This is to certify that the

dissertation entitled

Physician Self-Efficacy

in the Treatment of Obesity

presented by

Amy Stern Stoffelmayr

has been accepted towards fulfillment
of the requirements for

Doctoral degree in Department of
Counseling, Educational
Psychology and Special Education

Major professor

Date 7/19/94

PHYSICIAN SELF-EFFICACY IN THE TREATMENT OF OBESITY

by

Amy Stern Stoffelmayr

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Counseling, Educational Psychology, and
Special Education

1994

ABSTRACT

PHYSICIAN SELF-EFFICACY IN THE TREATMENT OF OBESITY

By

Amy Stern Stoffelmayr

Primary care physician level of confidence or "self-efficacy" in the treatment of obesity varies, on an anecdotal basis. Patient self-efficacy with regard to disease and treatment is known to vary. It is well-researched and is associated with a myriad of positive health outcomes--both physical and psychological.

The present study surveyed a large and varied group of physicians about their beliefs about their own obesity treatment capabilities, their beliefs about the outcomes of obesity treatment and their actual practice behaviors with obese patients. A smaller number of physicians were interviewed to discover what thoughts, feelings, ideas and experiences they had that fostered their self-efficacy. They were interviewed about their conceptualizations of the problem of obesity and its treatment to discover what supported the development and maintenance of self-efficacy beliefs.

Measures of obesity treatment self-efficacy and of obesity treatment outcome expectations were formulated that had reasonable reliability. The measures correlated moderately positively with each another. The scores on the self-efficacy measures and outcome expectations measures

were found to be related to practice behaviors in a way which is consistent with self-efficacy theory. Physician self-efficacy beliefs, as measured by the study instruments predicted self-efficacious physician behaviors.

Self-efficacy factors that predicted efficacious behaviors were physician beliefs about their own interpersonal skills and their own professional knowledge base regarding obesity and its treatment. The "affect management" factor (how well physicians' felt they could deal with any negative feelings they had towards their obese patients) did not, on its own, predict efficacious behaviors.

Outcome expectation factors that were found to be the most powerful predictors of self-efficacious behaviors were physician beliefs that obesity was treatable and that it was a shared responsibility between doctor and patient, that obesity treatment was effective and that it was important.

I observe the Phisician with the same dilligence, as hee the disease; I see hee feares, and I feare with him.

John Donne

Devotions, No.6, 1624

ACKNOWLEDGEMENTS

I would like to thank my dissertation committee: Drs. Nancy Crewe, Deb Feltz, Linda Forrest, Steve Radenbush, and to especially to thank my two dissertation directors, Linda Forrest for her assistance at this project's inception and Nancy Crewe for her assistance at its completion.

I would like to express my appreciation to Bertram Stoffelmayr for providing me with a role model of intellectual integrity.

TABLE OF CONTENTS

LIST OF TABLES

Chapter I

Introduction

Physicians report having different levels of confidence in their practice of medicine when treating patients with some types of problems than they do when treating patients with other types of problems. One such medical problem treatment area is obesity. On an anecdotal level, some doctors are more confident than others about their practice in treating obese patients.

One way of conceptualizing these different levels of physician confidence is in terms of self-efficacy. "Perceived self-efficacy" is one's judgment of one's own capabilities (Bandura, 1986). Self-efficacy judgments are specific to an area. In terms of this study, therefore, self-efficacy obesity treatment beliefs are beliefs that a physician has about his or her own capability in treating obese patients.

Knowing more about physician self-efficacy could be important for several reasons. It would help doctors, themselves, to practice more confidently, which would be of direct advantage to them. A sense of mastery and competence, in the area of ones professional activity, is sought by practitioners who are in professional practice.

It would also be helpful to patients. Patient self-efficacy with regard to disease and treatment has been studied in a variety of health and illness areas. Among these areas are: rheumatoid arthritis, cardiac rehabilitation, smoking cessation and weight loss. High self percepts of efficacy are found to be positively associated with a plethora of different positive physical and mental health outcomes, across illness area (O'Leary, 1986).

As the physician functions as a kind of medical "significant other" to the patient in the arena of health and illness, he or she is an important source of "efficacy information" for the patient. Therefore, physician self-efficacy and physician fostering of patient self-efficacy, could be an important influence on patient self-efficacy and, consequently, on positive patient health outcomes.

This relationship, between physician self-efficacy and patient self-efficacy, could be tested empirically in a future study. It can only be tested, however, if one knows more about physician self-efficacy.

The purpose of this study is to develop a measure of primary care physician self-efficacy in the treatment of obesity and to provide some evidence of its reliability and validity. Further, after identifying "high" and "low" self-efficacy doctors, this study aims to explore how

self-efficacy in this treatment area develops and how it is maintained.

From a counseling practice point of view, knowing more about what goes into high levels of self-efficacy and how individuals develop these high levels could assist in self-efficacy training of new physicians and in enhancing levels of self-efficacy in practicing physicians. This information would be useful to counseling psychologists working in the field of health care in their roles as teachers and consultants.

Overview of the Study

A first step was to survey a broad group of doctors about their self-efficacy beliefs and their practice behaviors with obese patients. The beliefs included those about treatment outcome. These beliefs and behaviors were, then, tested against theory.

The beliefs tested were formulated as expressions of self-efficacy and the physician behaviors tested were behavioral correlates of self-efficacy beliefs. These were drawn, specifically, from Bandura's self-efficacy theory as applied to obesity treatment of patients in primary care practice. Using these data, a measure of self-efficacy, with some evidence of its reliability and validity, was developed. In addition, these data were used to examine what background or environmental variables, if any, are associated with strong self-efficacy beliefs.

The next step was to discuss these beliefs with a small number of doctors, some of whom were self-efficacious and some of whom were not, using their scores on the study measures as the criterion for self-efficacy. The purpose of the interviews was to discover what thoughts, feelings, ideas and experiences physicians have about themselves in their treatment of obese patients. It was also to discover how their obesity treatment beliefs developed and how they are maintained.

The interview data were used to formulate a "model" of physician self-efficacy in the treatment of obesity. This model could be tested, at a later date, with another group of physicians. The same approach could be applied to self-efficacy beliefs in other areas of medical practice. It could be partnered, eventually, with a measure of patient self-efficacy and patient and physician self-efficacy could be tested together.

To summarize, the focus of this project is whether primary care doctors differ in their levels of confidence or self-efficacy in treating obese patients and, if there is a difference, to explore what it is based on. It is helpful to know because, then, one could develop procedures to enhance physician self-efficacy in this practice area. It would also provide information about a potentially important factor, which is currently missing, in the self-efficacy research in the area of health and illness. More

information about physician self-efficacy would help to illuminate patient self-efficacy and self-efficacy issues in doctor-patient interactions.

Chapter II

Literature Review

Study Constructs

The following is an introduction to the main theoretical base of the study, with an elaboration of some aspects of self-efficacy theory which are salient to studying this construct in the context of medical practice.

Self-Efficacy. The guiding theoretical construct of this study is that of self-efficacy. This construct is central to Albert Bandura's Social Cognitive Theory. Self-efficacy is a belief or perception that one has about oneself: "Perceived self-efficacy is defined as people's judgments of their capacity to organize and execute courses of action required to attain designated types of performances." (Bandura, 1986, p. 391). It is a self-made estimate of one's own competence in a given area.

