Effect of a Formal Therapy Agreement on Client Self-Management of Diabetes Mellitus

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A Clinical Investigation
presented to
the University of Oregon School of Nursing and the
Graduate Council of
the University of Oregon Health Sciences Center
in partial fulfillment of
the requirements for the degree of
Master of Nursing

June 8, 1979

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This study was conducted while the investigator was supported in part by United States Public Health Service Traineeship, Grant #5-A11-NU0035-18.

Acknowledgments

The author extends heartfelt thanks for the support and encouragement of her friend and guide, Pauline Bingham, while this study was in progress.

Appreciation is also extended to Ms. Marie Berger, Ms. Pauline Bingham, and Dr. May Rawlinson for their help as readers, and to Ms. Evelyn Schindler for sharing ideas which helped spawn this investigation.

The author is indebted to the participants in this study, for their openness and willingness to work in a new situation.

Enduring appreciation goes to Jeremy Thomas Baldwin who, during the progress of this study, attained the age of seven and mastery in the art of give-and-take so necessary in negotiation.

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Table of Contents

Chapter I

Introduction

Introduction to the Problem

The problem of patient noncompliance with prescribed therapy has received much attention in the medical literature in recent years. In part, reasons for this upsurge of interest can be attributed to the increase in numbers of people who have chronic illness and the growing use of outpatient care for acute illness. A result of these changes has been that more responsibility for self-care has been placed on the patient. Attention to the problems arising out of this trend toward self-care has prompted professional groups, the insurance business, and the government to provide or to update patient preparation standards, guidelines, and to a limited degree, budgets. The public, through consumer groups and the legal matrix, is demanding more involvement in and understanding of self-treatment (Fylling, 1975).

That patients do not follow therapist advice is well documented. Estimates of noncompliance in several reviews of the literature since 1966 result in consensus that at least 30 percent of outpatients do not fully comply with therapist recommendations (Davis, 1966; Marston, 1970; Gillum & Barsky, 1974; Sackett & Haynes, 1976). Confounding these findings is the evidence that therapists generally do not suspect noncompliance, and when asked, are unable to identify which of their patients are noncompliant (Davis, 1966; Golden & Johnston, 1970; Sackett & Haynes, 1976). Under such conditions, the possibility of successful

self-treatment seems remote.

In spite of the attention noncompliance has received from care providers, it remains a variously defined, difficult to measure problem (Marston, 1970; Sackett & Haynes, 1976). Reported attempts to identify demographic or psychological predictors of noncompliance have been disappointing (Stimson, 1974; Mitchell, 1974). The therapist-patient exchange itself, and the therapeutic regimen arising out of it, have been more fruitful for predicting instances of noncompliance (Mitchell, 1974; Davis, 1963) and these variables are within more reasonable power of therapists to change.

Statement of the Problem

Traditionally, the therapist-patient relationship has been therapist-controlled, while the patient offered little input and assumed only the responsibility for cooperating in an effort to get well. This role can be seen as adaptive for most people during a period of acute illness (Mauksch, 1965). When illness is or becomes chronic, and a person must resume or continue daily life responsibilities as well as administer a self-care regimen, direction of that care should shift toward a more collegial distribution between ill person and therapist (Szasz & Hollander, 1955). The patient needs to acquire therapist skills and motives; the therapist needs to interpret patient-supplied data and opinion as they arise, from the patient's frame of reference. Successful efforts in such a exchange require mutual participation, in an attempt to agree on a therapy plan which meets most of the expectations of both patient and therapist.

Diabetes mellitus is a chronic illness which is fraught with problems of self-administered care. Management is invariably complex, and conse-

quences of mismanagement include both short and long term effects in the patient (Etzwiler, 1972). Much more is known about diabetes and its management than is in use by the people who have it, but the cause of diabetes remains unknown and its management, even under controlled conditions, is imperfect. Accurate data from patients may offer the care provider needed guidance in the improvement of knowledge and treatment of the disease. Efforts to improve management of self-care assume greater urgency in face of the magnitude of the problem. According to the December 1975 Report to Congress from the National Commission on Diabetes, which was followed by passage in October 1976 of the National Diabetes Advisory Board Act, over ten million Americans now have diabetes, and that number is projected to increase by six percent each year.

The problem addressed by this study is illustrative of the serious lack of success with self-therapy by people who have diabetes millitus. The search for a solution focuses on assuring patient participation in, and commitment to, the therapy agreement process.

Review of the Literature

Problems relating to compliance and efforts to respond to them, including the use of contracting for health or medical care, have been explored and are discussed in the review of this literature to follow.

Compliance

Although compliance research has revealed some very useful information concerning patient self-care behavior, the context in which this information has been collected bears examination before proceeding further. The word "compliance" suggests the doing of a task by one person, at the direction of someone else. In the therapy setting, when a patient has (for whatever reason) not followed directions of a thera-

pist, the patient has been identified as noncompliant. Stimson (1974) has pointed out that this "deviant patient" concept which underlies the compliance research probably results in misstatement of the problem. The present study was conducted from the point of view supporting the alternate explanation posited by Stimson; that is, that the patient administers self care in a social milieu of his/her own. In this milieu, being ill and having contact with the medical world make up only part of the patient's life. Being chronically ill is demoted from the position of honor it may hold in the hospital or therapist's office, to a much less absorbing share of the attention of a person who returns from that office to work, play, and grow as a family member who has "normal" as well as "sick person" roles to attend. Within this context, high compliance was viewed as a reflection of success in self-treatment. The investigator acknowledges that the two concepts may be in conflict at times, but since compliance is currently the only context of research from which level of patient success in self-treatment can be inferred, it must be accepted.

Reasons for low patient success with self-treatment have been found in several areas, including the therapy itself, the therapist-patient exchange, patient education or information level about the illness, and psychological and social factors. These aspects of the problem will be reviewed.

The idealized therapeutic regimen most strongly associated with noncompliance neatly fits that for diabetes millitus (Etzwiler, 1962). Therapy is prolonged (lifelong) and consequences of stopping it can be delayed or uncertain. There are a large number of different, complex recommendations, and the patient (or the patient's family) assumes full

responsibility for carrying them out (Gillum & Barsky, 1974; Marston, 1970; Blackwell, 1973). In addition, the diabetic's daily life is affected by the need to change well-established diet habits and by the need for ongoing monitoring and self-adjustment of parts of the regimen itself (Etzwiler, 1962; Gillum & Barsky, 1974). Success in a self-treatment program of this sort depends on sophisticated preparation and a high level of commitment. The diabetic's primary resource in these matters should be the therapist, and the relationship they have is crucial to the success of the therapy (Etzwiler, 1972).

Various studies have isolated communication factors within the therapist-patient exchange which affect patient success in following through with therapy. Korsch, Gozzi, and Francis, (1968) identified "blocks" in communication, including the use of medical jargon, interruption, contradiction or argument, and dismissal, all of which were related significantly to patient dissatisfaction and to noncompliance. Davis (1968) using Bales' Interaction Analysis, described a significant correlation between noncompliance and "malintegrative" behavior, such as patient assertiveness, doctor disagreement, formality or rejection, and failure to give patients feedback.

Such relationships do not produce a good educational arena. There is consensus that patients must be adequately prepared to accept a self-therapist role, although in some cases, people who have diabetes get along quite well without it (Williams, Martin, Hogan, Watkins, & Ellis, 1967). It has been incorrectly assumed by therapists that patients do understand their therapy (Golden & Johnston, 1970; Davis, 1966; Donabeidan, 1964). The consensus in favor of teaching people about their diseases persists, and studies such as Etzwiler's (1962) showing

that diabetics are grievously ignorant about their disease are met by diabetes care providers with surprised dismay; if ignorance in some cases is harmless, in others it may be quite dangerous. After reviewing the literature, Donabeidan concluded that patients want or need to know more than they are told about their disease or its treatment (1964). Both Walker (1965) and Etzwiler (1972) emphasize that effective educational efforts are made from within the context of, and are dependent upon, an ongoing relationship which is based on mutual respect.

