects, the experimental subjects consistently scored much higher across all time periods, even prior to the experimental manipulations. The mean difference between the two groups is 17.5. Because there is no data for control subjects at time two, interaction terms could not be calculated.

In an attempt to elucidate the relationship between experimental and control subjects across time, the differences between the two groups were calculated for time one and time three. These differences were then compared to see if there was any significant change between them over time (see Table 6). According to the hypotheses, a group by time interaction was expected, such that a comparison of experimental control subjects' scores at time three would yield a significantly greater difference between them than a comparison at time one (due to the hypothesized effect of the manipulations increasing the value of the experimental subjects' scores while control subjects' scores remained
unaffected). Contrary to the hypotheses, the difference between the two group's scores at time three is less than the difference at time one. Thus, no significant effect of the manipulations is evident through this analysis.

Attitude toward writing progress notes - (2) semantic differential

In an effort to examine the effects of the manipulations on the semantic differential measure of attitude, a 3 x 2 x 2 (time by group by sex) analysis of variance was applied to the semantic differential data of all subjects. This analysis yielded no significant effects. The means of the two groups across time are presented in Table 6. A trend (F = 3.2, df = 1,117, p < .07) suggests that females tended to have more positive attitudes toward writing one progress note per day than did males. This trend is evident in a comparison of means. On a scale with a possible range of 7 to 35, with higher scores indicating more positive attitudes, the mean score of female subjects was 28.7 and of male subjects it was 26.7. Because there is no data for control subjects at time two, interaction terms could not be accurately calculated.

In an attempt to elucidate the relationship between experimental and control subjects across time, the differences between the two groups were calculated for times one and three. These differences were then compared to see if there
was any significant change between them over time (see Table 6). There was no significant difference between them.

The low variance among the means of the experimental subjects, as well as the fact that the means are all above 28 on a possible scale of 35 (see Table 6) both suggest that subjects might have been responding in a socially desirable manner. This possibility is further examined in later presentations of the results.

These results indicate that the control group differed significantly from the experimental group at the outset of the study on the $\Sigma b_i e_i$ measure of attitude, but there were no significant changes in this measure across group and time. The results also indicate that the direct measure of attitude data did not exhibit differences between the groups, nor differences across group and time. Finally, the results suggest the possibility of a response tendency toward socially desirable responses.

The manipulations (having subjects role play, receive a persuasive communication, and receive a reinforcing memo) were hypothesized to have the effect of changing subjects's beliefs toward writing more progress notes. In an attempt to assess the effects of these manipulations on beliefs, a $3 \times 2 \times 2 \times 2$ (time by sex by mode by feedback) analysis of variance was applied to the two attitudinal measures ($\Sigma b_i e_i$ and semantic differential) of experimental subjects only.
It yielded no significant main effects on either of the variables. There was a significant interaction effect of mode by feedback on the semantic differential scores ($F = 8.2$, $df = 1,64$, $p < .006$) such that subjects who responded via the written mode regarding their beliefs about writing progress notes and who did not receive a follow-up memo, scored lowest on the semantic differential measure of attitude (with lower scores indicating less positive attitudes). See times 2 and 3. The means of the semantic differential measure of attitude across mode, feedback, and time are presented in Table 7. Since there were no significant effects for the $\Sigma b_i e_i$ measure, means for this variable were not shown. There was a trend ($F = 3.33$, $df = 1,64$, $p < .07$) suggesting that males had less positive attitudes toward writing progress notes than females, as measured by the semantic differential. The mean score for male subjects was 26.2 and for females 29.6.

These results evidence that there were no main effects of the mode or feedback or communication manipulations. These results do not support the hypothesis that role playing, receiving a persuasive communication, and receiving a reinforcing memo influence subjects' attitudes.

Subjective Norms

It was hypothesized that subjective norms would differ
Table 7

Means of the Semantic Differential Measure of Attitude across Time, Mode, and Feedback Conditions

<table>
<thead>
<tr>
<th>Feedback</th>
<th>Time and Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 written</td>
</tr>
<tr>
<td>no memo</td>
<td>31.2</td>
</tr>
<tr>
<td>memo</td>
<td>32.5</td>
</tr>
</tbody>
</table>
between control and experimental subjects at times two and three (subsequent to the administration of the experimental manipulations). It was hypothesized that the experimental subjects would have subjective norms tending toward writing more progress notes than control subjects. In an attempt to investigate these effects, the following analysis was performed on the data.

A $3 \times 2 \times 2$ (time by group by sex) analysis of variance applied to the SN data of all subjects yielded a main effect for group ($F = 13.2$, df = 1,117, $p < .001$) such that the control group reported subjective normative beliefs which were less oriented towards writing one progress note per day at each time period than experimental subjects. The means of the SN measure across group and time are presented in Table 8. Because there was no data for control subjects at time two, interaction terms could not be accurately calculated.

In an attempt to elucidate the relationship between experimental and control subjects across time, the differences between the two groups were calculated for time one and time three. These differences were then compared to see if there was any significant change between them over time (see Table 8). According to the hypotheses, a group by time interaction was expected, such that a comparison of experimental and control subjects' scores at time three would yield a significantly greater difference between them than
Table 8

Means of SN across Time and Group

<table>
<thead>
<tr>
<th>Group</th>
<th>Time</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>1</td>
<td>0.4</td>
<td>no data</td>
</tr>
<tr>
<td>Experimental</td>
<td>2</td>
<td>20.4</td>
<td>21.3</td>
</tr>
<tr>
<td>Difference between groups (experimental - control)</td>
<td>3</td>
<td>20.0</td>
<td>13.1</td>
</tr>
</tbody>
</table>


a comparison at time one (due to the hypothesized effect of
the manipulations increasing the values of the experimental
subjects' scores while control subjects' scores remained
unaffected). Contrary to the hypotheses, the difference
between the two group's scores at time three is less than
the difference at time one. Thus, no significant effect of
the manipulations is evident through this analysis.

The manipulations were hypothesized to have the effect
of changing the subjects' normative beliefs toward writing
more progress notes. In an attempt to assess the effects of
the manipulations on normative beliefs, the following analysis
was performed.

A 3 x 2 x 2 x 2 (time by sex by mode by feedback) analy-
sis of variance on the SN scores of experimental subjects
only yielded a main effect for mode (F = 3.9, df = 1,64,
p < .05). Subjects who orally communicated the positive as-
pects of writing progress notes reported a more positive
subjective norm toward writing one progress note per day.
Table 9 presents the means of SN for experimental subjects
across time and mode. The greatest difference between modes
occurs at time two - the questionnaire at time two was com-
pleted immediately consequent to the oral/written mode
manipulation. There was a trend (F = 2.9, df = 1,64, p < .09)
suggesting that females had higher subjective norms to write
one progress note per day than did males (female \( \bar{X} = 21.6 \),
male \( \bar{X} = 17.6 \)).
Table 9

Means of SN Scores across Mode and Time

<table>
<thead>
<tr>
<th>Mode</th>
<th>Time</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>written</td>
<td>1</td>
<td>20.7</td>
<td>14.8</td>
</tr>
<tr>
<td>oral</td>
<td>2</td>
<td>20.2</td>
<td>26.8</td>
</tr>
</tbody>
</table>
These results suggest that the experimental manipulations did have some effect on subjective norms. At time two, subsequent to the role playing and persuasive communication manipulations, subjects in the oral condition reported subjective norms significantly higher (toward writing more progress notes) than did subjects in the written condition. This suggests that the oral mode was more effective in influencing subjective norms than was the written mode. The trend of females having subjective norms tending towards writing more progress notes suggests that females might intend and/or actually write more progress notes than males. The significance of these results will be elucidated when the behavioral data is considered.