Self-efficacy beliefs are hypothesized to influence one's actions in diverse ways (Bandura, 1986). Rather than being defined as stable personality characteristics or static estimates of future behaviors, efficacy beliefs are hypothesized to be process variables that function to influence behavior in a number of different ways. They influence which behaviors one chooses to do, how much effort one expends on a behavior and the degree of persistence one

maintains in the face of obstacles or of experience which disconfirm one's efficacy belief. In this way, the beliefs influence one's present behavioral repertoire and the development of self-efficacy perceptions which, in turn, affect future behavioral choice, effort and persistence.

Self-Efficacy and Outcome Expectations. Judgments about one's efficacy are sometimes confused with, but are conceptually distinct from, judgments about the outcomes or consequences of one's behavior: "an outcome expectation is a judgment of the consequence such behavior will produce." (Bandura, 1986, p.391). According to Bandura (1986), both constructs--perceived self-efficacy and outcome expectations--are domain-specific. They are learned and are, therefore, potentially modifiable.

In the context of this study, the domain is primary care physician treatment of obesity. Physician self-efficacy is the physician's belief that he or she can successfully carry out the necessary behaviors to treat obese patients. An example of such a behavior is that the physician believes that he or she has sufficient information about the treatment of obesity to make treatment recommendations to patients. An outcome expectation, in this context, is the physician's estimation that his or her treatment will result in the desired consequences. An example of such a consequence would be that the patient

learns about healthy eating and is able to change his or her eating behaviors.

The relationship between the constructs of self-efficacy beliefs and outcome expectations is not simple one. On a substantive level, it is easy to confuse judgments about one's own capabilities and judgments about the consequences of one's behavior. Or to confuse, in this case, physician treatment of an obese patient with patient actual weight loss. They are not necessarily, of course, unrelated. "Most outcomes flow from actions" and how one behaves affects the outcomes one experiences" (Bandura, 1986, p 392). The kinds of outcomes one anticipates, in one's thoughts, depends on one's judgments of how well one will be able to perform in a given situation. "One cannot sever expected outcomes from the very performance judgments upon which they are conditional." (Bandura. 1986, p.392).

There is not, however, a perfect correlation between a belief in one's own behavior and a belief about its expected outcome and the relationship, between efficacy belief and expected outcome is not a uniform one across areas of human endeavor. It can be thought of as varying on a continuum. On one end of this continuum, outcomes are inherent in actions or are tightly linked to actions. In such areas, outcome expectations closely parallel efficacy beliefs and knowing about outcome expectations does not add appreciably to our knowledge, over knowing about efficacy beliefs.

(Bandura, 1986, p.392). An example from the field of health care would be physician self-efficacy beliefs and outcome expectations in treatment for the surgical removal of a non-metastatic malignant breast tumor. Knowledge about physician efficacy beliefs about his or her own behavior are closely linked to expectations for treatment outcome.

In other areas, beliefs about one's behavior and the consequences of one's own behavior are not as closely linked. This occurs when no action can produce the desired consequences, when consequences are only loosely linked to quality or level of performance or when successful outcomes are linked to a minimum level of performance. Physician treatment of obesity is closer to this end of the belief-outcome continuum. Some people lose weight with no input from their doctors; others do not lose weight even with conscientious and skillful treatment on their physicians' part. In this case, one would expect physician beliefs about his or her own behavior to be not as closely linked to expectations of the desired outcome.

To study physician self-efficacy in the treatment of obesity, one would wish to know not only about self-efficacy beliefs about treatment, but also about physician outcome expectations for treatment.

Self-efficacy and Behavior: The Relationship in Theory. The relationship between one's own beliefs and one's own behavior is also not a simple one. Self-efficacy

beliefs affect behavior in diverse ways and are not simply "inert estimates of future action" (Bandura, 1986, p. 393). They involve decisions involving choice of activity, how much effort one expends on an activity and the degree of persistence one maintains in the face of obstacles or frustration. Self-efficacy beliefs influence emotional reactions during actual and anticipated performances of behavior. According to theory, factors which affect the strength of the relationship between belief and behavior are presence of requisite sub-skills and resources and whether there are incentives for the behavior of interest. There are also "dimensions" of self-efficacy which have implications for behavior. "Level" refers to one's estimate of the degree of difficulty of the performance behavior; "generality," to one's estimate of the degree of specificity of the domain of functioning and "strength," to the degree of resistance of the belief to disconfirming experiences (Bandura, 1986, p. 396).

Self-efficacy and Performance: The Relationship in Practice. In discussing the relationship between beliefs about behavior and actual behavior, Bandura talks about the relationship between what he calls "performance efficacy judgments" (Bandura, 1986, p. 395) and actual performance. According to theory, "people's beliefs...function as one set of proximal determinants of how they behave, their thought patterns, and the emotional reactions they experience in

taxing situations." (Bandura, 1986 p. 393). "Reasonably accurate appraisal of one's capabilities is,..., of considerable value in successful functioning." (Bandura, 1986 p.393). So a degree of accuracy between how one thinks one performs and how one actually performs is highly adaptive. Misjudgments in either direction have negative consequences: over-estimating one's abilities sets oneself up for stress, failure and loss of credibility; underestimating them sets one up for an unnecessarily limited sphere of activity or aspiration.

The more significant the consequences are, for misjudging one's abilities, the stronger is the incentive to judge them accurately. Temporal proximity between a judgment and its corresponding behavior should improve accuracy, according to theory. Clarity of the goals of one's behavior and clarity of the level of performance of one's own behavior (i.e. completion of a feedback loop) increase the accuracy of performance efficacy judgments. When the goals of one's behavior are ambiguous or when the quality of one's performance is unclear (both potentially characteristic of doctors' treatment of obese patients), belief accuracy about behavior is reduced because the process whereby perceived self-efficacy is used to regulate effort is interrupted (Bandura, 1986). When judgments are made in public, social pressure can also affect accuracy.

Public appraisals tend to be more conservative than do private ones (Bandura, 1986).

In a practical application of the theory, such as is being proposed here, the relationship between beliefs about behavior and actual behavior is of particular interest. One cannot necessarily observe people's actual behavior; data about behavior are often what people say about their behavior and believe about their capabilities. Evidence from empirical studies, where there are data about behavior as well as about beliefs, suggests that judgments about efficacy do, fairly accurately, predict subsequent performance behaviors. This has been documented across a variety of behavior domains including school achievement (Bandura & Schunk, 1981), smoking cessation (DiClemente, 1981), physical stamina (Weinstein, Yukelson & Jackson, 1980), treatment of phobias (Bandura & Adams, 1977,) treatment of arthritis (Lorig, Seleznick, Lubeck, Ung, Chastian & Holman 1989) and career choices (Betz & Hackett, 1981).

Sources of Efficacy Information. People do not acquire their perceptions of their own capabilities in a vacuum; they learn through direct experience with their environments and through "socially mediated" experiences (Schunk & Carbonari, 1982, p. 234). The most powerful way people learn about what they can do is by actually doing it, i.e. having an authentic experience of mastery. Bandura terms

this "enactive," "performance" or "attainment" learning (Bandura, 1986, p.399.) People also learn by modeling other people's mastery, either directly witnessed or imagined through "vicarious learning." In addition, individuals judge their abilities from what other people tell them about themselves, through verbal persuasion, exhortation and encouragement. In "vicarious" and "exhortative" sources of efficacy information, the relationship between influencer and influencee is of importance. One's physiological state, through autonomic reactivity, also provides one with information about one's capabilities are. Somatic arousal signals doubts about one's capabilities; symptoms of stress can hamper performance.