Psychological and sociological factors, while they do not help identify a noncompliant personality type, nor a noncompliance-prone situation (Stimson, 1974; Marston, 1970), do affect a person's potential for success in self-treatment (Marston, 1970). When these factors can be identified, they can be taken into account when therapy is designed. For example, if the patient understands the context of therapy and its consequences, that awareness may be appropriately applied in decision-making. Further, if the patient's inclination is fatalistic or if there is poor environmental support, some adjustment of the therapy or compensatory measure may be necessary before action can be expected (Gillum & Barsky, 1974). These variables may never be discovered unless the patient feels comfortable enough with the therapist to enter them for consideration. All patients entertain expectations of the therapist visit (Lorion, 1974). When information about such expectations is not sought, they may go unmet, and the patient may then experience a noncompliance-related feeling of dissatisfaction (Korsch, et al., 1968). Golden and Johnston (1970), in a study of doctor-patient communication, found that doctors were "appallingly unaware of their failure to

communicate" (p. 132). Geerston (1973) suggested that attention to "the expectations and needs of the patient" (p. 697) was implied by his data, and that such perception might be facilitated by the use of a scale designed to detect patient expectations. A patient-therapist exchange which includes some of these communication problems is likely to result in low agreement about what the patient is to do. Agreement of the patient with the doctor's diagnosis and plans for care was found to have a case-for-case correlation with compliance in an unpublished 1956 study by Pratt and Mudd (Pratt & Seligmann, 1957).

Underlying the changes implied here is a requirement to increase the level of patient participation in the visit with a therapist. Allport (1945) pointed out that, at least in this society, commitment to relevant action depends on the individual's level of participation in decision making and activity. Etzwiler (1972) professes that the active involvement of the patient, as a member of the health care team, is necessary to success in self-treatment by patients who have chronic illnesses.

Although failures in the therapist-patient relationship to communicate clearly, to meet patient expectations, and to achieve agreement have been correlated with noncompliant behavior, adherence to these variables does not guarantee success. Taken together, however, they do provide a climate conducive to increasing both the patient's preparation for effective action and the success of self-care actions taken. Since patient participation can be seen as an underlying factor in all three areas, it follows that increasing patient participation would effect an increase in patient preparation for and success in

self-care. Use of the contract for care as a way to assure patient participation, and to induce commitment, can be seen as one way to do this.

Contracts

A contract is "an agreement between two or more parties for the doing or not doing of something specified;" it may be written and/or enforceable by law (Random House, 1966, p. 317). Since the contract is a formal process to establish agreement, its use may facilitate the improvement of patient participation in, and the modification of therapist domination of, the therapist-patient exchange. A description of the traditional therapeutic process will be presented in contractual terms, with implications for change to meet needs imposed by the increased incidence of chronic illness and decrease in general care services. Current use of the contract in education and in medicine will be mentioned, and a modification suitable to the needs herein described will be presented.

Contracts for medical care have, until recently, been informal; that is, the therapist agreed to provide therapy, and the patient agreed to pay a fee. The actual content of either was rarely specified at the outset and no formal statement of the agreement was signed. This is a form of contract which was particularly well suited to the fondly remembered and more personal doctor-patient relationship of the past, and which is now the exception in a speeded-up world. It matched quite well the sick person and the therapist roles described in the sociological literature. The implicit contract was for the therapist to legitimize the patient's temporary exemption from ordinary role

responsibilities, and to cure the patient; in return, the patient would seek help, cooperate with therapy directed by the therapist, and pay a fee (Parsons, 1964). However, with the advent of the chemotherapy revolution in the 1930's, therapists had to assign to patients the administration of large portions of the "cure," and to leave the patient in (or return the patient earlier to) the setting of ordinary role responsibilities. Recent discoveries of relationships between disease and diet or activity have further increased the complexity and degree of change required of people who must assume the modern patient role. The implicit contract, therapist-cures-patient, no longer matches the actual contract. The fulfill their part of the actual contract, patients must now, in addition to seeking a cure, administer their own therapy; this may often include changing their daily behavior. At the same time, there is less exemption from ordinary role responsibility (illness is less legitimate) and therapists do less of the cure. These changes have created a gap between implicit patient and therapist expectations of the contract for care which probably contributes to the "compliance" problems now being identified. Since therapists cannot reduce the actual contractural requirements of patients, there may be an implicit ethical requirement of therapists to help patients adjust to a new "sick role," one requiring much greater participation, and a much less autocratic or paternalistic therapist role. Szasz and Hollander (1955) outlined three models of therapist-patient relationships analogous to the following transactional prototypes: parent-infant (therapist does something to patient), parent-child (therapist tells patient what to do), and adult-adult (therapist helps patient help

himself) (p. 586). The second of these corresponds to the traditional contract referred to above. Szasz and Hollander suggest that a relationship along the adult-adult prototype may "be realistic and necessary . . . in the management of most chronic illnesses" (p. 587). Diabetes mellitus is cited as an example.

Formal contracts for medical care have been used recently. Behavioral techniques lend themselves well to the mode, and "contingency contracting," which provides for a planned reward for negotiated therapeutic behavior, has been used in the treatment of obesity (Mann, 1972). Wingerson (1977) reported Dr. Mary Ann Swain's successful three year contract program with hypertensive patients in Ann Arbor, Michigan. In Swain's study, contracts covering self-care behavior directed at relaxation and weight loss were consistently honored by patients (Wingerson, 1977.) Etzwiler's use of the learning contract to specify patient and therapist (teacher) responsibilities has enthusiastic support in the literature describing the use of contracts in schools (Smith & Riebock, 1971; Barlow, 1974). After using contracts "successfully," on a "limited basis," Etzwiler concluded that the advantages seem to be:

1. Defining responsibilities of health providers and consumers in the maintenance of health and the prevention of disease.
2. Legitimizing involvement of the patient.
3. Stimulating planned systems of education and care.
4. Fostering accountability.
5. Improving team efforts and communication.
6. Protecting against claims of "breach" of contract or malpractice (1974, p. 4).

Additionally, he referred to recent "informed consent" mandates, and pointed out that "the contract symbolizes to the patient interest and concern on the part of the health professional" (p. 3). As yet, no published data describing this project have been seen.

The use of contracts covering the home care behavior of clients with diabetes has not yet been described, but Bachscheider's (1979) analysis of the self care requirements of a diabetic therapeutic regimen gives a comprehensive overview of client behaviors which might be found in such a contract. Bachscheider sorted the diabetic patient's responsibilities into four categories: 1. Those related to the condition (as monitoring of urine tests and symptoms, adjustment of activity, hygienic practices); 2. Those related to the effects of the condition (as skin and foot care; monitoring for infections, skin leisons, and retinopathy; compensatory mechanisms); 3. Those related to therapy (as the use of glucose control agents, including injection-related practices, use of food); 4. Those related to the effects of therapy (as monitoring for high and low blood sugar, written records of medication, activity, food intake, and stress). In summary, the diabetic therapy regimen includes the monitoring and management of blood sugar control variables (food, insulin, stress and exercise) and of the longer-term effects of the disease in the cardiovascular and nervous systems. The entire regimen is carried out by the person who has the diabetes. Given this degree of responsibility, it seems rightful, as well as necessary, that the client's part in designing the regimen is acknowledged.

Selected uses of the learning contract, which has been discussed in the educational literature since the 1920's, seem particularly

pertinent to the needs of therapists and patients in chronic illness care. Although reports consistently favor use of the educational contract to define student-teacher relationships, data are not frequently seen and some pitfalls of such a formal tool have been recognized. Bockman and Bockman (1973) warn that dependence on the contract as an instrument can be dehumanizing and depersonalizing. So far, many therapeutic uses of the contract, including those cited above, reflect agreement with Stimson's (1974) "deviant patient" concept. They seem to lend themselves to the warnings of Bockman and Bockman in that they serve to strengthen the therapist's direction and the patient's obligation, without improving the patient's participation in decision-making and, it follows, without improving the patient's commitment to the contract. Implicitly, acceptance of the contract as presented by the therapist can become yet another thing the patient must do in return for the therapist's help.

If, however, use of the contractual process can, as Bockman thinks,

1. Reduce or eliminate entirely an inordinate domination of therapy by the therapist;
2. Preserve all the critical functions and the accountability of the therapist;
3. Proportion the therapeutic design to the preparation and the psycho-sociological attributes of the patient;
4. Promote excellence of achievement absolutely and in terms of individual capability (paraphrase, Bockman & Bockman, 1973);

then use of a formal agreement process to define the therapist-patient relationship seems promising and needful.

Purpose

In review of the literature describing the problems related to the therapist-patient relationship, or to the therapy itself, it can be seen that faulty communication, contributing to low patient satisfaction and low level of agreement, is the hallmark of a situation wherein patient and therapist have differing expectations. A possible causative factor is low level of patient participation in a therapist visit. The patient can leave such a visit with low motivation and insufficient preparation for self-care, resulting in "noncompliance" and disruption in treatment. One particularly hopeful approach is the formalization of the process of establishing agreement, by using a mutually negotiated contract for care.