The relation of the subjective norm index to its components

In an attempt to assess the consistency of the individual subjective norm items with the overall index, a 3 x 2 x 2 (time by sex by group) analysis of variance was performed on the six component (nb)(mc) items (where the normative belief was multiplied by its concomitant motivation to comply). There was a significant effect of group on five of the items, with the other item having an effect of group where p < .057. The means of the six (nb)(mc) items by group are presented in Table 10.

These results are consistent with the results of the
Table 10

Means of the Six Component (nb)(mc) Items by Group

<table>
<thead>
<tr>
<th>Item</th>
<th>Control</th>
<th>Experimental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normative belief and motivation to comply re:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctors</td>
<td>1.3</td>
<td>2.9*</td>
</tr>
<tr>
<td>Building supervisor</td>
<td>1.8</td>
<td>3.9**</td>
</tr>
<tr>
<td>Ward charge</td>
<td>.8</td>
<td>4.8***</td>
</tr>
<tr>
<td>Social workers</td>
<td>.5</td>
<td>3.9***</td>
</tr>
<tr>
<td>Ward staff</td>
<td>-.2</td>
<td>2.2**</td>
</tr>
<tr>
<td>Therapists</td>
<td>-.2</td>
<td>2.9***</td>
</tr>
</tbody>
</table>

Note - Means were calculated on data from all subjects at all time periods.

* p < .06

** p < .05

*** p < .001
analysis of the overall subjective norm index. More specifically, the present results indicate that the individual items were consistent with the overall subjective norm index, in terms of the direction of means and their being significantly different from each other.

**Behavioral Intentions**

It was hypothesized that if there were no significant interaction effects on the attitudinal and normative components across group and time, then no significant interactional effects on behavioral intentions across group and time would be expected. The results of an analysis of variance applied to the intentions data are presented below.

A 3 x 2 x 2 (time by group by sex) analysis of variance applied to the intention per week and intention per day data of all subjects yielded, in both cases, a main effect for group (for the intention per week measure, \( F = 3.8, \text{df} = 1,109, p < .05 \) and for the intention per day measure \( F = 7.6, \text{df} = 1,109, p < .007 \)) such that the control subjects reported intentions to write less progress notes than experimental subjects. The means of the two measures of intention across group and time are presented in Table 11. The means indicate that control subjects reported intentions to write less progress notes across all time periods. Because there was no data for control subjects at time two, interaction
Table 11

Means of Two Intention Measures across Group and Time

<table>
<thead>
<tr>
<th>Time</th>
<th>Intentions per day</th>
<th>Intentions per week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>Experim.</td>
</tr>
<tr>
<td>1</td>
<td>4.5</td>
<td>6.7</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>6.2</td>
</tr>
<tr>
<td>3</td>
<td>5.9</td>
<td>6.1</td>
</tr>
</tbody>
</table>
effects could not be accurately calculated.

In an attempt to elucidate the relationship between experimental and control subjects across time, the differences between the two groups were calculated for time one and time three. These differences were then compared to see if there was any significant change between them over time (see Table 11). There were no significant changes in the differences between the groups. These results support the hypothesis that if there were no significant interaction effects on the attitudinal and normative components across group and time, then there would be no significant interactional effects on behavioral intentions across group and time.

In summary, these results indicate that at the outset of the study, the control group differed significantly from the experimental group in behavioral intentions and that this difference remained constant throughout the study. The results of an attempt to assess the effects of the manipulations upon the two intention measures of experimental subjects only are presented below.

A $3 \times 2 \times 2 \times 2$ (time by sex by mode by feedback) analysis of variance on the two intention measures of experimental subjects only yielded no significant main effects.

The means of the experimental subjects on the intention per day measure evidence a possible tendency to respond in
a socially desirable manner. On a 7 point scale, all of the means are above 6 (see Table 11), suggesting that subjects consistently reported high intentions to write at least one progress note per day. For the intention per week item there was a significant interaction effect for sex by feedback ($F = 12.1$, $df = 1,60$, $p < .001$) suggesting that females who received a memo had behavioral intentions to write the most progress notes. There was a trend on the intention per day item of the same two variables ($F = 3.0$, $df = 1,60$, $p < .09$). This effect suggests that females in the no memo condition reported intentions to write the least number of progress notes. The means of the two intention measures of experimental subjects across sex and feedback are presented in Table 12.

In summary, these results suggest a possible social desirability effect. Additionally, these results suggest that the experimental manipulations did have some effect on behavioral intentions. At time three, females who did not receive a memo had the lowest behavioral intentions on both measures. This suggests that lack of receiving a follow-up memo with female subjects is related to behavioral intentions of writing fewer progress notes. The implications of these results are considered further in the section below regarding analyses of behavioral data.
<table>
<thead>
<tr>
<th>Intention Measure</th>
<th>Feedback</th>
<th>Sex</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no memo</td>
<td>Female</td>
<td>12.6</td>
</tr>
<tr>
<td>Intention per week</td>
<td>memo</td>
<td>Male</td>
<td>23.6</td>
</tr>
<tr>
<td></td>
<td>no memo</td>
<td>Female</td>
<td>6.0</td>
</tr>
<tr>
<td>Intention per day</td>
<td>memo</td>
<td>Male</td>
<td>6.6</td>
</tr>
</tbody>
</table>

Table 12

Means of Two Intention Measures of Experimental Subjects across Sex and Feedback
Behavioral Data

It was hypothesized that if the change manipulations affected beliefs about the consequences of the behavior and normative beliefs, then there would be a change in intention and behavior. Given the lack of clear effects on the manipulations on beliefs and intentions, and the low intention - behavior correlation, the hypotheses suggest that there would not be significant effects of the manipulations on behavior. The results of an analysis of variance applied to the behavioral data are presented below.

A 3 x 2 x 2 (time by group by sex) analysis of variance applied to the two behavioral indices (mean daily entries and note days) yielded in both instances a main effect for sex (see Table 13). These effects both suggest that males wrote significantly fewer progress notes than females. This analysis also suggests a slight trend of group on the note days data, (p < .13) such that the control subjects wrote less progress notes than the experimental subjects. The means of the two behavioral indices across group and sex are presented in Table 14.

Since behavioral data was obtained for subjects in all conditions at all time periods, it was possible to examine interaction effects through statistical analyses. There were no significant interaction effects. This finding is consistent
Table 13

Summary of Analysis of Variance of Two Behavioral Indices by Time, Group, and Sex

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>60,071</td>
<td>1</td>
<td>60,071</td>
<td>2.238*</td>
</tr>
<tr>
<td>Time</td>
<td>30,595</td>
<td>2</td>
<td>15,479</td>
<td>0.577</td>
</tr>
<tr>
<td>Sex</td>
<td>506,355</td>
<td>1</td>
<td>506,355</td>
<td>18.862**</td>
</tr>
<tr>
<td><strong>2-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group x Time</td>
<td>25,312</td>
<td>2</td>
<td>12,656</td>
<td>4.71</td>
</tr>
<tr>
<td>Group x Sex</td>
<td>251</td>
<td>1</td>
<td>251</td>
<td>0.009</td>
</tr>
<tr>
<td>Time x Sex</td>
<td>22,621</td>
<td>2</td>
<td>11,310</td>
<td>4.21</td>
</tr>
<tr>
<td><strong>3-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group x Time x Sex</td>
<td>30,612</td>
<td>2</td>
<td>15,306</td>
<td>5.70</td>
</tr>
<tr>
<td><strong>Residual</strong></td>
<td>4675.751</td>
<td>163</td>
<td>26.845</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5034.594</td>
<td>174</td>
<td>28.934</td>
<td></td>
</tr>
</tbody>
</table>