A Developmental Perspective on Self-Efficacy. Bandura gives only very general developmental guidelines in his "Developmental Analysis of Self-Efficacy" (Bandura, 1986). Children's experiences with their environment provide the initial basis for developing a sense of "causal efficacy" (Bandura, 1986, p.414). For the infant, the arena of personal efficacy is the immediate, physical environment. Her or his experience centers on controlling sensory stimulation by manipulating objects in the environment, including the attentiveness of the infant's care-givers. These early experiences of personal efficacy are central to the development of one's social and cognitive competence. The infant and the environment are seen as operating

reciprocally, with parental responsiveness increasing infant competence and infant capabilities eliciting care-giver responsiveness (Bandura, 1986).

As a child's environment expands, socially and psychologically, her or his representational capabilities develop and peers, within a context of social comparativeness, assume an increasingly important role in the development of self-percepts of efficacy. In their relationship with siblings at home and peers at school, children form "evaluative habits" (Bandura, 1986, p.416). These habits influence the choice of "comparative referents in self-ability evaluations in later life" (Bandura, 1986, p.416). Self-efficacy appraisals and the verification of appraisals, particularly in the arena of cognitive self-efficacy, develop in a school context of social comparativeness. Children judge their own capabilities with increasing accuracy as they get older.

Throughout development, each period provides the individual challenges in "coping efficacy" (Bandura, 1986, p. 417) with developmental tasks. In late adolescence and early adulthood, there is a focus on mastery in the areas of ability to form intimate relationships and make vocational choices. Self-efficacy is considered an important motivator for career aspirations and career accomplishments (Bandura, 1986 and Betz & Hackett. 1981). "Coping efficacy" is not elaborated on further.

Middle years are characterized by routines which stabilize self-percepts of efficacy in the areas of relationships, especially generative relationships and of career. It is also the time when one confronts the limitations of one's capabilities. Old age is seen as a time of efficacy reappraisal and a declining sense of self-efficacy may be instrumental in a process which results in declining cognitive and behavioral functioning (Bandura, 1986; Rodin, 1986).

These life span guidelines for the development of self-efficacy are quite vague. In general, Bandura advocates the use of a "micro-analytic research strategy" (Bandura, 1977, p. 205) to explore the origins of self-efficacy beliefs. Specific behaviors, not global behavioral domains, are targeted for evaluation and measures are designed that are tailored to these specific behaviors.

The construct of self-efficacy has gone through refinement and has been tested in a variety of areas since it was proposed by Bandura (Bandura, 1977). It is related to other forms of self-referent thought, such as "self-concept," "self-esteem," "effectance motivation," and "outcome expectancy" theories (Bandura, 1986). Yet self-efficacy is distinct from other constructs in that it is not "global" and "stable," but situation-specific and variable. Self-efficacy is not invariably tied to self-worth and viewed as intrinsic. Consequently, self-efficacy can be

measured independently from the behavior it affects, but is not measured independently of context.

Self-Efficacy Theory and Research on Health and Illness

Much current research in clinical and counseling psychology is concerned with a relatively small number of questions about the role that basic cognitive processes play in human behavior. The construct of "self-efficacy" has become more frequently used since Bandura's 1977 article in the Psychological Review: "Self-efficacy: Towards a Unifying Theory of Behavior Change" (Maddux & Stanley, 1986).

The interdisciplinary field of behavioral medicine has emerged and grown during approximately this same period of time. Illness and health are increasingly seen as multidetermined; social and behavioral factors, as well as physiological ones, are seen as determining an individual's health or illness status. In the framework of social cognitive theory, social, behavioral, environmental and physiological factors are seen as reciporically interacting and "health" (or "illness") is seen as an "end state" or outcome of their mutual influences (O'Leary, 1985).

Behavioral medicine has accrued an empirical research base that is spread across the knowledge base of a range of professional disciplines and patient populations (i.e. diagnostic groups.) Behavioral medicine uses a variety of research methodologies, hypothesizes a myriad of factors as predictors and values a plethora of physiological and

psychological factors as health outcomes. Independently evolving bodies of research have focused on different aspects of health and illness (Ell, 1985/86, Kaplan, 1990). Research foci include factors that reduce the risk of disease or are associated with the promotion of health or quality of life; and factors that ameliorate the symptoms (physical and psychological) of illness or of treatment and are associated with optimal functioning. These latter factors are of particular significance in the area of chronic disease or condition. "Self-efficacy" has been suggested as an integrating construct for this diverse field by several reviewers (Ell, 1985/86, O'Leary, 1985). There has developed a body of research in the field of behavioral medicine that uses self-efficacy as its guiding theory.

Health Promotion. Health promotion or health enhancement is an area where self-efficacy theory has been used to guide and evaluate interventions designed to initiate and maintain health behavior change. In smoking cessation treatment and smoking cessation relapse, training to increase self-efficacy to resist smoking increases with treatment and is positively associated with treatment effectiveness, at the time of treatment (Condiotte & Lichtenstein, 1981) and also with the long term effectiveness of smoking cessation treatment (DiClemente, 1981). Self-efficacy treatment assists smokers to stop smoking and not to start again.

Eating Disorders. Self efficacy theory has been used to guide the study of eating disorders, the most common of which is obesity (O'Leary, 1985). The effect of pre-existing and experimentally manipulated levels of self-efficacy on weight loss have been examined (Weinberg, Hughes, Critelli, England & Jacobson, 1984). Cognitive-behavioral principles, such as proximal goal-setting, manipulation of environmental cues and modeling, are a common part of behaviorally-based weight loss programs (O'Leary, 1985).

Pain. Self-efficacy theory has also been used to examine the relationships among social, behavioral and biochemical aspects of acute and chronic pain. Studies have focused on the influence of emotional arousal in pain perception (Craig, 1984); the interpretation and context of arthritic pain (Lorig, Chastian, Ung, Shoor, Holman, 1989 and Shoor & Holman, 1985); the past history of pain (Fordyce, Fowler, Lehmann, DeLateur, Sand, & Treischmann, (1973); attentional focus in pain control (Turk, Meichenbaum, and Genest, 1983); perceived control over the pain stimulus (Neufeld & Thomas, 1977 and Reese, 1982); and affect of ethnic background on pain perception (Weisenberg, Kriendler, Schachat, & Werboff, 1975). Self-efficacy has been a useful construct which helps in understanding the effectiveness of cognitive and non-cognitive coping

strategies, how medications and placebos work and the role of affective arousal in pain.

Cardiac Rehabilitation. Self-efficacy theory has also been used to guide research on medical patients following a myocardial infarction who participated in a multifaceted, interdisciplinarily-administered program, known as "cardiac rehabilitation" (Ewart, Taylor, Reese & DeBusk, 1984). "Cardiac efficacy" (the patient's belief in the capability of his or her own heart,) was found to be a stronger predictor of patient recovery than many more conventional medical parameters (Bandura, in press). An interesting study also included a measure (and manipulation) of the patient's spouse's perception of the patient's cardiac efficacy (Taylor, Bandura, Ewart, Miller & DeBusk, 1985). The patients' wives were provided with modeling and mastery experiences of their own cardiac capability. These experiences of their own capability increased the wives' perceptions of their husbands' cardiac efficacy. The wives' ratings for their husbands' cardiac efficacy were more congruent with husbands' ratings of their own cardiac efficacy than were the ratings for wives who did not have modeling and mastery experiences themselves. Combined cardiac efficacy ratings (the patient's and the wife's) were the most consistent predictor of patient cardiovascular functioning.