It was the general purpose of this study to determine whether a contract for care could be successfully established between a nurse and a client, and whether using a contract could improve clients' success with self-care. Accordingly, it was hypothesized that diabetic clients who negotiated and signed a written agreement would report greater success with self care than diabetic clients who were presented with a list of written expectations, but did not negotiate a contract. Success was described in terms of the type and number of tasks which a client did or did not perform. The second purpose of this study was to inspect objective and subjective information about degree of illness for their relationship to the use of contracts.

Chapter II

Methodology

Setting

The present study was conducted in a U.S. Veterans Administration (V.A.) hospital-based outpatient endocrinology clinic. Care at the clinic is available at no charge to veterans. Currently, 18 to 28 clients visit the once-weekly, half-day sessions for initial or return visits. People who have diabetes comprise nearly half the Endocrine Clinic population, and are referred to it from the hospital's admissions department, from other clinics or from an inpatient service. Frequency of return visits ranges from weekly to biannually; usually one to four months pass between visits. Staff in the clinic includes two staff doctors, one nurse practitioner, and a fluctuating group which during this study included one research fellow and two residents. Clients are seen in the order of their arrival at the clinic and are assigned to therapists randomly. The nurse practitioner sees only diabetic clients; otherwise, the population seen and the assignment does not vary between staff members. If needed, a client may see both the nurse and a doctor. A dietitian is available in the clinic, and a podiatrist joins the staff monthly.

Subjects

The entire sample was drawn from veterans being treated for adult-onset type diabetes mellitus at the V.A. outpatient Endrocrinology Clinic. The typical subject in that population was male and a World

War II veteran aged 50 or over. Many had other major medical problems, as could be expected in a group of people who have diabetes mellitus of about ten years' duration. Subjects included in the study met the following criteria. They were:

1. English speaking;
2. Between 21 and 80 years of age;
3. Presently unknown to the investigator;
4. Adult-onset type diabetics;
5. Assigned to the investigator;
6. Visitors of the clinic at least every three months during the past one year;
7. Able to achieve a score of 8 or more on the Wechsler Memory Scale.

The study was limited to clients who had adult-onset diabetes because it is the more common of two clinically distinct groups of people who have diabetes. Clinical presentation and therapeutic approach differ between these groups, so that it was thought expedient to accept only clients who had the more common type.

The associate learning subtest from the Wechsler Memory Scale consists of ten paired easy and difficult associates, that are presented verbally in three trials (Wechsler, 1945). This widely used scale provided a way to measure memory in a rapid and simple way, and was used in this study as a rough estimate of the client's ability to carry out self-care responsibilities (see Appendix A). The associate learning scale has a possible range of scores from 0 - 21; this subsection of the Wechsler scale would represent acceptable memory for the purpose of this

study (Matarrazo, Note 1).

Design

The design of the present study was post-test only, with an experimental and a control group. Reported self care behavior of the two groups was the dependent variable. The independent variable was the style of therapist behavior. Group A was designated as the experimental group and the control group was Group B. Written instruction was given to the control group to isolate the effect of commitment to the contract from the fact that a contract is also "written instruction."

Assignment of subjects to groups was done in the following manner. At the time of assignment of the first client, if the coin came up heads, the subject was assigned to Group A; if tails, B. The second client was assigned arbitrarily to the other group. The procedure was repeated until all subjects were in a group.

In view of the method of randomization and subject mortality in the present study, pretesting would be desirable in documenting the degree of similarity of the group at the outset of the study (Campbell & Stanley, 1966). Since the testing consisted of routine questions which fit nicely into the format of a usual clinic visit, pretesting could have been done without influencing the posttest behavior of the subjects in either group. However, home care instruction given by previous care providers was not known, and there was not time for an additional visit in the present investigation.

Internal validity of the present design can be attributed to the fact that both groups were treated the same way except for the manner

of determining the plan for home care behavior. Content of the visits and time of return to the clinic were handled as usual in the setting. The care provider was new to all participants. Internal validity could have been weakened by the fact that the care provider was the same for both the experimental and control groups. This may have resulted in exposing both groups to the (pro-negotiation) attitude of the (investigator) care provider. However, only subjects in Group A were actually invited to negotiate their self care responsibilities and to sign the resulting agreement. Group B participants were "told what to do" just as if the advice had been given by other care providers in the setting.

External validity was affected by the homogenous nature of the population from which subjects were drawn, and by the fact that care was provided to all subjects by the same person. However, the internal validity considerations outweighed those of generalizability.

Since the study was a small one, mean scores of subjects in each group were used for comparison. The progress of individual clients was also described when needed to prevent the effects of averaging from obscuring the success or failure of single subjects.

Data Collection Instruments

The instruments used for recording the tasks which resulted from applying the independent variable were the contract form shown in Appendix A and a sheet of paper for written instructions which bore the title, "Instructions for Home Care."

The dependent variable, client report of success with self care, was recorded on the investigator's copy of each subject's contract or instruction form, beside the corresponding task originally recorded

on the form.

Scoring of success with self-care behavior was an "either-or" process, involving a determination of whether the contract or assignment was done or not done, by item. This judgment was based on completion of tasks fulfilling the intent of the assignment, rather than a literal percentage of the behavior expected. Thus, a subject might not have completed a task exactly as written by the investigator, and yet still could have been considered successful. This precaution was necessary because, while the contracts represented the agreement of two parties, the written form was always the nurse's interpretation of that agreement. Judgments were based on the following criteria:

1. Did the client accomplish the goal intended to be achieved by the written statement?
2. If a record was required, was some form of a record produced?
3. Was there agreement between therapist and client as to success of performance? If there was not, benefit of the doubt was to be given the client.

Judgments of performance compared to written instructions were made in the same way as for performance compared to contracts.

The contract form (see Appendix A) is a simple agreement form with space for commitments, the dates of writing and of completion of the contract, and signatures of both parties. Two copies were made; the therapist's copy bore the subject's number rather than a signature. The form for written instruction was a titled but otherwise blank sheet; the therapist's copy bore the number identifying the subject.

Instruments used to obtain data for secondary measures included an

interview form; clinic records of weight and plasma glucose, as routinely recorded in each client's chart; and the control standard self-anchoring scale.

The form for collecting background client information was designed by the investigator and included the client's age, marital status, height and weight, school experience, duration and treatment of diabetes, other medical treatments, and physical and social ability (see Appendix A).

The objective data relating to diabetes control were those routinely collected from each client who attended the clinic. This included fasting or post-prandial plasma glucose and weight on the clinic scales in indoor clothing, including shoes.

Plasma glucose is recorded in milligrams of glucose detected by an enzyme (glucose oxidase) analyzer, which would be found in one deciliter (100 milliliters) of plasma (ie: mg./dl.). This value was calculated by examining a much smaller amount of plasma from the subject's venous blood. The samples were drawn in the clinic laboratory on the morning of the client's visit, and were available in the clinic during the afternoon session. The normal range for this value varies with the time the sample is drawn in relation to the subject's last meal, since there may be more glucose in blood after a meal than when a subject is fasting. Samples reported herein included both fasting and post prandial blood. Fasting refers to a client in a non-fed (for 12 hours) state; the V.A. normal range was 90-130 mg./dl. and post prandial refers to the value checked at variable intervals after eating a meal. The normal range for this value has not been established in a population

similar to the one under study, but values for plasma glucose less than 180 mg./dl. were accepted as normal in clients attending this clinic (Kendall, Note 2).

Body weight was recorded in pounds and was measured on the same balance scale for all subjects. The scale was also the same between visits, and it was checked prior to each use to assure that the starting point was zero pounds. The number of pounds overweight was determined by comparing the subject's weight with the value at the top of the range of desirable weights for men of medium frame as shown in the Metropolitan Life Insurance Company Table of Desirable Weights (Metropolitan Life Insurance Company, 1959).

Subjective evaluation of satisfaction with the state of diabetes was estimated by means of Cantril's standard self-anchoring scale (Cantril, 1969), which consists of a ladder with ten rungs. The subject was shown the ladder and is told that the top rung indicated an estimate of the state of his diabetes at its best, and the bottom rung, its worst. Each rung of the ladder was assigned a number between one and ten, in ascending order, so that the "best" score had a value of ten. For a full description of the technique and reports of research using the self-anchoring scale, see Robinson and Shaver (1973). A copy of the scale is included in Appendix A.