195 cases were processed
20 cases (10.3 pct) were missing

MEAN DAILY ENTRY

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>1.004</td>
<td>1</td>
<td>1.004</td>
<td>767</td>
</tr>
<tr>
<td>Time</td>
<td>1.576</td>
<td>2</td>
<td>0.788</td>
<td>602</td>
</tr>
<tr>
<td>Sex</td>
<td>16.372</td>
<td>1</td>
<td>16.372</td>
<td>12.509**</td>
</tr>
<tr>
<td><strong>2-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group x Time</td>
<td>1.655</td>
<td>2</td>
<td>0.827</td>
<td>632</td>
</tr>
<tr>
<td>Group x Sex</td>
<td>1.178</td>
<td>1</td>
<td>1.178</td>
<td>136</td>
</tr>
<tr>
<td>Time x Sex</td>
<td>4.044</td>
<td>2</td>
<td>2.02</td>
<td>154</td>
</tr>
<tr>
<td><strong>3-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group x Time x Sex</td>
<td>1.056</td>
<td>2</td>
<td>0.528</td>
<td>403</td>
</tr>
<tr>
<td><strong>Residual</strong></td>
<td>213.342</td>
<td>163</td>
<td>1.309</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>235.946</td>
<td>174</td>
<td>1.356</td>
<td></td>
</tr>
</tbody>
</table>

195 cases were processed
20 cases (10.3 pct) were missing

*p < .13
**p < .001
Table 14

Means of Two Behavioral Indices across Group and Sex

<table>
<thead>
<tr>
<th>Behavioral Index</th>
<th>Group</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Female</td>
</tr>
<tr>
<td>Mean Daily Entry</td>
<td>Control</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>1.2</td>
</tr>
<tr>
<td>Note Days</td>
<td>Control</td>
<td>8.9</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>10.2</td>
</tr>
</tbody>
</table>
with the findings regarding no significant changes in difference scores of beliefs and intentions across group and time.

In an attempt to elucidate the effects of the manipulations, if any, an analysis of variance was performed on the behavioral data of experimental subjects only. The results of this analysis are presented below.

A $3 \times 2 \times 2 \times 2$ (time by sex by mode by feedback) analysis of variance on the mean daily entry behavioral index of experimental subjects only, yielded two main effects, one for sex ($F = 11.3, \ df = 1,64, \ p < .002$) and one for feedback ($F = 3.7, \ df = 1,64, \ p < .05$) such that males wrote fewer progress notes than females and subjects who received a memo wrote more progress notes than subjects who did not receive a memo. The means of the mean daily entry behavioral index are presented across time, sex, and feedback in Table 15. Time 3 clearly shows the main effect for feedback. Time three behavioral assessments occurred during the three weeks immediately consequent to the feedback manipulation.

Another $3 \times 2 \times 2 \times 2$ (time by sex by mode by feedback) analysis of variance applied to the note day behavioral index of experimental subjects only, yielded a significant main effect for sex ($F = 11.3, \ df = 1,64, \ p < .002$) suggesting that males wrote fewer progress notes than females. There was also a significant interaction between sex and mode ($F =$
Table 15
Means of the Mean Daily Entry Behavioral Index across Time, Sex, and Feedback

<table>
<thead>
<tr>
<th>Feedback Condition</th>
<th>Time and Sex</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>No memo</td>
<td>1.2</td>
<td>.75</td>
<td>1.3</td>
</tr>
<tr>
<td>Memo</td>
<td>1.1</td>
<td>.3</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Table 16
Means of the Note Day Behavioral Index across Mode and Sex

<table>
<thead>
<tr>
<th>Mode</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
</tr>
<tr>
<td>Written</td>
<td>9.2</td>
</tr>
<tr>
<td>Oral</td>
<td>11.4</td>
</tr>
</tbody>
</table>
5.5, df = 1,64, p < .02) suggesting that females in the oral condition wrote the most progress notes. The means for the note day behavioral index across mode and sex are presented in Table 16.

These findings suggest that the manipulations were not consistently effective in influencing the behavioral dependent variables. The main effects of sex and feedback on the mean daily entries measure suggest that sex and receiving a memo influence the overall number of progress notes written. The main effect of sex and the interaction effect of sex and mode on the note days behavioral criterion suggest that sex, and sex and mode of role playing influenced whether or not a progress note is written each day worked.

One might postulate that simply completing a questionnaire constituted an act of commitment on the part of the subjects, and thus, the effects of the manipulations are masked by the already attained effect of commitment. If this is the case, then the rate of progress note writing prior to Time 1 would be significantly less than at Time 1 (the time of the administration of the first questionnaire) or after.

Using all subjects (experimental and control) who responded to questionnaire one, means were calculated for the two behavioral indices for two weeks prior to the administration of the questionnaire. These means were compared
(with t tests) to the means of the behavioral indices assessed during the week of questionnaire responding, and also with the mean behavioral data from Period 2 and Period 3 of the study. There were no significant differences between the means at any time.

These results suggest that completing the questionnaire did not induce a commitment effect. Thus, the limited effects of the manipulations cannot be explained as being the consequence of commitment effects resultant from completion of the questionnaires.

**General Summary of Anova Findings**

Anova analyses of the data of this study yielded several significant differences between experimental conditions. One consistent difference occurred between control and experimental subjects. Control subjects were found to have significantly less favorable attitudes toward writing progress notes (on one attitude measure), subjective norms less inclined toward writing progress notes, intentions to write fewer progress notes, and tended to write fewer progress notes (p < .13 on one behavioral measure). Each of these differences between groups occurred at each of the three assessment periods of the study, suggesting that control subjects were consistently different from experimental subjects, even at time one, before the experimental manipulations were
administered. A comparison of difference scores across group and time yielded no significant interaction effects on attitudinal or normative beliefs, or on intentions. The analyses of behavioral data also yielded no significant interaction effects across group and time. In an effort to elucidate the effects of the manipulations several analyses of variance were performed on the data of experimental subjects.

The analyses of variance on experimental subjects only, yielded several different results. The analyses of attitude measures yielded a significant interaction effect of mode by feedback on one measure of attitude, suggesting that subjects who responded via the written mode in the role playing manipulation and who did not receive a follow-up memo, had less positive attitudes toward writing progress notes than did subjects in other conditions. There was also a trend (p < .07) of sex on one measure of attitude, suggesting that males had less positive attitudes toward writing progress notes than did females.

The analyses of subjective norm data of experimental subjects only, revealed that subjects in the oral role playing condition had subjective norms significantly higher (toward writing more progress notes) than did subjects in the written condition. There was also a trend (p < .09) of sex on subjective norms, suggesting that females had norms tending toward writing more progress notes.
The results of analyses applied to the two intention measures of experimental subjects only, suggest a sex by feedback interaction on one measure of intention, such that females who did receive a follow-up memo had behavioral intentions to write more progress notes than did other subjects. A sex by feedback interaction on the other intention measure suggests that females who did not receive a follow-up memo had intentions to write the least amount of progress notes.

The analyses of behavioral data of experimental subjects only, revealed that females tended to write more progress notes than males on both behavioral measures. On one measure, there was a main effect for feedback, suggesting that receiving a memo was associated with writing more progress notes. On the other behavioral measure, the interaction effect of sex and mode suggested that females in the oral role playing condition wrote more progress notes than subjects in any other condition.