Chronic Disease. Adherence to medical regimens is an issue of particular importance to patients with chronic disease, which, by definition, cannot be cured. Chronic disease can sometimes, however, be "managed" and patient behavior is often of prime importance of this management. Kaplan, Atkins & Reinsch (1984) have studied patient self-efficacy about adherence to exercise programs and Maddux & Rogers (1985) studied behavioral intentions to stop smoking. In patient behavior change programs, where there is a short term loss in return for a long term gain, focusing on outcome expectations as well as self-efficacy beliefs is of importance (O'Leary, 1985). If a patient is to "sacrifice," it must be seen to be worthwhile.

Lorig et al. (1985), at the Stanford Arthritis Center, have accrued a small body of research on self-efficacy and arthritis. They have incorporated self-efficacy training and arthritis self-efficacy measures in to their health education program for arthritis patients. Using a "modified grounded theory" approach to data analysis in their research, they found self-efficacy to be a significant predictor of study outcomes (Lorig et al., 1989). Using a modified grounded approach was initiated by their discovery that they had an educationally-oriented health program, which clearly helped participants, but whose participants did not improve significantly on the study's educational measures.

Self-efficacy has been a useful construct in many substantive areas in the research on health and illness. Self-efficacy has been used, primarily, by psychologists working on problems in the medical arena and has fostered some conceptual integration of a highly diverse body of knowledge. This research has been patient (not health provider)-focused.

Teacher Self-Efficacy

The only developed body of research on self-efficacy of those who provide a service to others is that of teacher self-efficacy (Bandura, 1986; personal communication, 10/91). There have been some limitations, however, in the way that teacher self-efficacy has been studied. Self-efficacy and outcome expectations have not been maintained as conceptually distinct. Teacher self-efficacy has been measured in terms of student outcomes (Fuller, Wood, Rappoport & Dornbusch, 1982; Dembo, Gibson, 1985; and Newmann, Rutter, & Smith, 1989). Perceptions of self-efficacy have been viewed as "stable" and "global," rather than variable and domain-specific. A teacher's self-efficacy is assumed to be a "fixed" quality of the person, rather than one which may vary, within an individual, across situations (Raudenbush, in press).

A recent study (Raudenbush, in press), looked at teacher self-efficacy independent of student outcome measures. Using an hierarchical linear modeling design,

self-efficacy variation in teachers was examined not only between subjects but also within subjects across teaching situations. "Intra" teacher practice variables included preparation of the teacher and grade level of the students and academic track of the students taught; "inter" teacher variables included demographic characteristics and organizational environment variables.

This way of conceptualizing variation highlights differences, within individuals, between situations and takes in to account a complex array of factors that influence a multidetermined outcome like professional practice. It focuses on the provider of a service, not on its recipient.

Primary Care Physicians and Health Behavior Change

Amongst the different ways of conceptualizing the practice of medicine is whether it is oriented primarily around the disease or primarily around the patient. In recent past history, disease-oriented medical practice has been in ascendance and has successfully guided Western medicine: the physician does something "to" the patient, prescribing substances or performing a procedure (Weiner, 1989). Successes of this approach are obvious, e.g. in modern surgical techniques and antibiotic treatment for infection. Weaknesses of this approach are also increasingly clear in areas that are important in medical

practice today: prevention and management of chronic disease and condition.

Chronic Disease. Chronic disease cannot be cured, but it can often be controlled. However, usually it cannot be controlled (or managed) substantially by the physician doing something "to" the patient. The treatment is a persevering adherence, by the patient, to a treatment regimen. Patient behavior, not physician behavior, is of primary importance. The patient must do something (e.g. take blood pressure medication) and/or must not do something (e.g. eat foods high in salt). Preventive health practices are also highly dependent on patient behavior. Management of chronic conditions and fostering of preventive health behavior need patients who are actively motivated and regimen-adhering and physicians whose practice is oriented to the patient, particularly, education and engagement of the patient in health practices, not a practice which is oriented to the disease (Tresolini, 1992, Weiner, 1989).

Currently, patient health education is considered an appropriate part of medical practice; doctors are encouraged through their own professional journals and by recommendations from government reports to counsel their patients about making behavioral changes to reduce chronic disease risk factors (Bartlett, 1987; U.S. Prevention Services Task Force, 1989). Health promotion material is increasingly a part of the curricula in medical schools

(Bloom, 1989, Sullivan, 1990). Practicing physicians themselves consider it to be important (Sobal, Valents, Muncie, Levine & DeForge, 1985).

Medical Education. However, formal training in the education and engagement of patients in health behaviors and behavior change, and opportunities to practice these behaviors under guidance or to have role models for these behaviors while training do not appear to be routinely available to all medical students or even all interested medical students. Medical students state that they are interested, have adequate knowledge, but have difficulty translating their knowledge into practice (Tresolini, 1992).

Current Practice. Practicing physicians also express discomfort and lack of confidence in their roles of health educator and engager/initiator of patients in health behavior change (Becker & Janz, 1990, Orlandi, 1987). In a survey of primary practitioners, smoking cessation was considered a "very important" or "important" health behavior to address with patients (100% of respondents), followed by taking precautions around hazardous materials, (98%), avoiding excess caloric intake (97%) and eating a balanced diet (97%). Limiting alcohol is so considered by 83%, exercising regularly by 72% and getting adequate sleep by 70% (Sobal et al, 1985). Of all of their patients' daily activities which may increase risk for disease or exacerbate existing disease or condition and which are potentially

modifiable, concerns about obesity and adequate diet are very highly ranked by doctors in practice.

There is a high degree of consensus by medical educators, medical students and practicing physicians that patient health behaviors and health behavior change is an important part of medical practice, for both preventive health practices and for the management of chronic disease or condition. It is also an area in which both students and doctors express discomfort and a lack of confidence.

Obesity

Obesity is a widespread condition; estimates of its prevalence range from 15% to 50% (Bray,1976). Mild to moderate obesity is usually defined as 10% to 20% above average and gross obesity as 30% above average weight (Wilson, 1984). Prevalence is inversely proportional to socioeconomic status, increases with age and is more common in some ethnic groups (Stunkard, 1975). Obesity has serious consequences, medically and psychologically. Gross obesity is clearly shown to have deleterious medical consequences in the areas of hypertension, hyperlipidemia, diabetes, pulmonary and renal problems, osteoarthritis and recovery from surgery (Wilson, 1984). The association of obesity and cardiovascular disease is usually considered the most critical area of medical concern.

However, the extent to which deleterious consequences are directly the result of obesity, as an independent

factor, or are the result of a combination of obesity with other risk factors, is unclear. It is also unclear what the deleterious consequences are of mild to moderate obesity (Brownell, 1982). Although there is consensus that mild to moderate obesity does not have as strong an association with disease, as does gross obesity, this group still appears to be at risk for chronic disease related to health habits (e.g. poor diet). Weight reduction is associated with reducing these behavioral risk factors (e.g. improving diet).

Psychological consequences of obesity include social stigmatization and dieting. Even successful dieting, i.e. that which is associated with actual weight loss is associated with undesirable emotional sequelae such as depression, anxiety, fatigue, irritability and preoccupation with weight and diet (Wilson, 1984). Motivation for weight loss is powerfully associated with social concerns and vanity (Stuart & Jacobson, 1979), rather than health concerns. Social benefits of weight loss may indirectly promote improved personal health habits (Wilson, 1984).