Data Collection Procedure

Each clinic day, all clients who were assigned to the researcher and met the criteria for inclusion in the study were asked to volunteer. Those who volunteered were asked to review and sign the consent form (Appendix B). Clients who signed the consent form then responded to the

memory test. Those whose score was above eight were asked for background information. They were then asked to give an estimate of the state of their diabetes on the Cantril scale. Since the reading level of this group was not known and members of this population may be subject to vision changes, all explanations were verbal and all data collecting instruments were read verbatim by the investigator.

A coin toss then determined whether eligible clients would be assigned to Group A or Group B, as previously described. The clinic visit then proceeded as related below for each group. During succeeding clinic sessions, this process was repeated until seven subjects were in each of the two groups.

Group A clients then entered into a contract with the investigator. Following the initial history-taking and physical examination portion of the visit, the idea of negotiating self care tasks was introduced, using a paraphrase of a prepared script. The nurse acknowledged that the client was expected to assume much responsibility for self-care, and indicated the benefits to be had in establishing agreement concerning which responsibilities might be most pertinent in the client's case. The nurse then invited the client to negotiate an agreement covering specific commitments the client could make, to treat his diabetes. Content of the contract depended entirely upon client needs, as identified earlier in the visit and as became evident during the negotiation process. When different needs surfaced, a compromise was sought which the client was able to say he would accomplish. A copy of the content of both the contracts and the written instructions is in Appendix C. When the agreement had been reached and recorded on the prepared form,

nurse and client signed the contract. The client retained the original and the nurse, an unsigned (number-coded) carbon copy.

Group B clients continued in a relationship which differed in style from the nurse's usual behavior in that the nurse specifically acknowledged the magnitude of responsibility for self-care usually expected of people who have diabetes, and asked the client about his expectations and understanding of the self-treatment which was expected by the nurse. Specific written instruction was then given to the client; a number-coded carbon copy was kept by the nurse. The time of return appointment for all clients was established in the usual way (assignment by the nurse).

At the time of the next visit, all clients were asked to complete a second Cantril scale estimate of their diabetes status. Open-ended questions referring directly to the commitments made by Group A clients, and to those assigned to Group B clients were included in the usual history-taking portion of the visit, and responses to these questions were recorded on the nurse's copy of the contract of instruction form. Laboratory values were retrieved from the charts later. Clients were thanked for their contributions to the study and were given an opportunity to indicate their preference for or against continuing in a relationship (with the staff nurse practitioner) which would be similar in style to that experienced in the study. The staff nurse practitioner is knowledgable in the use of contracts and written instruction and agreed to follow the clients who expressed an interest in continuing with her.

Chapter III

Results and Discussion

This study compared success with self-care reported by two groups of adult-onset diabetic veteran outpatients. One group entered into a contract with the nurse investigator and the other group was given written instruction.

Results of the study were considered in light of the kind and number of tasks assigned or agreed upon. Differences between groups were evaluated by describing their effects upon performance.

Sample Deterioration

Four subjects were lost from the original 14 participants. Two were dropouts from Group B and the other two subjects were excluded from Group A. Of the two who dropped out, one did not return because he was hospitalized for treatment of bronchitis. It is not known why the second person did not return. Characteristics of the subjects who did not complete the study are shown in Appendix D.

The loss of these four subjects had effects in two areas. First, the resulting assignment of participants to groups was uneven, so that more members of Group A were selected by chance and more members of Group B, by default. (Refer to the explanation of assignment of groups.) This affected internal validity as discussed earlier. Secondly, the age difference between groups increased. Conclusions regarding the age difference are reported later in the report.

Description of the Sample

The final number of subjects in each group was five. Characteristics of the ten subjects in the final sample are shown in Table I. The typical subject was a married male veteran who had had diabetes for nine years. Mean years of education was 11 years. Most subjects were taking insulin as well as medication for other conditions. All were able to take care of themselves. There was a difference in age between groups, with participants in Group A having a mean age of 60 and those in Group B, a mean age of 50.

Table I

Characteristics of Participants

	Group A (Experimental)	Group B (Control)
Marital status		
married	4	3
separated	1	0
divorced	0	2
Mean age	60	50
Mean years education	11.7	11
Mean years known diabetes	9.2	8
Diabetes treatment		
insulin	2	3
oral hypoglycemic	1	1
diet only	2	1
Other medications	5	3

Time Between Visits

Times of returning to the clinic depended not just upon the content of the written instruction or contract, but also upon the stability of a client's condition, the client's preference as to return time, and the caseload of the clinic. Since increasing the time between visits would increase the number of behaviors implied by the instruction or commitment, the success of the clients was examined in terms of the time which passed between visits. This relationship is discussed later. All clients had entered the study within six months, and had returned to the clinic within nine months of the beginning of the study. The range of time intervals between initial visit and return to the clinic was two weeks to three months. The average length of time between visits was 1½ months in Group A and 2 months in Group B.

Task Assignment or Negotiation

In keeping with the design of the study, Group A clients negotiated tasks they would complete, and Group B clients were assigned tasks. The nature of tasks agreed upon or assigned was individualized to client need and was not predetermined by any study-related criteria. Tasks were therefore different in kind and number between participants. For example, Subject #16 was overweight and was not taking insulin, so his instruction was to stop his bedtime snack. Subject #23, however, needed a bedtime snack and was asked to include one daily. Negotiation probably resulted in some expectations that would never have been assigned. Subject #13 was very obese and was snacking on a large number of high calorie foods. Outcome of the negotiation was that he would use his favorite snack, donuts, as a reward for not snacking

in the time between visits. (See Appendix C.) Success by kind of task is described on page 31.

Number of Tasks

The number of tasks per participant varied between one task and five tasks. The average number of tasks per client was similar between groups, but the only occurrence of both extremes (one task, five tasks) were both in Group A. The remaining members of Group A negotiated two or three tasks; four out of five Group B subjects were assigned three or four tasks. The effect on success of the number of tasks per subject is described elsewhere.

Type of Tasks

The type of tasks is summarized in Table II. Most often, the type of tasks was related directly to a diabetes control variable: food, exercise, insulin; or to the monitoring of that control: urine testing and record keeping.

Table II

Distribution of Task Type by Groups

Task Type	Group A	Group B
Food	5	4
Exercise	0	2
Urine Test	5	2
Insulin	2	3
Weight	1	0
Other	0	4

"Other" tasks were less directly related to diabetes control, but were felt to affect the diabetic condition by influencing a diabetes control variable. Examples of "other" tasks include recording a face representing mood for a person who could not understand why he was tempted by food some days more than others, and visiting with a spouse about aspects of diabetes control which affect the entire family (i.e.: food, preparing to do diabetes care in case of disability of the client). Success with "other" tasks would be considered encouraging, since it is recognized that diabetes control is affected by the entire life pattern of an individual. The fact that none of the Group A subjects negotiated this sort of task may mean that they were unaware of the influence of these seemingly unrelated factors of their diabetes. The difference between groups in distribution of "other" tasks does indicate that there was less clinician influence (and more client input) in the group which negotiated tasks than in Group B. Since the investigator acknowledges the need for considering the client's whole life pattern in attempting to control diabetes, it also reveals a need for client education in this area.

The Dependent Variable

As the scoring of success with self-care was done, the complexity of behavior and the extent of commitment required of participants was revealed, and commanded the respect of the investigator. Two examples will be given to illustrate the scoring process. Subject #10 signed an agreement which committed him to make a chart for urine test results and test his urine two hours after breakfast daily, and make a list of things he ate that were not on his diet. The date of his return to the clinic was two months later, so this contract committed him to 60 urine tests

done and recorded, and to 60 days of noticing whether his food intake matched his prescribed diet. He returned to the clinic with four sheets of grease-stained writing paper, two months of dates down the left side and notes on his food intake beside the dates. The notes included the words "reg. diet" and a urine test result for most days. On other days, there was a list of foods, including some not on his diet, and on two days there was a note "no test." This record had been kept on his kitchen table for two months. Technical interpretation of these data would have to include the facts that the record was not in chart form, that two urine tests were omitted and that the foods listed were not limited to those not on his diet. However, the investigator realized that the person keeping the record had no use for a technical interpretation of the word "chart" (written by the nurse) and so chose to accept the record as a chart. Likewise, the requirement for daily urine testing was considered done because it was done for most, even though not all days, and the record of food intake was accepted because it contained (even though it was not limited to) what was agreed upon. To have scored this person's performance as unsuccessful would have been unjust and detrimental to the client-provider interaction, but it does illustrate the complexities encountered in the scoring process.