**Accuracy of Subjects' Self Reports**

In an effort to assess the accuracy of subjects' self-reported behaviors as compared to their actual behaviors, the self report data and the actual behavioral data were compared. Table 17 presents subjects' mean responses across time to the questions: In the past, I have written about...
Table 17

Number of Progress Notes Written
(Actual and Reported) at Three Time Periods

<table>
<thead>
<tr>
<th>Variable</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question re:</td>
<td>1</td>
</tr>
<tr>
<td>On the average...</td>
<td>14.9</td>
</tr>
<tr>
<td>During the past week</td>
<td>12.9</td>
</tr>
<tr>
<td>Actual mean number of entries per week</td>
<td>4.2</td>
</tr>
</tbody>
</table>
progress notes per week on the average; and During the past week, I wrote approximately ___ progress notes. Table 17 also presents the actual mean number of progress notes written by subjects, as assessed by an examination of the records. T tests applied to these means revealed that subjects reported writing significantly more progress notes per week than the number of progress notes written in the records reveals. The average discrepancy between the actual number of progress notes written and the responses to the question regarding "the past, on the average" is 8.9 per week \( (t = 27.4, \text{df} = 49, \ p < .001) \). The average discrepancy between the actual number of progress notes written and the number reported in the "during the past week" question is 7.6 \( (t = 23.2, \text{df} = 49, \ p < .001) \). The results of these analyses suggest that subjects reported writing more progress notes than they actually wrote. The implications of these findings, with regard to the possibility of subjects responding in a socially desirable way, are considered in the discussion section. The apparent increase in actual number of entries per week is not significant \( (t < 1.0) \), and is probably attributable to the increase in number of days worked by subjects across the three time periods.
DISCUSSION

The results of this experiment demonstrate the applicability of the Fishbein and Ajzen (1975) formulation to the study of beliefs, attitudes, intentions, behavior, and behavior change. The results related to the Fishbein and Ajzen formulation are briefly summarized in the paragraph below. Following this general overview is a more detailed discussion of the hypotheses derived from the Fishbein and Ajzen formulation; the results related to them, and the implications of those results. This discussion is divided into six sections; two measures of attitude; the relation of attitude and normative components to intention; intention - behavior relationship; the effects of the conditions of group and sex; the study as a field study; and the effects of the manipulations.

General Overview

The findings of this study can be summarized as follows. The expectancy value formulation of attitude was found to be highly correlated with a direct measure of attitude. There were significant multiple correlations of the attitudinal and normative components on intentions. Correlational analyses yielded significant intention - behavior relationships. The differences between control
and experimental subjects in attitudes and subjective norms were consistent with their differences in intention and behavior, as predicted by the model. Similar consistent differences were found between males and females. The findings of this study were consistent but attenuated as compared with those of laboratory studies with this model. The within experimental subjects' manipulations (the role playing, persuasive communication, and reinforcing memo manipulations) did not influence beliefs in any consistent way, and, as predicted given the situation where they did not change beliefs, they did not affect attitudes, intentions, or behaviors in any consistent way. These findings provide support for the Fishbein and Ajzen formulation. They are discussed in more detail below.

Two Measures of Attitude

The expectancy-value formulation of attitude was supported by the results of this study. It was hypothesized that the expectancy value model of attitude ($\Sigma b_i e_i$) would significantly correlate with a direct measure of attitude. The expectancy value index, composed of the sum of the products of subjects' perceived consequences, were significantly correlated ($r = .51$) with a direct measure of attitude (the summed score on five semantic differential items). This finding approximates the findings of previous studies.
Ajzen and Fishbein (1970) obtained correlations of .63 and .67 and in 1972, they obtained a correlation of .61, in their examination of the relationship between the two measures of attitude.

Thus, the results herein attest to the generalizability of these previous findings to the field setting of a mental hospital and to the subject population of direct care staff. It appears that the expectancy-value formulation and direct measures of attitude are comparable indices.

The finding of the comparability of the two indices has implications for the use of one measure as versus the other. The advantages of using the expectancy-value formulation include that it enables one to assess and monitor very specific components of attitude. When the goal is the understanding or assessment of specific aspects of attitudes, the expectancy-value measure is clearly the more advantageous measure. In contrast, the direct measure of attitude provides a simple, more parsimonious measure. When the goal is a quick assessment, or a simple, direct assessment, the direct measure of attitude provides the more useful measure. In the analyses below, the more parsimonious direct measure of attitude is used.

Relation of Attitude and Normative Components to Intention

This study examined the ability of the Fishbein and
Ajzen formulation to predict behavioral intention in a field setting. It examined the relation of the components of the model to intention through a multiple regression analysis of the data. It was hypothesized that the multiple correlation coefficients of the attitudinal and normative components with behavioral intentions would be high and significant. This hypothesis was supported, in that five of six multiple correlation coefficients were significant beyond the .05 level, with the overall average multiple correlation coefficient being .44.

These results are consistent with several studies that suggest that specific behavioral intentions are predictable from the attitudinal and normative components of the theory. As reported in the introduction, in at least ten different studies where the multiple correlations of the two components with intentions have been computed, the average multiple correlation was .808. The present study's average multiple correlation of .44 represents a lower, but still significant relationship. One might speculate that the relationship is attenuated in the present study due to several uncontrollable variables present in the field setting, such as varying norms, problems with efficient data assessment, particular characteristics of the subject population under consideration, etc. These variables and others are discussed in detail in later paragraphs. Another possible explanation of the obtained
lower values is that socially desirable responses limited the variability of the data. On both the semantic differential measure of attitude and the intention per day measure, subjects' responses were consistently on the high end of the response dimensions. Given this ceiling effect, the obtained significant multiple correlations are impressive, in that they demonstrate an ability of the model to discriminate among data with relatively low variability. In conclusion, the significant relationships found in this study, along with the high relationships found in the past, suggest that the attitudinal and normative components are predictive of intentions.

Intention - Behavior Relationship

It was predicted that there would be a correlation between intention and behavior. This hypothesis was supported, in that four of the six correlations between the correspondent intention and behavior items were significant below the .05 level, with the other two such that \( .06 \leq p \leq .10 \). The mean correlation between the intention and behavior measures was \( .32 \).

Ajzen and Fishbein (1970) reported intention behavior relations which correlated .897 and .841. The correlations which they obtained, higher than those obtained in the present study, might be attributed to differences in procedure.
Their measures were very specific, taken immediately prior to the behavior, and after eight warm up trials. These conditions were not present in the present study. Also, the present study was conducted in the field, with all the attendant complexities and uncontrolled variables inherent therein.

The values of the correlation coefficients obtained in the present study, although lower than those of previous studies, are statistically significant. This finding, along with the previous laboratory findings, evidence that intentions can be predictive of behavior.

Although not part of the original hypotheses, the attitude-behavior relationships were examined. The correlations between the two behavioral indices and the two attitudinal indices at the three time periods were calculated. There were no significant correlations between attitude and behavior.

The Effects of the Conditions of Group and Sex

It was hypothesized that the effect of manipulations directed toward changing the value of a component of the model would be to change the intention to perform a specific behavior and to change the probability that a specific behavior would be performed, with each effect varying in impact with the weight of the component being influenced and the amount of change in the value of the components. This hypothesis was supported by data from the group conditions and from the
sex conditions, when an analysis of variance was applied to the data of all subjects.

In a comparison of control and experimental subjects, subjects in the control group reported less positive attitudes toward writing progress notes (on the expectancy value measure) and subjective norms less inclined toward writing one progress note per day worked (both \( p < .05 \)). Control subjects also reported less intentions to write one progress note per day \( (p < .05 \) on both measures). On the note days behavioral measure, there was a trend \( (p < .13) \) for control subject to write fewer progress notes than experimental subjects. Thus, the differences in value of the attitudinal and normative components between the two groups were consistent with the differences between the groups on intention and behavior measures.