Treatment. This common, serious, physical and psychological health problem is quite refractory to treatment. Most obese people do not become thin, either in the short term or the long term (Wilson, 1984; Brownell, 1982). "Obesity has remained resistant to most treatment methods, and even the most effective procedures have

produced relatively modest successes." (Wilson, 1984, p. 667). Attrition rates in treatment programs range from 50% to 80% Multifaceted treatment based on behavioral principles appears to be the most effective; moderate weight loss (10 to 11 lbs.), in the short term, is the result, across behavioral treatment type (Wilson, 1984). Increasing physical activity seems to help, for short and long term weight loss and for reducing the negative emotional sequelae of both obesity and of dieting.

Very low calorie diets and medication are found to have some success when used in conjunction with a behavioral program. Overall, behavioral programs show the most success with maintenance of weight loss for up to one year. Results for longer term studies are meager, but in general, do not show good results over a span of years (Wilson, 1984). A problem with evaluating the results of long term weight loss maintenance is the uncontrollability of inevitable confounds (Brownell, 1982). Even the most effective program may not be as powerful an influence, as many other factors, on an individual's weight over the life span.

Obesity is a chronic health problem. It's cause is largely unknown; there is no cure. It has deleterious physical and psychological consequences. There are a number of available treatments which are helpful in managing this chronic problem (i.e. treatments which produce some relief of symptoms for some people, some of the time.) Although

overweight causes physical and social liabilities, so does dieting.

Obesity is a condition which, for many people, needs life-long management. Like other chronic health problems, there needs to be a management plan worked out between the patient and his or her doctor, to optimize the balance between the risks and benefits of both the problem and management of the problem.

Research Questions and Hypotheses

Ideally, in research on self-efficacy, one measures beliefs and behavior separately at, minimally, two points in time. Specific behaviors are sampled, from a larger area of interest and are arranged hierarchically from least to most difficult (arranged by "level," according to theory). Measures are taken and, then, an intervention designed to manipulate the subject's self-efficacy beliefs is implemented. Measures of beliefs and behaviors are re-taken (Bandura, 1986). In field research on health and illness, this ideal design is not possible in many areas of clinical interest, for ethical as well as practical reasons.

Although Bandura's theory of cognitive processes is "social," self-efficacy research has focused on patient self-efficacy beliefs alone and not on the beliefs of those who inhabit the patient's social environment. Research has not studied self-efficacy "interactions," among patient beliefs and those in the patient's interpersonal

environment. Significant health care providers, such as physicians, have not been studied, either in terms of their own self-efficacy or its influence on patients.

Recent Studies. There is a single published study that deals explicitly with physician self-efficacy and investigates whether physician self-efficacy and physician outcome beliefs are associated with physician practice behaviors (Gottlieb, Mullen & McAlister 1987). In this study, self-efficacy beliefs and outcome expectations were each measured on a single item, 4-point scale. The study's substantive area was various kinds of substance abuse (nicotine, alcohol and over the counter and illicit drugs); outcomes were three practice behaviors: history-taking and counseling, which represented efficacious behaviors and referral, which represented an inefficacious behavior. More recently trained doctors (across specialty area) and internists reported being more likely to engage in the targeted self-efficacy behaviors with their patients. G.P.s were the least likely. Family practitioners were most likely to engage patients in counseling; general practitioners were least likely.

The method of the Gottleib et al study was a quantitative analysis done on data from a questionnaire survey mailed to primary care doctors (general internists, family practitioners and general practitioners), with a return rate of approximately 29%. Medical specialty and

year of medical school graduation were found to have the greatest predictive power for practice behaviors. Self-efficacy beliefs and outcome expectations were also significant predictors of practice behaviors. An interesting finding was that self-efficacy expectations were a stronger predictor than outcome beliefs, across all subjects.

Weaknesses of this study include possibly overly-simple instrumentation (a single question may be a sufficient measure of a physician's self-efficacy in a practice area, but this was not tested); and an extremely diverse substantive area of practice. Comparing knowledge and skills, (not to mention attitudes) for treating cigarette addiction and heroin addiction are like comparing apples and oranges. The focus of the Gottleib study illuminated differences in treatment for different substances within the broad practice area of drug abuse treatment rather than differences among individual physicians in their self-efficacy beliefs. Analyses were done on doctors as a group, not on individual doctors, across substance abuse areas.

A study about the relationship between physician decision making and practice behaviors (Gruppen, Wolfe & Stross, 1990) asked about physician "confidence" in treating four common medical problems seen in primary practice. Vignettes depicting treatment and management of rheumatoid

arthritis, asthma, chronic obstructive pulmonary disease and fever of unknown origin were rated as to physician preference for treating the patient themselves, pursuing consultation before treating themselves or referring the patient to another doctor for treatment. The relationship between targeted self-efficacy behaviors and board certification status and administrative practice characteristics of individual doctors was examined. Those who were board certified were more likely to seek consultation via the literature and then treat themselves and wished, in general, to retain a higher degree of primary care control of their patients. Those in group practice sought informal consultation with colleagues and then treated themselves. Doctors in solo practice relied on formal consultation. Physicians were mail-surveyed and data were quantitatively analyzed on the questionnaires which were returned and useable (18%).

The cognitive processes of individual physicians were not studied, but as in the Gottlieb et al. study, doctors were studied, as a group, within the larger administrative contexts of their practices and their specialties. They were studied more from a sociological point of view than a psychological one. Differences in physician practices between diagnostic patient groups were not highlighted as in Gottlieb et al. This study emphasized differences in administrative practice arrangements and board certification

status and how they affect practice behaviors (or vice versa). An alternative way of conceptualizing practice contexts are as sources of efficacy information for doctors. They are the settings where enactment, modeling and exhortative and somatic experiences and behaviors take place.

Tresolini and Stritter (1992) used case study methodology to examine self-efficacy in "patient health education for health promotion" for final year medical students intending to practice in primary care areas. Using a semi-structured format, researchers interviewed students about their educational experiences during medical school (both formal and informal), in gaining knowledge about 1.) the benefits of health promoting patient behavior, 2.) conveying this information to their patients and 3.) engaging patients in the educational process. 28 students (one third of their class) were interviewed. 6 faculty members involved in health promotion-related teaching were also interviewed and a documentary review was conducted on materials such as course syllabi and curriculum guides.

Interviews and other materials were submitted to a qualitative analysis, using grounded theory and case study methodology. A framework from self-efficacy theory was used to focus on relevant data, organize categories and define alternative explanations as well as to provide a descriptive framework for "cases". Content areas from theory which

interviews covered were: sources of efficacy information, appraisal of this information and "many aspects of student perspectives and learning experiences" (Tresolini & Stritter, 1992). A 9-item questionnaire, measuring self-efficacy in each of three health promotion areas (smoking cessation, "heart-healthy" nutrition, and exercise and fitness) was given to students following the interview. Questionnaire items, within area (3 items each), were graded along a continuum of difficulty (or self-efficacy "level"), from easiest (e.g. believing that one has the health promotion information oneself), to harder (believing that one can transmit it to patients) to hardest (believing one can engage patients in the educational process).

Three "patterns of medical student experiences" or "cases" were formulated on the basis of the qualitative analysis; descriptive statistics on the self-efficacy measure showed a difference associated with each pattern, in the expected direction. Students with more health promotion experience and exposure to models scored higher on the self-efficacy measure. For students in two of the three "patterns", self-efficacy scores also varied in the expected direction for behaviors at the different difficulty levels; self-efficacy was higher for behaviors the researchers considered "easier". For the students in the third group (those with the most experience, most exposure to models and highest interest), there was no difference in self-efficacy

scores. Theirs were uniformly high across level of behavior difficulty, possibly showing a "ceiling effect" of the measure.