In contrast, Subject #12 signed a contract which included a commitment to test and record his urine before lunch or at bedtime every day. On his return to the clinic, he reported losing the record of his urine tests, and testing his urine every two or three days, or when he overate. This commitment was scored "not done." Thus, there was no attempt to quantitate a portion of a commitment or assigned item.

It was scored either "done" or "not done," but the "done" score may represent imperfections that did not contradict the intent of the plan. Scoring was done during the visit with the client, so that any areas of disagreement could come to light. None were detected. Interpretations of the data, item by item, are included in Appendix C.

Success with Self-Care

As can be seen in Table III, success in accomplishing self-care tasks was 60 percent for subjects in Group A and 60 percent for subjects in Group B.

Table III

Percent Success with Self Care by Groups

Subject	% Success
Group A (experimental)	
10	100
12	0
17	100
21	100
22	0
	mean 60%
Group B (control)	
11	25
13	100
15	100
16	33
23	33
	mean 60%

Thus, the hypothesis that clients who negotiated a formal therapy agreement would report more success than clients who received written instruction was not supported by the average scores.

In considering the success data, it should be kept in mind that the investigator's behavior was similar between groups (in that the approach with all clients was individualized and personalized) so that the only difference was the investigator's invitation and insistence on active participation in the negotiation process with the subjects in Group A. It is also true that negotiation with a care provider is a concept which would be new to clients in the population under study. It is likely that it would take a longer time to establish the "mutual participation" milieu (Szasz & Hollander, 1955) which permits true negotiation. These factors would tend to decrease the initial impact of a contract for care. It is likely that the positive aspects of the nurse-client exchange in which all clients participated (the nurse consistently acknowledged the client's responsibilities for self care, inquired about the client's opinion and ability to do self care, and provided written instruction for all clients) probably improved the success of subjects in both groups. However, this cannot be known because pretesting was not done.

Degree of Success Within Groups

All participants in Group A achieved 100 percent success when they succeeded at all; more participants in Group B had partial success. This may mean that when the agreement process was successful, participants were wholly committed to complete their tasks. It may also reflect better tailoring of the regime to the clients in Group A (Sackett &

Haynes, 1976). Group B success, on the other hand, may have depended more on external variables which were not identified in the assignment process, and less on the therapist's assignment. Group B subjects were more likely to do only part of what was assigned. This implied difference in commitment may also suggest a reason for zero percent success in two Group A participants. Some flaw in the agreement process (such as the aforementioned failure to establish a milieu of "mutual participation") may have left these subjects with no feeling of commitment at all. Or, if Group A participants viewed themselves as being a party to a contract and for some reason broke part of it, commitment to the remaining tasks might have been seen as pointless or unnecessary.

Effect of Content of Tasks on Success

Viewing success in light of the kinds of tasks (see Table IV), it is immediately noticible that food and exercise-related tasks fared poorly. Tasks related to taking insulin, urine testing, or "other" matters were more often completed successfully.

Table IV

Percent Success by Kind of Task

	Group A		Group B	
Task Content	% Success	# Tasks	% Success	# Tasks
Food	40	2 of 5	50	2 of 4
Exercise		0	0	2
Urine Test	60	3 of 5	100	2
Insulin	100	2	0	3
Weight	0	1		0
Other		0	100	4

These data reflect acknowledged change theory. That is, it is harder to change longstanding habit, and easier to add new behavior. The distribution of hard-to-change tasks (food, exercise) is even between groups. The data reveal a need to educate clients and care-providers with respect to avoiding tasks which attempt to change long-standing habit. It is easier to attempt to learn new behavior that, if acquired successfully, would tend to be prepotent over the undesirable old behavior, than to try to stop the old behavior. There is a reason for behavior; trying to stop doing something without responding to the need for that behavior some other way would require more "will power" than most people have (Stuart & Davis, 1972). Behaviorists have been using this technique for years, but when it comes to giving advice to people who have diabetes, food-related behavior is often viewed purely as a control variable and its important part in the client's daily life may be overlooked.

The lack of success with insulin-related behavior in Group B is initially surprising, since insulin-giving behavior would be fairly recently acquired. In both Group B subjects who failed to succeed with insulin-related behavior, however, the instruction was an attempt to stop or change long-standing habit. For example, Subject #23 was not using abdominal injection sites because of an aversion to injecting himself there (which he shares with many people). The investigator's assumption that he could simply commence using those sites turned out to be erroneous. The same person tried storing his insulin at room temperature as instructed, but stopped after one week because "I can't control my diabetes that way." Apparently (because of evidence such as

positive urine tests that revealed high blood sugar which was due to some other factor) he felt that cold insulin was more effective for him. Changing that behavior was against his better judgment.

It seems likely then, that careful attention to the kind of behavior change which contributes to successful change might contribute to client success with self-management of chronic illness.

Effect of Number of Tasks on Success

The success of participants in relation to the number of tasks assigned or agreed to is shown in Table V. It is noticeable that when only one task, or when five tasks were agreed to there was no success. Indeed, five of the seven participants who were assigned or agreed to two or three tasks had 100 percent success; participants who were assigned other numbers of tasks did not achieve 100 percent success.

Table V

Percent Success by Number of Tasks

Number of Tasks	Number of Subjects	Percent Success
1	1	0
2	3	100
3	2	33
	and 2	100
4	1	25
5	1	0

It should be noted, however, that Subject #12, who agreed to five tasks, ended up with a commitment to record three separate variables, and with two commitments to change (rather than replace) eating behavior. Thus it could be argued that his lack of success was attributable to the

content, rather than the number, of tasks. While compliance has been noted to decline with increasing numbers of self-care behaviors, five tasks is not an unusual assignment for an outpatient who has a chronic illness (Sacket & Haynes, 1976).

In reviewing the data revealing number of tasks, it becomes apparent that all of the urine testing tasks actually represent two separate behaviors: testing the urine, and keeping the record. The purpose of urine testing in diabetes care is to obtain data about the urine sugar (and by inference, the blood sugar) so that the effects of blood sugar control variables (food, stress, insulin, exercise) can be checked. Thus the goal of urine testing is to obtain useable data. Since most people have trouble recalling their urine test results (which have little effect on other aspects of their lives, and which are not felt, i.e.: usually there are no symptoms of high blood sugar), a written record is usually mandatory. For that reason, clients are taught to identify keeping the record as part of the testing procedure. In this study, in all cases except that of Subject #22, when the urine tests were done the record was kept. In scoring the behavior of Subject #22, the client reported doing the urine test, but found it inconvenient to record the result. Had he been able to report the data verbally, it would have been appropriate to consider the testing and recording behaviors separately in his case (giving him 50 percent success rather than zero percent). Since he could not, the scoring pattern already established was maintained.

In summary, in spite of the suggestion in these data that the number of different tasks might have affected client success, it does

not seem likely that the small numbers of tasks per subject in this study had any significant effect on success with self-care.

Effect of Time Between Visits on Success

As was pointed out previously, increasing the length of time between visits would increase the number of times a client would be expected to carry out a task. Theoretically, increasing the total number of tasks might decrease success. To some extent, this factor was considered in the scoring process but it will be examined separately here.

The total number of tasks expected of a client was found by multiplying the number of tasks negotiated or assigned by the number of times the tasks should be done by the time of return to the clinic. Detail of this process is shown in Appendix C, and the data are summarized in Table VI. It should be noted that in some cases, increasing the time between visits did not affect the number of times a task should be done. The average number of tasks for Group B clients is nearly double that for Group A clients, but a scatterplot of these data (see Figure I) reveals no correlation between the number of tasks and percent success.