It is not clear why control subjects consistently reported beliefs, attitudes, and intentions to write less progress notes than experimental subjects, nor why they actually tended to write less progress notes, even prior to the experimental manipulations. One possibility is that the buildings had different norms. Despite the fact that both buildings administered general psychiatric care, one (the building of the experimental subjects) also housed the psychology department of the hospital (a staff of 11 people, including the present investigator). The presence of this
additional group of professionals in the building with the experimental subjects might have induced them to report and perform higher quality and quantity work. Also, the building of the control subjects was an older one, with several features which might have lowered the morale of the patients and personnel (e.g., large, group dormitory rooms for all patients, as versus rooms for 4 patients in the building with experimental subjects; an average of 40 patients on the men's locked ward, as versus the average at the building of experimental subjects being 20, etc.). None of these observations were systematically explored or controlled in the present study. Future research might further explore the effects of such variables.

A comparison of male and female subjects, among experimental subjects only, revealed a trend for females to have more positive attitudes toward writing one progress note per day (p < .07) on the semantic differential measure of attitude. Females also reported subjective norms tending toward writing more progress notes (p < .09). There were no main effects for sex on intention, however there was a significant interaction which suggested that females who received a memo intended to write more progress notes than subjects in any other condition. On both behavioral measures, there was a main effect of sex on behavior, such that females wrote more progress notes than males. Thus, there is some evidence for consistency
in the differences between the sexes on the attitudinal and normative measures, and the intentional and behavioral measures.

This consistency is supportive of the hypothesis that beliefs are the primary mediator of any intention or behavior. This finding, consistent with those of previous studies (e.g., Ajzen, 1971; Ajzen & Fishbein, 1971; etc.) provides additional supportive evidence for the view of beliefs (as assessed through the attitudinal and normative components of the model) as central in understanding and predicting intentions and behaviors.

It is not clear why the difference exists between males and females with regard to writing progress notes. One remark overheard by the investigator was that progress note writing was regarded as "women's work", with men's work being defined as subduing acting out patients, moving heavy furniture and supplies, etc. Also, it might be that women of several educational levels and diverse backgrounds work as direct care staff at a mental hospital, due to the congruency between the direct care tasks and the stereotypic woman's role of nurturer and caretaker. This diversity among women might result in a higher motivation and ability to perform job tasks, such as progress note writing, adequately. The men staff members, however, might not have congruency between their usual role and the attendant's tasks, thus, men might
not be so attracted to the job. Perhaps men would take an attendant's job more as a "last resort" than women. Support for the notion of women having a higher level of ability than men with regard to job related abilities is found in the study by Pryer et. al. (1966) where female subjects' scores on tests of knowledge of job skills were higher than males' scores both before and after training. Another possible explanation for the differences between the sexes is that men were more assertive and independent regarding their desires and activities, and that they thus refused to do the work of writing progress notes regularly. None of the above ideas were examined in the present research. Future research might examine these issues further.

This Study as a Field Study

It was hypothesized that the results of this study would approximate the findings of previous studies using this model, but that the intention-behavior relationship would be attenuated by the limitations of the complex factors involved in this field study, as compared to previous laboratory studies. This hypothesis was supported. Whereas previous laboratory studies have indicated that the average correlation between intention and a wide range of behaviors is about .70, the overall correlation between intention and behavior obtained in this study was significant, with a value of .32. This
is close to Newman's (1974) finding, also obtained in a field study, of .39.

Whereas laboratory studies have indicated that the average multiple correlation between the components of the model and behavioral intentions is about .80, this study obtained significant multiple correlations averaging .44. Newman (1974) obtained multiple correlations of .45 and .70. Thus, the results of this study approximate the findings of previous laboratory studies, but are attenuated. They are consistent with Newman's (1974) field study. Response tendencies toward socially desirable responses might explain some of the attenuation. It appears that the basic functioning of the model is consistent across settings, with the degree of the relationships among variables being influenced by the nature of the setting under examination. With less controlled settings, as the field, the relations tend to be significant, but attenuated, when compared to those obtained in laboratory settings.

The Effects of the Manipulations Administered to Experimental Subjects Only

It was hypothesized that the role playing manipulation, the persuasive communication manipulation, and the social reinforcement manipulation would change intentions and behavior, and that these changes would be mediated by the manipulations' effects on the beliefs of the subject, and the
subsequent value and weighting of the theory's components.

The results indicate that these manipulations (administered to experimental subjects only) did not affect attitudinal or normative beliefs in any consistent way. The findings regarding the effects of the manipulations on attitude, intention, and behavior are consistent with the findings on beliefs; the manipulations did not affect attitude, intention, or behavior in any consistent way.

One interesting finding concerns the results of the analyses of the subjective norm data of experimental subjects, which revealed that subjects in the oral role playing condition had subjective norms significantly higher (toward writing more progress notes) than did subjects in the written condition (at time 2, immediately subsequent to the manipulation). This effect is suggestive of Milgram's (1965) findings regarding the relationship between the proximity of the interviewer and the obedience of subjects. In the oral attitudinal role playing manipulation, the experimenter spoke directly with subjects as they role played, whereas in the written conditions, subjects received a letter asking them to write an essay. Milgram's findings suggest that the more immediate situation (the interview) would yield more compliance with the interviewer's demands. This effect might explain why subjects in the oral condition reported more positive subjective norms toward writing progress notes.
Possible Explanations for the Lack of Effectiveness of the Manipulations

The issues of the reliability and validity of the questionnaire

One might conjec that the effects of the manipulations were not evident due to flaws in the questionnaire. One might pose the possibility of an invalid and/or unreliable assessment instrument. Findings in this study provide confusing evidence regarding this issue. The findings reported in Pilot Study I evidenced the reliability and validity of the instrument in that the instrument effectively differentiated control and experimental subjects; and there was a significant multiple correlation on one intention measure. Also, subjects's self-report of the accuracy of their responses averaged 6.4 on a seven-step scale.

There is much indirect evidence for the reliability and validity of the questionnaire. The intercorrelations of the seven basic dependent variables across time yielded twenty one significant correlations. Also, in the main study, the questionnaire consistently differentiated between control and experimental subjects, and between male and female subjects across several variables. There was a high and significant correlation between the questionnaire's two measures of attitude (mean = .51). Analyses of individual component
items of the \( \Sigma e_i \) and SN indices revealed findings that were consistent with the results of the analyses of the overall index. Significant multiple correlations of \( A_B \) and SN with I (mean \( R = .44 \)) and significant I - B relationships (mean \( r = .32 \)) also suggest the reliability and validity of the instrument. All of the evidence above suggests that it is highly probable that the assessment instrument was reliable and valid.

In contrast to the above is the finding that subjects apparently tended to respond to the questionnaire in a socially desirable way. The issue of the validity of the questionnaire assessment becomes apparent when one considers the statistically significant differences between the reported number of progress notes written and the actual number written.

Thus, there is conflicting evidence regarding the reliability and validity of the questionnaire instrument. One might conject that the instrument was reliable and valid with regard to certain questions (as those concerning attitudes, norms, etc.) but not with regard to other questions (as those concerning reports of past behavior). It is essential that future research address and clarify this issue.

Problems with the nature of the behavior studied - progress note writing
Upon initial consideration, progress note writing appeared to have many of the desirable characteristics of a behavior to be examined in an experimental investigation. Over the course of the study, however, the investigator learned, through observation, communication, and examination of the data, that progress note writing also had several characteristics which made it an undesirable behavior to examine. Below, the desirable characteristics are briefly summarized, and the less desirable characteristics are discussed in more detail.

The desirable characteristics of progress note writing behavior included that, as suggested by Fishbein's (1966) study, it can be specified in very specific terms, and the opportunity to engage in the behavior is not limited by external forces (this latter point was also suggested as important by Newman (1974) in his field study). Progress note writing is also desirable in that it does not require several intervening steps for its performance. Additionally, it is objective and easily quantified. Thus, progress note writing is characterized by several attributes important to an experimental study of volitional behavior.