Conclusion. Because the psychological context of medical practice is complex and not well-studied, and because research in the area of physician self-efficacy is very sparse and that which exists does not focus on psychological variables, this study begins at a basic level.

The study focuses on identifying physicians who consider themselves to be efficacious in the treatment of obese patients and exploring the attributions these doctors make for their efficacy in this practice area.

Goals

A first goal of the study is to develop an instrument to measure physician self-efficacy in the treatment of obesity, with evidence of its reliability and validity. A second goal is to examine whether there are demographic characteristics or practice characteristics of physicians that are associated with strong and weak self-efficacy in the treatment of obesity.

Research Questions

1.) Assuming that doctors vary in their self-efficacy in treating obese patients, can this difference be measured

reliably and validly? A reliability coefficient of .70 is sought.

2.) What attributions do physicians make for the development of their own self-efficacy in this treatment area?

Hypotheses

Scores on the self-efficacy measure are associated with physician practice behaviors, in a manner which is consistent with self-efficacy theory. Specifically, that doctors with stronger self efficacy beliefs in the treatment of obesity will:

Hypothesis 1. have a higher proportion of obese patients in their practices,

Hypothesis 2. discuss obesity with a higher proportion of their obese patients,

Hypothesis 3. initiate discussion of obesity with a higher proportion of their patients,

Hypothesis 4. have a higher proportion of their patients on some kind of weight control program,

Hypothesis 5. consult more with their medical colleagues and the medical literature about their obese patients,

Hypothesis 6. refer fewer of their obese patients to other doctors for primary care,

than will doctors with weaker self-efficacy beliefs.

Chapter III

Method

Introduction

A combination of quantitative and qualitative methodologies was used for studying physician self-efficacy. Doctors with strong and weak self-efficacy were identified using quantitative methods; the study of each group was by quantitative and qualitative methodology. The qualitative base for this study was twofold. "Modified grounded theory" methodology (Glaser & Strauss, 1967) was used. Rather than initiating data collection and analysis with an atheoretical eye, collection and analysis were done through a conceptual lens from self-efficacy theory. Self-efficacy constructs were grounded in data from the doctors under study. Case study methodology (Yin, 1989) was also used to study a small sample of doctors. Statistical and measurement principles from Mehrens and Lehmann (1984) and Glass and Hopkins (1984) provided the basis for the quantitative methodology used in the study.

Design

The study had two stages. In the first stage, an instrument was developed that measured physician self-efficacy in the treatment of obesity. It was given to a large group of doctors and a distribution of scores was

obtained. Demographic and practice information from the doctors was also gathered. Analyses were done on the scores to evaluate the self-efficacy instrument and to provide empirical evidence of the anecdotal difference among doctors in their level of confidence in treating obese patients.

Self-efficacy scores were examined to see if physician beliefs predicted physician practice behaviors. Demographic and practice variables were tested for their association with self-efficacy and outcome expectations scores.

In the second part of the study, the self-efficacy beliefs of a small sample of individuals (doctors with high and low self-efficacy scores) were examined through interviewing, using partly structured and partly open-ended questions.

Subjects

The subjects for this study were primary care physicians practicing in the Lansing, Michigan area and in the Rapid City, South Dakota area, who were listed on professional and institutional rolls and other public listings, e.g. the telephone book and newspaper advertisements. The South Dakota cohort included doctors in Nebraska, Wyoming, Montana and North Dakota, in addition to those in western South Dakota. All doctors, with M.D. or D.O. degrees who specialize in family practice or general internal medicine were recruited as study subjects. In addition, general practitioners in the Rapid City area were

recruited. This group numbered approximately 365. Attempts were made to recruit a sample which was as representative as possible, of primary care doctors practicing in the states of Michigan and South Dakota. It included doctors practicing in cities, in the surrounding suburban and rural areas, in small towns and, in the South Dakota cohort, doctors practicing under the auspices of the Veteran's Administration, the Indian Health Service and the U.S. Air Force. Doctors were included with a high variation of level of university-affiliation (including none) and a high variation of type of practice arrangement, ranging from solo private practice and small group private practice to university clinic based practice, HMO practice, and U.S government practice.

For the first part of the study (testing the instrument,) the study sample was the group of every physician who could be readily identified in the two areas. For the second part of the study (studying individual high and low self-efficacy doctors,) a small sample was drawn from the physicians who had returned their questionnaires. The sample size for the qualitative part the study was determined, as the data was collected and analyzed, according to principles of qualitative data analysis (Gorden, 1980).

Development of the Physician Self-Efficacy Measure

The Physician Self-Efficacy Measure sought to answer

the question: are there differences between doctors in their self-efficacy in treating obese patients? In addition to measuring self-efficacy, its purpose was to designate individuals for further study. Items for the Physician Self-Efficacy Measure were of two kinds and were given as two separate questionnaires. One focused on self-efficacy beliefs and used as its question stem: "How confident are you that you could:" The other, the Physician Outcome Expectations Measure, focused on outcome expectations and used as its question stem: "Indicate your agreement with the following statements:".

Items for each measure were drawn from principles of self-efficacy theory as applied to practice beliefs and outcome expectations in the area of obesity treatment. The relationship between the measures was examined but the two were maintained as two separate measures throughout the analyses.

A brief measure of physician demographic information and self-reported behavior, the Physician Practice Measure, was also given. This asked the doctors about themselves and their actual practice behaviors with patients. Questions were single-item measures that pertain to substantive practices that illustrate self-efficacy principles of behavioral choice, effort and persistence. Copies of the three measures are Appendices A, B and C.

Evaluation of the Self-Efficacy Measure, Outcome Expectations Measure and Physician Practice Measure

Reliability. Test reliability is the consistency between two measures of the same thing. Estimates of a test's reliability are made by evaluating its stability, equivalence and internal consistency. (Mehrens & Lehmann, 1984.) The Physician Self-Efficacy Measure and Physician Outcome Expectations Measure were "criterion-referenced" measures, with response repertories that were specified by theory (i.e. beliefs about one's confidence in treating obese patients and beliefs about the outcome of obesity treatment). The measures tested the correspondence between what an individual stated (the doctor's self-reported efficacy and outcome beliefs) and an underlying theoretical continuum of efficacy ("perfectly efficacious" beliefs and "optimally strong" outcome expectations.) The score of a "criterion-referenced" measure is interpretable according to "specified performance standards" (Mehrens & Lehmann 1984) which are, in this case, beliefs about particular behaviors and the outcomes of these behaviors.

The measures were also "norm-referenced," in the sense that scores were interpreted compared to a distribution of scores, not only compared to a self-efficacy criterion. Inferences made on the basis of the measures, however, were limited to a narrow subdomain, defined by the criterion (i.e. primary care physician treatment of obesity), rather

than a broad domain, as they would have been in a primarily norm-referenced test (Mehrens & Lehmann, 1984).

Evidence for test stability is not as essential for the reliability of criterion-referenced measures as it is for norm-referenced tests, (Mehrens & Lehmann, 1984). Test-retest reliability was, therefore, not evaluated. Evidence for a criterion-referenced test's internal consistency is important (Mehrens & Lehmann, 1984) and this can be estimated, on a single test administration, by calculating a consistency coefficient (e.g. Cronbach's alpha,) which is an index of the homogeneity of items, or the degree of correlation between single test items and the total test score (Mehrens & Lehmann, 1984.) An internal consistency coefficient was calculated for the self-efficacy and the outcome expectations measure to evaluate the reliability of each.