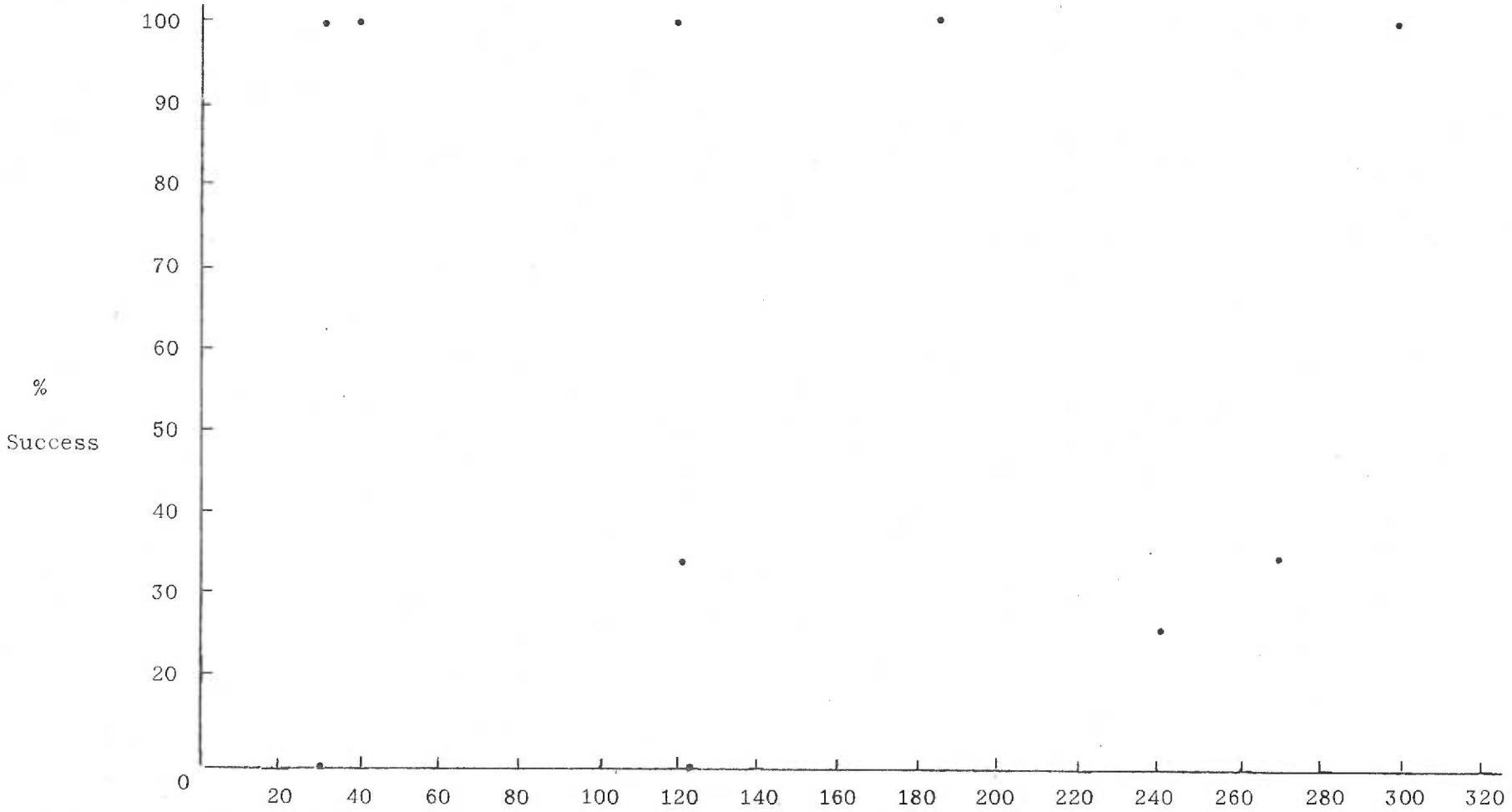
Table VI

Effect of Time Between Visits on
Total Number of Tasks

Subject	Return Time (months)	TASKS	
		Number of Types	Total Number of Tasks
Group A (experimental)			
10	2	2	120
12	1	5	122
17	3	3	187
21	0.5	2	40
22	1	1	30
		Total	499
		Mean	99.8
Group B (control)			
11	2	4	240
13	1	3	31
15	2	2	300
16	2	3	121
23	3	3	270
		Total	962
		Mean	192.4

Figure 1

Percent Success by Total Number of Tasks



The possibility that waiting a long time between visits, in and of itself, might decrease success would be plausible if client success was related to a reward obtainable on returning to the clinic. It can be argued that rewards given by therapists for client behavior change is likely to cause (unwanted) client dependence on the therapist, so that it was hoped that the time intervals would not affect success of clients in this study. A comparison of the record of time of return visits (shown in Table VI) with success scores reveals no connection between return time and success.

Effect of Age on Success

When the age of each participant (Appendix E) was examined in light of success, it was found that all participants who attained 100 percent success were over 55 years of age. Mean success for participants under 55 years amounted to only 18 percent. Since there were more older participants in Group A, this factor may have been in part responsible for the success in that group. No reference to age which supports this finding was discovered in the compliance literature. In fact, when age was isolated, it was never found to be significant (Marston, 1970). It would be interesting to know how successful these people were in other matters, by age. If many people who use the V.A. services do so when they cannot afford to pay for private services, then perhaps these data illustrate a difference by age, in success at providing income. Clients in the older age group (World War II veterans) would be approaching, or have passed, their maximum earning years and may have retired, so that their incomes are more likely to be fixed. They may not have foreseen the need for health insurance, and could now, due to age and

risk factors, have trouble getting insurance. Thus it is easy to understand that an older person who had experienced success might find himself using the V.A. services, even if he preferred private health care services.

Men in the younger age group (Korean War veterans) would be more likely, if successful in their work, to have expandable incomes and access to health insurance. If the younger group of V.A. clients can be described as less successful in their work than the older group, perhaps they identify themselves as unable to succeed in other matters (such as self care). This would tend to decrease their actual success. If success is more predictable for the older veteran than for his younger counterpart, then the existence of more older subjects in Group A would decrease the effect of the independent variable in that group.

Objective Data

The objective data included weight and plasma glucose.

Weight

Weights of participants before and after the study, with percent overweight, are shown in Table VII.

Table VII

Weight of Participants and Percent Overweight

	Weight (Pounds)	Percent Overweight	
Subject	Before	Before	After
Group A			
10	213	37	34
12	221	30	29
17	225	53	57
21	242	47	44
22	231	28	31
Mean	226	39	39
Group B			
11	215	30	35
13	255	42	42
15	184	38	38
16	230	44	46
23	165	29	18
Mean	210	36	36

The mean number of pounds overweight was similar for subjects between groups and did not change during the study. One overweight person in each group lost weight; mean percent overweight stayed the same in both groups.

Plasma Glucose

As can be seen in Table VIII, average plasma glucose levels for participants in both groups were abnormally high.

Table VIII

Mean Plasma Glucose* (mg./dl.)

	Before	After
Group A	241	260
Group B	285	256

*normal 80-130 mg./dl.

The raw data in Appendix E show that all individual plasma glucose levels were elevated. The fact that the averages represented blood tests collected at variable times of day means that the significance of the apparent differences in individual "before" and "after" values cannot be determined. Taken case by case, the data were more useful, but in no case did the plasma glucose levels indicate improvement in control of diabetes.

Objective Measures and Success with Self Care

None of the objective data indicate that any of the subjects had improvement in their diabetes control during their participation in the study. The lack of change in objective data held true even when clients succeeded in accomplishing the tasks designed to change objective measures. This means that the plans for self care need to be redesigned. That is, the client will have to do more, or other, tasks if his diabetes is to be controlled. Thus, adjustment of the assignment of agreement is indicated. An appropriate change (one that takes all known diabetes control factors into account) is more likely in a situation wherein all such data may be brought out and discussed. Since nearly all the data

required is derived from the client's home setting, this sort of planning should be easier if mutual participation between client and care provider is established--as it was, or would soon be, in the contract group. Changes in the plan may be disconcerting in the assignment group, wherein the client expects to be told what to do, and should be able to depend on the therapist to decide and to be right.

Subjective Data

Cantril Scale

Satisfaction with the state of diabetes, as shown by the Cantril scores, is entered in Appendix F. The mean score was higher in Group A both before and after clients' participation in the study. While Group A participants felt more positively about the state of their diabetes after the study than Group B participants, Group B as a whole changed more in a positive direction. Since diabetes is a disease in which there are few symptoms which are identifiable and troublesome, a high level of satisfaction should be expected. Any change may as well be due to other factors as to the state of diabetes in itself.

Two of the participants said they wanted to continue to negotiate contracts with a therapist and were referred to the cooperating V.A. nurse practitioner. None of the Group B participants stated a desire to continue to receive written instruction. In retrospect, this may be a good indication of satisfaction with care. If so, successful renegotiation of therapy contracts could be expected for those who chose to continue in the mode.

Chapter IV

Summary, Conclusions and Recommendations

Summary

Successful management of chronic illness seems to imply the need for greater client participation in decision making in therapy planning, which would be associated with greater commitment to carrying out that plan. The purpose of this study was to test the following hypothesis concerning a method for assuring greater client participation and commitment; that diabetic clients who negotiated and signed a written agreement would report more success with self care than diabetic clients who were given a list of written expectations.