The less desirable attributes of this behavior included, that, in order for it to be performed, it required that subjects have the verbal abilities and resources to express their ideas and thoughts in writing. During the study, some of the
subjects verbalized concerns about their writing ability and asked for a course in writing skills. Some subjects were not willing to write an essay but were willing to respond orally to one of the manipulations. These behaviors suggest that some of the members of the population under consideration did not have and/or felt they did not have the resources and abilities to write their ideas and thoughts clearly.

Another characteristic originally specified as desirable involved the subjects' having no engrained habits mitigating against their performance of the behavior. Comments during the study suggested that there were some such engrained habits, as, progress note writing was termed "women's work", it was viewed as a chore which had a history of being done once per week per patient for years, and there appeared to be a norm such that it was generally done by the younger and more active members of the staff. Thus, it appears that there were some engrained patterns mitigating against the performance of writing a daily progress note. Age was not assessed or controlled during this study. Future research might examine the influence of this variable more closely.

Another undesirable characteristic of the progress note writing behavior is that it could not be assessed immediately consequent to the questionnaire assessments. Although the questionnaires were all distributed at the same time, they were returned to the investigator at varying times. Due to
subjects' varying work days, varying amounts of free time, and varying motivation to complete the questionnaire, the forms were returned anywhere from one day to twenty days consequent to their distribution. Behavioral data gathering began on day 21 consequent to distribution. Thus, contrary to the desired situation of assessing behavior immediately consequent to the administration of the questionnaire, there was a three-week time lag in the present study.

And finally, although it was thought that all necessary data related to progress note writing would be readily accessible, midway in the study, after all questionnaires were collected and prior to behavioral data collection, it was discovered that each subject had to sign a release form, in order for the investigator to find out information relevant to the number of progress notes written per day. Six subjects refused to sign this release form, thus limiting the amount of behavioral data available. Thus, there were several characteristics of progress note writing behavior which might account for the lack of effectiveness of the manipulations.

Mental hospital direct care staff characteristics - as evidenced by previous research, the subjects' tendency toward socially desirable responses, and the investigator's informal observations.
The summary and conclusion of the research on mental hospital direct care staff personnel suggested that the most central and difficult attitude to change is the attendant's attitude toward power, and that a change attempt which does not threaten or challenge the attendant's sense of power will have a higher likelihood of being accepted than one which does.

The attempt to change attendants' progress note writing behavior was originally conceived of as an attempt to change a behavior which was unrelated to issues of the attendants' power. Upon reflection, however, it seems that there are several ways in which the subjects could have interpreted it as a threat, to their power. First, any attempt at changing their routine, regardless of the content of the attempted change might be seen as a threat to their status quo, their social control, and/or their power. Several attendants did make comments such as, "Why do they always want us to do more work? Why don't they go after the doctors or psychologists to write more progress notes?" Thus, it seems that some subjects perceived the request to write more progress notes as a demand falling upon them, related to their status, whereas people of higher status did not have such demands placed on them, implying that the demand was seen in some ways as related to power issues.
Also, all of the manipulations were administered by people of higher status than the attendants. The role playing manipulation was administered by the investigator (a psychology intern), and the persuasive communication and reinforcing memo manipulations were distributed from the building supervisor. Thus, since authority figures were associated with the manipulations, attendants might have perceived the manipulations as challenges to their power.

Another factor which might have affected the lack of effectiveness of the manipulations is the subjects' apparent tendency toward socially desirable responses. The average discrepancy between subjects' reported and actual number of progress notes written per week was 8.9, with the difference between the two means being significant below .001. Additionally, one attitude index mean was 29.4 out of a possible 35, and the mean intention per day index was 6.3 on a 7 point scale. These findings evidence that subjects responded in ways which did not accurately reflect themselves and their actions. Given that the subjects' questionnaire responses were one basis of assessment of the effects of the manipulations, and given that subjects' responses were not accurate at times, it is clear that the apparent limited effect of the manipulations might in part be due to the tendency of the subjects to report socially desirable responses.
It is not clear why subjects tended to report intentions to write fewer progress notes as time went on. One might conject that with time, they became more honest regarding their intentions. Also, since they were signing the questionnaire form with their names, they perhaps were concerned about possible negative repercussions, if they did not report intending to write a sufficient amount of progress notes, thus, the inflated estimates.

This high degree of discrepancy between the reported intentions and actual behavior suggests a possible limitation of the model. It appears that in some situations, one of the artifacts of the self-report techniques is the stimulation of subjects reporting socially desirable intentions. This suggests the importance of using the model with subjects who are limited in their need to report socially desirable responses, or, of recognizing and controlling for these inflated responses.

Another possible explanation for the lack of effectiveness of the manipulations involves the characteristics of the hospital staff workers. Through informal contacts and observations, the investigator noticed that subjects appeared to have their own set of norms and behaviors, and that suggestions, information, and influence attempts often seemed only to cement them further in their own unchanged patterns. For instance, one psychologist asked the attendants on one
ward to gather five specific patients together at a specific time each week, and he would lead them in a group therapy group. For several weeks, the attendants "forgot" the appointed time, neglected to gather the patients together, and had scheduled other appointments for several of the specified patients at that time. This kind of resistance to change seemed to characterize the attendants' general mode of reaction to any change attempt. If this pattern of resistance is generalizable to the progress note writing change attempts, then the lack of effectiveness of the manipulations might be due to the subjects' resistance to change.

Relevance of Fishbein and Ajzen's (1975) postulations regarding why an influence attempt might fail

Fishbein and Ajzen (1975) suggest that an influence attempt may fail to affect the dependent variable for at least three reasons; it may not produce the desired change in proximal beliefs; even when changes in proximal beliefs occur, these changes may have no effect on the primary beliefs; and, the influence attempt may have unexpected and undesirable impact effects on external beliefs, which can also influence primary beliefs.

With regard to the first two suggestions, it appears that the manipulations did not have any significant effects on the proximal or primary beliefs. Analyses of the data
yielded no consistent effects of the manipulations on the attitudinal or normative beliefs of subjects. The suggestion of the effect of the influence attempt on external beliefs is related to the discussion above, regarding staff's reactions to an influence attempt. It seems that the mental hospital direct care staff's reactions to this influence attempt might have been to perceive it as just another demand on their time and energy, and thus ignored it. Thus, there is a possibility that there were undesirable impact effects.

Conclusions and Theoretical Implications of This Research

The findings of this research suggest the applicability of the Fishbein and Ajzen formulation to the understanding of beliefs, attitudes, intentions, and behaviors in a field setting. The model's postulation of a high relationship between the expectancy value formulation of attitude and a more direct measure of attitude was supported. The model's ability to predict intention and behavior were evidenced by the multiple correlations of the attitudinal and subjective norm component on intentions, and the relationship between intention and behavior. Thus, overall, there is much evidence supporting the model's formulation of the values and functioning of beliefs, attitudes, intentions and behaviors.

The lack of effectiveness of the manipulations suggests several areas for future research. The relevance of the
Fishbein and Ajzen formulation to the understanding of the functioning of manipulations such as the ones in this study is still not clear. The nature of the intervening processes between manipulations (such as social reinforcement, persuasive communication, and role playing) and consequent belief, attitude, intention, and/or behavior change is an area open for future investigation.

Another area for future research involves the nature of the dynamics of mental hospital direct care staff members' reactions to attempts at change. What determines when a change attempt will be resisted? How can a change attempt not threaten the attendants' sense of power? These are but a few of the many unanswered questions in this area of research.