The Physician Practice Measure is a series of single items and, therefore, no test for reliability was appropriate for them.

Validity. Test "validity" is the extent to which the test measures what it is supposed to measure. The kinds of inferences that can be made about an individual from his or her test score depends on the test's validity. If one wishes to make inferences about a person's performance other than that which is measured ("predicting" performance, in a sense) criterion-related validity evidence is of particular

importance (Mehrens & Lehmann, 1984). In this instance, one was trying to "predict" physician behavior from a test score based on items culled from self-efficacy theory.

Content-Related Validity. To evaluate the content validity of a measure, one examines how well the test items serve as a sample of the domain of the behavior of interest. In test development, the task is to define the content domain and universe of situations as specifically as possible for a finite set of behavioral objectives, then to devise a sampling process of this finite set to choose test items. These items are then inspected by experts for adequacy, precision, comprehensiveness and clarity (Mehrens & Lehman, 1984). The preliminary drafts of the measures for this study were evaluated by both content and methodological experts. They were Deborah Feltz Ph.D. (a self-efficacy researcher and committee member); Bertram Stoffelmayr, Ph.D. (a self-efficacy researcher and medical educator); Ruth Hoppe, M.D., (a general internist and medical educator), and John Strandmark, M.D. (a general internist with a practice specializing in the treatment of obesity).

Criterion-Related Validity. Criterion-related validity is evidenced by empirically comparing scores on the measure of interest to another, independent measure (i.e. a criterion) of the thing one is interested in measuring. Self-efficacy scores on a second, independent measure of physician self-efficacy or observations of physician

behavior would provide criterion-related validity evidence for study measures. In the absence of having an established instrument which has accrued validity evidence or being able to observe physicians in practice, I proposed the following criterion-related validity estimates.

Physician Practice Measure items 10a. through 10d. and 11a. and b. provided evidence of criterion-related validity for the measures. These items asked physicians about experience with actual patients in practice. Reported behaviors from the recent past were considered to be independent, external indicators of physician beliefs.

Construct-Related Validity. Construct-related validity evidence refers to the degree one is able to infer constructs in psychological theory based on a test score. If a measure has construct validity, there is evidence that scores will vary as the underlying theory predicts (Mehrens & Lehmann, 1984.) Multiple indices of validity and reliability evidence are needed to provide information about a measure's construct validity. These multiple sources of evidence, ideally, provide convergent information which supports the operationalization of an underlying psychological construct.

Heterogeneity of subjects and of item difficulty increase construct validity. Heterogeneity of subjects with regard to geographic area of residence, medical degree and specialty, practice type, setting and size; and with regard

to age, gender, and medical school graduation date was part of the sampling procedure.

Self-efficacy theory, itself, served as the foundation for validity of the measures which identify doctors with strong and weak self-efficacy. Constructs from the theory were not independent criteria because they provided the conceptual basis from which items were drawn determining measure score. But the larger underlying constructs of self-efficacy and of outcome expectations served as criteria for the subparts of the theory and vice versa. Each test item which dealt with a single, specific aspect of efficacious behavior, (e.g. confidence in diagnosing patients whose obesity puts them at health risk) provided validity evidence for the test as a measure of the larger, underlying construct of self-efficacy in treating obese patients. Beliefs about specific treatment outcomes, (e.g. patients who try, can lose weight) provided validity evidence for the test as a measure of the larger underlying construct of outcome expectations in treating obese patients.

This relationship, between items pertaining to specific behaviors and a larger, underlying, construct is also part of the evidence for the test's content validity and content reliability. Content validity and reliability are related to "generalizability" in a broad sense (Mehrens & Lehmann, 1984.) One is, in each case, trying to generalize: from a

specific behavior to behavior in a diversity of situations, from a test item to a total test score and finally, from a paper and pencil indicator to behavior in a real life situation. As different types of validity evidence are interrelated with each other and with reliability evidence, conceptually as well as operationally (Mehrens & Lehman, 1984), the relationship between the subparts of a theory to the theory as a whole, and between individual test items and to the larger, underlying construct make up the links in a logical chain.

Variability in scores is also a part of the validity evidence for the measures. Scores indicating efficacious and inefficacious doctors serve as evidence for construct validity for each other, based on self-efficacy theory. Strong self-efficacy beliefs and outcome expectations serve as a criterion (by way of contrast) for weak self-efficacy beliefs and expectations.

The Development of the Self-Efficacy Interview

The qualitative part of the study addressed the question of how self-efficacy beliefs develop and are maintained by focusing on the doctors' own perceptions of themselves. The interview was highly structured in its underlying form although not all questions were asked in a highly structured way.

The underlying structure of the interview was based on self-efficacy theory. It dealt with sources of efficacy

information (i.e. how beliefs are formed) by asking physicians about their experiences of "enactment," "modeling," "exhortation" and affective response, during their training and in their current practice. It also sought to discover spontaneous sources of self-efficacy information which are not a formal part of the theory. The interview dealt with specific aspects of self-efficacy theory as applied to practice in this area: behavioral choice, effort and persistence; incentives for behavior; and dimensions of behavior, such as level of difficulty of behavior, generalizability of behavior and strength of behavior.

Some questions were open-ended, to learn how physicians understand these beliefs themselves. Data were gathered on spontaneously-generated sources of efficacy information and on aspects of self-efficacy in a professional practice area, which were not a formal part of the theory, but which were logically associated with it. These included motivation for the development and maintenance of self-efficacious behaviors, criteria by which one evaluates one's own behavior and goal-setting (and goal adjustment) which supports self-efficacy beliefs. Special attention was paid to interview material that did not support theory, that disconfirmed theory or that theory neglected.

The analysis of data from the interviews was qualitative and quantitative. Tabulations and groupings were

formed to present clear summaries of the data. Some material is presented in the form of "patterns of practice."

Interview material is quoted to illustrate, with examples, what interviewees said about themselves and their practice with obese patients. Guidelines for the self-efficacy "training" or "enhancement" of physicians are made on the basis of the results of quantitative and qualitative analyses.

Evaluation of the Self-Efficacy Interview

Validity. Content validity of the interview was evaluated similarly to the self-efficacy measures, with examination of the questions by self-efficacy experts. Construct-related validity was tested by comparing high and low self-efficacy doctors to each other, on variables of interest and on test items and scores, as is described for evaluating the self-efficacy measures.

Procedure

Physicians' names were garnered from the phone book, from the rolls of MSU's Faculty Group Practice Directory, from Health Central and PHP and from a physicians' directory for the Rapid City area. Guidelines for mail surveys were followed from Dillman (1978) and Maheux, Legault & Lambert (1989), with special attention paid to techniques which increase response rate. These included personalizing the cover letters with physician names and addresses, signing

them and including a handwritten note at the end of each letter. There were no follow-up letters or phone calls.

Delimitations and Limitations of the Study

The sample chosen for the study was relatively broad. It included doctors in two geographic areas, one rural and western, one industrialized and mid-western. The physicians practiced in cities, suburbs, small towns, VA hospitals, Indian reservations and a military base. They were of a wide range of ages and trained in a wide range of medical schools. Their practice areas included all of the common primary care practice designations: family practice, general practice and general internal medicine.

The sample included doctors of both sexes and of diverse practice affiliations. Practice affiliations ranged from solo private practice to group private practice, health maintenance organizations and university clinics. It included doctors in government practice through the VA, the USAF and the Indian Health Service. From the point of view of the study sample, generalizability of findings of the study is fairly broad.