The method of investigation was experimental. Subjects in Group A entered into a written agreement to do self-care tasks. Their reports of performance were compared to the reports of Group B clients, who received written instruction but did not negotiate the plan.

The subjects were middle-aged veterans who sought care at a Veterans Hospital outpatient clinic for their adult-onset diabetes mellitus.

The results indicated that there was no difference in reported success between groups. Success may have been affected by the following variables:

1. Age. Older clients (more than 55 years of age) were more successful with self care than younger clients.
2. The assignment of tasks involving hard-to-change behavior (as, long-standing habit) was associated with failure, which was more often seen in Group B.

3. The assignment of "other" tasks (not directly related to a diabetes control variable) was associated with success, which was seen only in Group B.

Success with self care was probably not affected by:

1. The number of tasks. While there were differences between groups in the number and kinds of tasks as well as the number of actual tasks expected, no correlation between these data and success with self care was discovered.
2. The time interval between visits did not appear to affect success with self care.

There was 60 percent success in completing tasks reported by both groups. The design did not permit a comparison with previous self-care behavior, nor to behavior in response to verbal instruction or agreement. There was no change in the objective data reflecting diabetes control.

Conclusions

On the basis of this study, the following conclusions pertain (only) to the subjects in the study:

1. The short term use of a written contract does not contribute to better success in self-care behavior than the use of written instruction which is not negotiated.
2. Direct attempts to change long-standing habits are unlikely to be successful.
3. "Other" tasks (involving changes in daily activities which affect a diabetes control variable indirectly) are promising in promoting successful self-management of diabetes mellitus.
4. One visit may not be enough time to establish the "mutual participation" milieu which is essential to successful negotiation

of an agreement.

5. The agreement style of client-therapist interaction lends itself well to making the changes in plans for care which are likely to be needed in diabetes care planning.

Recommendations for Further Investigation

Based on the findings of this study, the following recommendations for further investigation are made:

1. Repeat the study using a larger, randomized sample of subjects whose previous performance with (traditionally assigned) self care is known.
2. Extend a similar study to include at least three return visits for renegotiation of a contract or adjustment of an assignment.
3. Repeat the study using a more traditional authoritative approach with Group B.
4. Repeat the study using a control group not exposed to written instruction.
5. Investigate the effect of age and employment on success among veteran outpatients.
6. Further clarification of exact outcomes would be useful for scoring purposes in a future investigation, but the effect of that clarification on the client-therapist milieu should also be studied. Any tendency to formalize the process may be unproductive.

Recommendations for the Use of Therapy Agreements

Based on the investigator's experience during and since this study, it is recommended that the agreement mode be used in any situation in-

volving the required participation of the client in his/her own care. Since this style of practice is unusual, explanation of its purpose and of the process will be necessary, and may need to be repeated as the client becomes more accustomed to participating in negotiation. A client's active participation may be evidenced by his/her:

1. Volunteering a new idea for care based on therapist input;
2. Countering a therapist suggestion with an applicable suggestion or a statement of inability to carry out the care as proposed by the therapist;
3. Asking for reinterpretation of the meaning of a proposed therapy plan in light of the situation in which the plan will be carried out.

In the negotiation process, the therapist should encourage:

1. The addition of a few new tasks which tend to crowd out, rather than change directly, old established habits which are counter-productive;
2. Recognition of "other" tasks which are not directly related to care but which may have an indirect effect;
3. Suggestions from the client, or opinion from the client as to which therapist recommendation would be more likely to be helpful to the client;
4. Substantive input from the client which would reveal understanding of the therapist's point of view, and information from the client revealing his/her opinion of the therapist's understanding of the client's point of view.

In negotiation, the therapist should discourage:

1. Identification of any objective measure of diabetes control as evidence of completion of a self-care task. In a weight loss project, pounds lost should not be the required evidence of success with self-care tasks. Instead, direct evidence of completing the task should be used;
2. Formalization of the agreement process any more than is mutually desired. Real commitments arise from understanding between people; any written evidence should represent, rather than attempt to define, that understanding.

Reference Notes

1. Matarrazo, D. Personal communication, December 14, 1974.

2. Kendall, John. Personal communication, April 24, 1979.

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Appendix A

Instruments:

Contract Form

Wechsler Scale

Cantril Scale

Client Information Form

Study #_____

Agreement: Self-Management of Diabetes Mellitus

During the period of time beginning_____ _____ and ending

_____, I will:

Signed:_____

Date_____

Time_____

Instruction, Wechsler Memory Scale: Associate Learning

Say, "I am going to read to you a list of words, two at a time. Listen carefully because after I am through, I shall expect you to remember the words that go together. For example, if the words were EAST-WEST; GOLD-SILVER; then when I say the word EAST, I would expect you to answer (pause) WEST. And when I say the word GOLD, you would, of course, answer (pause) SILVER. Do you understand?"

When the patient is clear, as to directions, continue as follows: "Now listen carefully to the list as I read it." Read first presentation--METAL-IRON, BABY-CRIES, etc., at the rate of 1 pair every two seconds.

After reading the first presentation, allow 5 seconds and test by presenting first recall list. Give first word of a pair and allow a maximum of five seconds for response. If the patient gives correct reply, say, "That's right," and proceed with the next pair. If patient gives incorrect reply, say, "No," supply the correct association, and proceed with the following words.

After the first recall has been completed, allow a 10-second interval and give second presentation list proceeding as before. Repeat a second time, making three presentations and recall tests in all.

Scoring--one credit for correct response if given within five seconds. Get final score as follows: Add all credits obtained on easy associations in left hand column and divide score by two. Add credits on hard associations in right hand column. Total score is sum of easy and hard association scores. Example: Sum of subject's credits on easy association 14. Dividing by two, the score on easy association is 7. Sum of credits on hard associations 6. Adding the scores, the total score is 13.

The lists of words are:

First presentation	Second presentation	Third presentation
metal-iron	rose-flower	baby-cries
baby-cries	obey-inch	obey-inch
crush-dark	north-south	north-south
north-south	cabbage-pen	school-grocery
school-grocery	up-down	rose-flower
rose-flower	fruit-apple	cabbage-pen
up-down	school-grocery	up-down
obey-inch	metal-iron	fruit-apple
fruit-apple	crush-dark	crush-dark
cabbage-pen	baby-cries	metal-iron

Wechsler, continued:

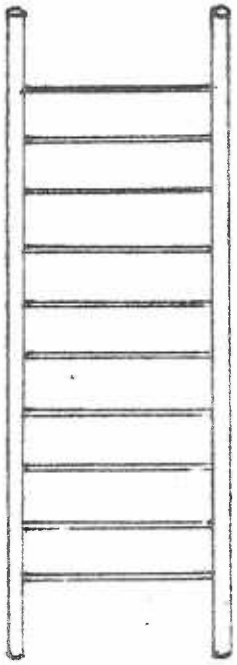
First recall	Second recall	Third recall
north	cabbage	obey
fruit	baby	fruit
obey	metal	baby
rose	school	metal
baby	up	crush
up	rose	school
cabbage	obey	rose
metal	fruit	north
school	crush	cabbage
crush	north	up

The hard associations are: obey, cabbage, school, crush.

Study #_____

Cantril Scale

Here is a picture of a ladder. Suppose we say that at the top of the ladder represents the best possible state of diabetes for you and the bottom represents the worst possible state of diabetes for you. Just point to the place on the ladder you think is appropriate for you now. Don't be hesitant or embarrassed in putting yourself near the top or near the bottom of the ladder if that is the way you happen to feel. Just give your first reaction without thinking too much about it.



Study #_____

Client Information

1. What is the date of your birth?
2. How tall are you?
3. Weight (chart):
4. Are you: married
   single
   separated
   divorced
   widowed
5. Do you live alone now? Yes No
6. If yo, what are the ages of the others, and who are they?
7. How many years of school did you attend?
8. How long have you had diabetes?
9. What is the treatment of your diabetes now? Insulin? dose?
   Pills? dose?
   Diet? How many calories?
10. Who else knows how to take care of your diabetes?
11. What treatment for other diseases or disabilities are you expected to manage at home?
12. Can you: See to read newsprint? For example, (show newsprint).
    Yes No
    Hear knocking on your door? Yes No Telephone? Yes No
    Go out to visit friends or attend to business? Yes No

Appendix B

Consent Form

Study #_____

CONSENT TO PARTICIPATE IN RESEARCH

I, _____, agree to serve as subject in the investigation named "Effect of a Formal Therapy Agreement on Client Self-Management of Diabetes Mellitus," conducted by Laura Baldwin, under the supervision of Marie Berger, Associate Professor of Nursing. The investigation aims at discovering whether increasing client participation in, and commitment to, the therapy plans, will affect the visitor's success in self-management of diabetes at home.