Finally, the limitations of the self-report techniques employed in this study might be explored. Perhaps a multi-method assessment procedure to assess the theory's components would provide a more accurate and valid index of the theory's components. Also, the ramifications of the model's heavy reliance upon questionnaire assessments must continue to be examined. The implications of this heavy reliance upon questionnaire assessments includes limitations regarding the model's general viability.
Practical Implications

One practical implication of this research involves the issue of pretesting. Pretesting was clearly useful in this study for clarifying the nature of the components of the Fishbein and Ajzen formulation with regard to the particular population under consideration. The two pilot studies clearly elucidated such issues as the salient beliefs of the subjects, the most efficient form of the questions and questionnaire, and some issues regarding the validity of the questionnaire instrument. Such issues are central when one is working with a formulation which relies heavily on a questionnaire assessment of beliefs, attitudes, and behaviors. The utility of pretesting was affirmed in this study.

Several issues regarding working in the field were also elucidated. One is related to checking through details of a study before one begins an investigation. The unplanned delays in this study - the three week delay of questionnaire return, the necessity of procuring releases for some information - interfered with the efficiency and comprehensiveness of the study. Also, a field study can involve considerable time and effort in terms of data collection. Questionnaire assessments spanned a two month period, with collection of the actual progress note writing behavioral data spanning a three month period (of counting words, matching notes with
subjects in the study, and recording dates). This study elucidates the salience of such issues in any field study.

Finally, it seems that an air of circumspection and caution would be appropriate in any endeavor attempting to apply manipulations successful in lab settings to the field. This study suggests that manipulations such as social reinforcement, role playing, and persuasive communication did not affect subjects in the same way as they had in previous laboratory studies. This finding suggests qualifications and limitations of applicability of these findings in certain settings. The nature of these qualifications and limitations, as well as the settings where they apply, comprise an area for further investigation.
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Appendix i
Imagine that you were to write daily progress notes on every patient that you work with (as, patients that you talk with for more than a few minutes, patients whom you feel that you've reached or helped, or patients that you've noticed something different about). The questions below refer to this situation.

Please answer each question as honestly and as accurately as possible. Thank you.

1. If I write daily progress notes, I will provide useful information for future patient care workers:
   likely __:__:__:__:__:__ unlikely
   and this likelihood would make me feel
   good __:__:__:__:__:__ bad

2. If I write daily progress notes, I will help the patients more
   likely __:__:__:__:__:__ unlikely
   and this likelihood would make me feel
   good __:__:__:__:__:__ bad

3. If I write daily progress notes, I will help non-ward staff know more about their patients (as, psychiatrists, social workers, etc.)
   likely __:__:__:__:__:__ unlikely
   this likelihood would make me feel
   good __:__:__:__:__:__:__ bad
4. If I write daily progress notes, I will take time away from other patient care activities
   unlikely __:__:__:__:__:__ likely
   and this state of affairs would make me feel
   good __:__:__:__:__:__ bad

5. If I write daily progress notes, I will feel more personally satisfied with my job.
   likely __:__:__:__:__:__ unlikely
   and this state of affairs would make me feel
   bad __:__:__:__:__:__ good

6. If I write daily progress notes, I will make the records look good
   unlikely __:__:__:__:__:__ likely
   and this state of affairs would make me feel
   good __:__:__:__:__:__ bad

7. If I write daily progress notes, I will make other staff members angry
   likely __:__:__:__:__:__ unlikely
   and this state of affairs would make me feel
   good __:__:__:__:__:__ bad

8. If I write daily progress notes, I will think more about patients and patient care
   likely __:__:__:__:__:__ unlikely
   and this state of affairs would make me feel
   bad __:__:__:__:__:__ good
9. If I write daily progress notes, I will please the administrators of the hospital

unlikely __:__:__:__:__ likely

and this state of affairs would make me feel

good __:__:__:__:__ bad

10. If I write daily progress notes, I will help the other ward staff to know more about what is going on with each patient

likely __:__:__:__:__ unlikely

and this would make me feel

bad __:__:__:__:__ good

11. I think that Dr. Arafh expects me to write daily progress notes on each patient that I work with

likely __:__:__:__:__ unlikely

I do __:__:__:__:__ I do not want to do what Dr. Arafh expects in this situation.

12. The off-the-ward patient care personnel (as psychiatrists, social workers, etc.) expect me to write daily progress notes on each patient that I work with

likely __:__:__:__:__ unlikely

I do want to __:__:__:__:__ I do not want to do what the off-the-ward personnel expect in this situation.

13. Mr. Shuman (Director of Nursing, CVH) expects me to write daily progress notes on each patient that I work with

unlikely __:__:__:__ unlikely

I do __:__:__ unlikely I do not want to do what Mr. Shuman expects of me in this situation.
14. Mrs. Yarlboro expects me to write daily progress notes on each patient that I work with

unlikely __:__:__:__:__:__ likely
I don't __:__:__:__:__:__ I do
want to do what Mrs. Yarlboro expects me to do.

15. The other ward staff members expect me to write daily progress notes on each patient that I work with

likely __:__:__:__:__:__ unlikely
I want to __:__:__:__:__:__ I do not want to
do what the other ward staff members expect me to do.

16. Mrs. Butterfield expects me to write daily progress notes on each patient that I work with

unlikely __:__:__:__:__:__ likely
I do not want to __:__:__:__:__:__ I do want to
do what Mrs. Butterfield expects of me.

17. The charge on the ward expects me to write daily progress notes on each patient that I work with

likely __:__:__:__:__:__ unlikely
I do __:__:__:__:__:__ I do not
want to do what the charge on the ward expects me to do.

18. During the next week, I intend to write daily progress notes on each patient that I work with

likely __:__:__:__:__:__ unlikely

19. I want to __:__:__:__:__:__ I do not want to
write daily progress notes on each patient that I work with during the next week.
20. The answers on this questionnaire accurately reflect my feelings today - they accurately express my thoughts and ideas about the subjects mentioned

likely __:__:__:__:__ unlikely
Appendix ii
PRELIMINARY QUESTIONNAIRE

1. Imagine that you were to write daily progress notes on every patient that you work with (as, patients that you talk with for more than a few minutes, patients whom you feel that you've reached or helped, or patients that you've noticed something different about). What would be the favorable and unfavorable consequences of doing this? What comes to mind that might result from your doing this? In other words, what might happen if you did this? Please list all of the possibilities that you can think of in the space below.

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10.
2. Now we are interested in knowing who you think would care about whether or not you wrote a daily progress note on every patient that you worked with. Who would be concerned about whether or not you did this? Please be sure to consider those who might disapprove of your doing this as well as those who might approve. Please list below all of the people or groups that would be interested.

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 
Before you begin, I want to assure you that all information in this questionnaire is for research purposes only. Please try to answer each question as honestly and as accurately as possible. All information contained herein is strictly confidential and will only be seen by me.

This questionnaire is about writing progress notes. Imagine, that starting tomorrow, you write at least one progress note each day that you work. The questions below refer to this situation. Please try to answer each question as honestly and as accurately as possible. Thank you.

Identification of variable being assessed

1. If I write at least one progress note each day that I work, I will be helping to provide a more complete picture of the patients.

unlikely __:__:__:__:__ likely

belief one

(b1)

2. If I write at least one progress note each day that I work, I will provide information that would help the team and other interested staff people to develop and deliver better patient care.

unlikely __:__:__:__:__ likely

(b2)

3. If I write at least one progress note each day that I work, I will be helping to provide new and unique information on some patients, because some patients will only talk openly with certain people.

unlikely __:__:__:__:__ likely

(b3)

4. If I write at least one progress note each day that I work, I will be making work for myself, it would be dull, uninteresting, and repetitive.

unlikely __:__:__:__:__ likely

(b4)
5. If I write at least one progress note each day that I work, I will become depressed, because I will realize how little progress the patients make.

unlikely __:__:__:__:__:__:__ likely 

6. If I write at least one progress note each day that I work, I will record biased points of view, things that I have misunderstood, or only bad things about patients, so that the notes wouldn't give a true picture of the patients.

unlikely __:__:__:__:__:__:__ likely 

7. If I write at least one progress note each day that I work, the patients will be nervous about my writing so much in their charts and they will lose some trust in me.

unlikely __:__:__:__:__:__:__ likely 

8. If I write at least one progress note each day that I work, I will provide information that will be used by the hospital personnel for reference.

unlikely __:__:__:__:__:__:__ likely 

9. If I write at least one progress note each day that I work, I will facilitate my expressing more interest in the patients and my developing a closer relationship with them.

unlikely __:__:__:__:__:__:__ likely
10. If I write at least one progress note each day that I work, it will help the staff to get patients discharged earlier and to better prepare the patient for discharge.

unlikely __:__:__:__:__ likely

11. (We would like to know approximately how many progress notes you usually write. Please fill in the blank in the following sentence.)

In the past, I have written about ___ progress notes per week on the average.

12. (Again, please fill in the blank:)

During the past week, I wrote approximately ___ progress notes.

13. Most people that are important to me think that I should write at least one progress note each day that I work.

unlikely __:__:__:__:__ likely

14. Providing a complete and accurate picture of the patients is

bad __:__:__:__:__ good

15. Providing information that would help the team and other interested staff people to develop and deliver better patient care is

bad __:__:__:__:__ good

16. Helping to provide new and unique information that a patient felt comfortable to tell only me is

bad __:__:__:__:__ good
17. Making work for myself on dull, uninteresting, and repetitive tasks is
   bad __:__:__:__:__:__ good
18. For me to get depressed is
   bad __:__:__:__:__:__ good
19. To record a biased point of view, a misunderstanding, or only bad things about a patient is
   bad __:__:__:__:__:__ good
20. For the patients to be nervous about my actions and lose some trust in me is
   bad __:__:__:__:__:__ good
21. To provide information that is used by hospital personnel for reference is
   bad __:__:__:__:__:__ good
22. To express more interest in the patients and develop a closer relationship with them is
   bad __:__:__:__:__:__ good
23. To discharge patients earlier and to have patients better prepared for discharge is
   bad __:__:__:__:__:__ good
24. In the weeks to come, I intend to write ___ progress notes per week.
25. The doctors think that I should write at least one progress note each day that I work

unlikely __:__:__:__:__:__ likely

26. The ward charge and the nursing supervisor think that I should write at least one progress note each day that I work

unlikely __:__:__:__:__:__ likely

27. The building supervisors think that I should write at least one progress note each day that I work

unlikely __:__:__:__:__:__ likely

28. The social workers think that I should write at least one progress note each day that I work

unlikely __:__:__:__:__:__ likely

29. The other ward staff think that I should write at least one progress note each day that I work

unlikely __:__:__:__:__:__ likely

30. The therapists that work with the patients (as, occupational therapists, music therapists, psychotherapists, etc.) think that I should write at least one progress note each day that I work

unlikely __:__:__:__:__:__ likely

31. In the weeks to come, I intend to write at least one progress note each day that I work

unlikely __:__:__:__:__:__ likely
32. I think that it would be best if each ward staff member wrote ___ progress notes per week

33. Generally speaking, I want ___:___:___:___:___ I do not want to do what the doctors think I should do

34. Generally speaking, I want ___:___:___:___:___ I do not want to do what the work charge and the nursing supervisor think I should do

35. Generally speaking, I want ___:___:___:___:___ I do not want to do what the building supervisors think I should do

36. Generally speaking, I want ___:___:___:___:___ I do not want to do what the social workers think I should do

37. Generally speaking, I want ___:___:___:___:___ I do not want to do what the other ward staff think I should do

38. Generally speaking, I want ___:___:___:___:___ I do not want to do what the therapists (music therapists, occupational therapists, and psychotherapists, etc.) think I should do

39. Generally speaking, I want ___:___:___:___:___ I do not want to write at least one progress note each day that I work

Identification of variable being assessed

filler item

motivation to comply item one

\( m_{c1} \)

\( m_{c2} \)

\( m_{c3} \)

\( m_{c4} \)

\( m_{c5} \)

\( m_{c6} \)

filler item
40. To write at least one progress note each day that I work is
harmful __:__:__:__:__:__ beneficial
bad __:__:__:__:__:__ good
punishing __:__:__:__:__:__ rewarding
negative __:__:__:__:__:__ positive
unpleasant __:__:__:__:__:__ pleasant

41. My answers to the above questions accurately reflect my thoughts and feelings
unlikely __:__:__:__:__:__ likely

42. The idea of this study, as I understand it, is __________________________
_____________________________

43. I would like to conclude by saying to you __________________________
_____________________________

(Please use the back for additional comments)
Appendix iv
To: Merritt Hall Staff
From: Supervisors' Office
Re: Progress notes

As you know, we, the staff at Merritt Hall, have a multitude of responsibilities for patient care which we are constantly trying our best to meet. This memo is in regard to one of those duties - writing progress notes.

We have received a lot of information about the usefulness of progress notes from various people who work with patients and we want to share this information with you.

In July, 1974, doctors in Merritt Hall building reported having used progress notes and having found them a valuable source of information. They mentioned that more and better progress notes on charts would be useful to them. It was suggested that if staff members could write at least one note each day they worked, more and better progress notes would probably result, and the doctors would find this very helpful.

Also, music therapists, occupational therapists, psychotherapists, and social workers have all mentioned that progress notes have been very informative and helpful in their work. They mentioned that they rely on progress notes for treatment plans. They stated that they are going to try to write more regular and better progress notes, and that they would appreciate it if, when possible, other staff would try to do the same.

Ward staff members generally agreed that most of the time, progress notes are useful and informative to everyone involved with a patient. Most ward staff, especially nursing supervisors and ward charges, stated that they expected other staff members to write regular progress notes.

This office (the supervisors' office) uses progress notes daily. Progress notes provide information needed to make important decisions about a patient. The more detailed and frequent the progress notes are, the more helpful they are to us. We would like to see each aide attempt to write informative progress notes on charts often.
Thus, there has been a lot of talk and opinions expressed regarding progress notes. It has been suggested by many patient care workers that more and better progress notes might assist in providing better care for the patients. Perhaps if each staff person wrote one progress note each day, we could provide more and better progress notes.

Recognizing that you face several responsibilities every day, we urge you to remember the importance of progress notes. Progress notes are important to other ward staff members, therapists, social workers, doctors, etc. In the next few weeks especially, perhaps you could try to write at least one progress note per day that you work, and thereby continue to contribute to our efforts toward better patient care.
Appendix v
To: (individual employee's name)

From: Supervisor's Office - Merritt Hall

Re: Progress Note Writing

Date: Sept. 20, 1974

This memo is a reminder about writing progress notes. A couple of weeks ago, this office distributed a memo, asking that ward staff personnel try to write at least one progress note each work day. Several staff members responded to that memo by writing more progress notes than they used to write. We want to thank those who were so responsive to that request. Also, we'd like to remind others that by writing at least one progress note each work day, you can help us provide better patient care.

Some of you may not be aware of how much progress notes are used. Often, doctors, other staff members, and this office use progress notes when you are not on duty, so that you don't always see how much your writing progress notes is appreciated. Let this note express each patient care worker's gratitude to you, for your trying to write at least one progress note per day. Although you may not always see it, your writing progress notes really does make a difference in our ability to understand and help our patients.

Thus, this office hopes that you will continue to try to write more and better progress notes. You can help us to provide the best possible patient care by writing at least one progress note per day.