During the next two clinic visits, Laura Baldwin, R.N., will be the person I will see to discuss my diabetes. I will be asked to respond to a short test of my memory. The next time I return to the clinic, I will be asked to answer questions about my home management of my diabetes. The total time required of me will be about one hour.

While I may not benefit directly from my part in the study, I understand that I may contribute to improving clinic care in the future, for myself and others who have diabetes mellitus. There is no risk to me in participating.

All information that I give will be handled confidentially. My name will not appear on the records and anonymity will be insured by use of code numbers to identify all documents. Laura Baldwin has offered to answer any questions I may have about the tasks expected of me in the study.

I understand that I am free to refuse to participate or to withdraw at any time without effect on my relationship with or treatment at the Veterans Administration Endocrinology Clinic.

I have read the foregoing.

Date_____ Signed_____

Time_____

Witnessed_____

Appendix C

Content of Instructions and Contracts

with Number of Tasks

and Scoring Detail

Group A

Agreements

Subject #	Task	Time of Return	Total Number of Tasks	Scoring
10	Make a chart for urine test results and test urine two hours after breakfast daily.	2 months	60 tests recorded	Done except for two days.
	Make a list of things eaten that are not on diet.		60 days of food intake noted	Done.
12	Test urine before lunch or at bedtime daily and record.	1 month	30 tests recorded	Not done. Lost records; testing every two to three days or when he overeats.
	Eat three meals and one bedtime snack (only) daily.		30 days of checking food intake	Not done. Not eating regularly, more snacks.
	May have two donuts per month, if tempted.		28 days of going without donut	Not done. Has six donuts, cake, custard.
	Include weekly weights on records.		4 weights recorded	Not done. Can't recall weights, lost record.
	Record extra foods eaten.		30 days of food intake noted	Not done. Lost record.
17	Test urine in the morning when I have a cold, and for one week before return to clinic.	3 months	7 days of tests and an unknown number of tests during colds	Done. No colds.
	Take current vial of insulin out of refrigerator.		90 days of storing insulin on shelf	Done.
	Rotate injection sites on a six week schedule.		90 injections planned	Done.

Agreements (continued)

Subject #	Task	Time of Return	Total Number of Tasks	Scoring
21	Test urine twice a day, two hours after meals; test a second time if the first test is positive.	2 weeks	28 tests recorded and an unknown number of second tests	Done. 26 tests, all negative.
	List all food for four days between now and return to clinic.		3 lists per day for four days, or 12 lists	Done.
22	Test urine at bedtime every day and record the results for two weeks before return to the clinic.	1 month	30 tests (14 recorded)	Not done. Did tests, but no record and can't remember results.

Group B

Instructions

Subject #	Task	Time of Return	Total Number of Tasks	Scoring
11	Eat only three meals and one bedtime snack.	2 months	60 days of checking food intake	Not done. Eats only three meals, but snacks "continuously."
	Ride exercise bike three miles each morning.		60 times	Not done. Stopeed when fishing season opened.
	Rotate injection sites by using consecutive sites 1½ inches apart and avoid returning to the same site for two months.		60 injections planned	Not done. Uses consecutive areas of body, loses track after four days.
	Bring record of daily urine tests on return to clinic.		60 tests recorded	Done.
13	Use measuring spoons.	1 month	Number not specified Goal: Control amount of food per serving	Done. Used spoons for one week, now aware of amounts.
	Keep appointment with employment agency.		1 visit to agency	Done, but didn't get a job. Discouraged.
	Use Eucerin cream after hands or feet are in water.		1 time each day for 30 days, or 30 times	Done. Nearly always remembers hands.
15	Test urine four times a day and record.	2 months	240 tests recorded	Done (with few omissions).
	Record a face representing mood every day.		60 moods recorded	Done.

Instructions (continued)

Subject #	Task	Time of Return	Total Number of Tasks	Scoring
16	Walk 15 blocks per day.	2 months	60 walks	Not done. Eight blocks today, many days none. (No change.)
	Delete nighttime snack.		60 days of going without snacks	Not done. Ate at bedtime three or four times this week.
	Visit with wife about resuming diet.		1 visit	Done, but "I told her she had to learn to cook and to cook less food each meal."
23	Rotate injection sites so that abdomen is used, and at least ten injections are given in each leg.	3 months	90 injections planned	Not done. Not using abdomen, using consecutive areas, loses track after four days.
	Resume bedtime snack.		90 snacks	Done.
	Store currently used vial of insulin outside of refrigerator.		90 days of putting insulin on shelf	Not done. Tried, but "couldn't control my diabetes that way."

Appendix D

Characteristics of

Non-Completing Participants

Characteristics of Non-completing Participants

	Group A		Group B	
Subject	14	19	18	20
Marital status	M	M	M	S
Age	67	57	62	61
Education (years)	12	13	9	14
Years of diabetes	12	17	7	1
Diabetes treatment	I	I	I	D
Other medications	Yes	Yes	Yes	No
Self care: able	Yes	Yes	Yes	Yes
Reason for not completing	Excluded	Excluded	Hospitalized	Unknown

Marital status: M = married

S = single

Diabetes treatment: I = insulin

D = diet only

Appendix E

Age of Participants

Age of Participants

Subject #	Age
Group A	
10	66
12	54
17	67
21	60
22	53
Group B	
11	51
13	56
15	58
16	40
23	44

Appendix F

Raw Scores:

Plasma glucose

Cantril

Plasma Glucose Levels of Participants

	Plasma Glucose (mg./dl.)*	
Subject	Before	After
Group A		
10	173	163
12	256	290
17	270	310
21	311	370
22	195	290
Group B		
11	280	231
13	415	430
15	184	170
16	210	182
23	210	266

*normal range 80-130 mg./dl.

Cantril Scores of Participants

Subject		Before	After
Group A			
10		8	6
12		6	7
17		6	4
21		8	8
22		9	10
	Mean	7.4	7
Group B			
11		7	5
13		0	3
15		2	6
16		9	9
23		10	10
	Mean	5.6	6.6

Appendix G

Abstract

Abstract

Effect of a Formal Therapy Agreement
on Client Self-management of Diabetes Mellitus

Increasing chornic illness, accompanied by poor records of patient success with self care, has been associated with patient alienation from the health care system. An effort to increase patient participation in and commitment to the plans for therapy should contribute to success with self-care by people who have chronic illness. People who have diabetes mellitus must do much self-management, and they were selected as an ideal population for the study. The design of the study was posttest-only, with an experimental and a control group. English-speaking adult male volunteers attending a Veterans Administration hospital endocrinology clinic for care of mature-onset type diabetes mellitus who were unknown to the investigator and who responded acceptably to a memory test were randomly assigned to an experimental group (A) and a control group (B). Group A subjects negotiated and signed a therapy agreement with the nurse, and Group B subjects were given written instructions for self-care. The signed therapy agreement was the independent variable. After returning to the clinic, all participants were tested for the dependent variable, reported success with self-care, using an open-ended interview. Average success scores for each group were compared. The following control data were also collected: plasma glucose and body weight, a subjective estimate of the state of the client's diabetes using Cantril's self-anchoring scale, and descriptive information. The memory test referred to above was a sub-test of the Wechsler Memory Scale. Five subjects in each group completed

the study. The results indicated that there was no difference in reported success between groups. Thus, the hypothesis was not supported. Success with self care in this study may have been affected by age (older subjects were more successful); the assignment of behavior changes involving longstanding habit (less success); the assignment of tasks not related directly to a diabetes control variable (more success). Success was probably not affected by the number of tasks or the time interval between visits. There was 60% success with self care tasks in each group. The design did not permit a comparison with previous self-care behavior, nor a comparison with behavior in response to verbal instruction or contracts. There was no change in plasma glucose or body weight of subjects. Among the conclusions of the study was the observation that the duration of experience with contracts by the subjects was probably insufficient to establish a "mutual participation" milieu, and that a successfully established agreement process would lend itself well to the changes in plans for care required in diabetes care. Recommendations were made for further study, and for the use of contracts.