Limitations of the study include a possible bias in the sample, due to only efficacious doctors (or some other subgroup of the sample) choosing to participate. To encourage inefficacious doctors to participate, subjects had the option of returning questionnaires anonymously.

There are also limitations inherent in using a self-report measure. Both sources of information about study doctors, (those about their beliefs and those about their behaviors) are in the form of "self-reports." The estimates that study subjects provide and the relationship between the estimates may be, therefore, inflated. There is past self-efficacy research evidence, however, which indicates that individuals do report their self-efficacy beliefs accurately (Bandura & Shunk, 1981).

Treatment of the Data

After the first phase of data collection, descriptive statistics were used to examine the characteristics of the sample on demographic variables, practice behavior variables and on scores from the self-efficacy measures. The measures were evaluated by calculating reliability coefficients on each. A factor-analysis was done on each measure to test for the structure of the underlying constructs of the measures. Reliability coefficients were also calculated for measure factor scores, as well as total measure scores. A scatterplot graph and Pearson Product Moment Correlation Coefficient was calculated to examine the relationship between scores on the physician self-efficacy instrument and the physician outcome expectations instrument. Correlation coefficients were also calculated on measure factor scores.

Regression analyses were done, using the self-efficacy (PSEM) and the outcome expectations (POEM) scores as predictors and physician practice behaviors as outcomes (Physician Practice Measure items 10a. through 10d. and 11a. and b.). This step in the analysis tested whether physician beliefs and outcome expectations predicted physician behavior. It was a test of the construct validity of the study measures.

Three items on the outcome expectations measure (#1, #2 and #13) provided information for a possible confound in the association between behavior and beliefs (and expectations.) These addressed the issue of the degree of importance the physician placed on the problem of obesity. They helped to evaluate whether existing choice, effort and persistence may be undermined, if a physician considers obesity treatment unimportant.

A second analysis tested whether physician demographic characteristics or practice characteristics (Practice Measure items 1. through 7.) predicted self-efficacy (PSEM) or outcome expectations POEM) scores.

The second phase of the data analysis was qualitative in nature. The self-efficacy beliefs of a small sample of individuals were examined via a semi-structured interview. Individuals were chosen on the basis of self-efficacy scores, so that efficacious and inefficacious doctors were included among the interviewees.

Techniques of qualitative analysis were applied. Data were sorted and organized; they were examined to identify and generate categories and, then, themes and patterns based on sources of efficacy information, physician attribution about behavioral choice, effort and persistence, physician goal-setting and physician performance self-evaluation. The "constant comparative" method was used, which entails coding, then grouping and regrouping data, working towards an integration of data. (Strauss & Corbin, 1990.)

Emergent theories were evaluated against the data and data were scrutinized to identify alternate explanations (Marshall & Rossman, 1989). Attention was paid to spontaneously generated sources of self-efficacy information, to strategies for appraisal and modification of beliefs and behavior and to supports for self-efficacy development and maintenance. "Patterns of practice" are presented, with comparisons made of their relative strengths and weaknesses, in supporting or undermining obesity treatment self-efficacy.

Chapter IV

Results

Quantitative

Study Sample

Three hundred and sixty-four questionnaire packets were sent out; 199 (55%) to doctors in Michigan and 165 (45%) to doctors in the South Dakota area. In this original sample, 81 doctors (24%) had a Doctor of Osteopathic Medicine (D.O.) degree and 278 (76%) had a Doctor of Allopathic Medicine (M.D.) degree.

Altogether, 178 questionnaires were returned, a return rate of 49%. The return rate from Michigan doctors was 47%, and from South Dakota area doctors it was 48%. Five questionnaires (3%) were returned anonymously. The return rate for M.D.'s was 46%, and for D.O.'s it was 54%.

The make up of the final study sample is as follows: 94 study respondents (53%) are from Michigan; 79 (44%) are from the South Dakota area; 133 (74%) are M.D.'s and 40 (23%) are D.O.'s. The medical degree from 5 doctors (3%) is unknown.

The sample of doctors who returned their questionnaires appears to be quite representative of the study target sample with regard to geographic area of residence and

medical degree. The extent of their representativeness on other study characteristics is unknown.

Description of the Sample. Besides type of medical degree and area of residence, demographic information collected on study doctors included age, sex, year of medical school graduation, medical specialty, type of practice arrangement, size of practice, approximate number of patients seen each week, percent of patients seen who are female and whether there are obese patients in the practice.

Age. The study doctors ranged in age from 30 to 76; the median age was 43 years. 36% of the doctors were aged 40 or younger, 60% were 45 or younger and 80% were 55 or younger.

Sex, Year of Medical School Graduation. Seventy-eight percent of the study sample were males and 22% were females. The year of medical school graduation ranged from 1943 to 1992 and the median year was 1974. Approximately 70% graduated between 1966 and 1986.

Medical Specialty. Eighty-eight percent of the study sample specialized in family practice (61%) or general internal medicine (28%). The remaining 12% were general practitioners, all of whom resided in the South Dakota area.

Practice Type. Sixty percent of the doctors were in private practice and 25% worked primarily in a university-affiliated clinic. Of the remaining 15%, 6% were employed

by the Veterans' Administration, 5% by the Indian Health Service, 3% by the US Air Force and 1% by HMO's.

Practice Size. The size of the practices in which the doctors work were as follows: 17% were in solo practice, 28% were in a practice of 2 to 3 doctors, 24% were in practice with 4-6 doctors and 32% worked in a practice of 6 or more doctors.

Patient Load. The size of the doctors' weekly patient load was as follows: 11% saw fewer than 20 patients per week, 30% saw approximately 50, 30% saw about 100 per week and 23% saw more then 100 patients per week.

Percent Female. The percent of patients in a practice that was female ranged from 1% to 100%. The average percent of female patients in a practice was 60%.

Ninety-nine percent of study doctors stated that they had obese patients in their practices.

The typical study subject was a male doctor, specializing in family practice; he was in his early forties, worked in a group practice of 2 to 6 doctors and saw between 50 and 100 patients per week, 60% of whom were women and some of whom were obese. Table 1. summarizes information about the study sample.

Table 1. Description of the Study Sample

	Target Sample n = 364	Study Sample n = 178	Qualitative Sample n = 10
State			
MI	199 (55%)	94 (53%)	10(100%)
SD	164 (45%)	79 (49%)	
Medical Degree			
MD	278 (76%)	133 (74%)	8 (80%)
DO	81 (24%)	40 (23%)	2 (20%)
Age (median)		43.0 yrs.	43.5 yrs.
Sex			
M		137 (78%)	8 (80%)
F		40 (22%)	2 (20%)
Med.sch. grad.year (median)		1974	1976
Medical Specialty			
FP		108 (61%)	5 (50%)
IM		49 (28%)	5 (50%)
GP		21 (12%)	
Practice Type			
private		106 (60%)	2 (20%)
university		45 (25%)	8 (80%)
VA		10 (6%)	
IHS		9 (5%)	
USAF		6 (3%)	
HMO		2 (1%)	
Practice Size			
solo		30 (17%)	
2-3 drs.		49 (28%)	1 (10%)
4-6 drs.		43 (24%)	1 (10%)
>6 drs.		56 (32%)	8 (80%)
Patient Load per Week			
<20		23 (11%)	1 (10%)
20-75		55 (30%)	6 (60%)
75-125		55 (30%)	3 (30%)
>125		45 (23%)	
% Practice who are Female (mean)		60%	55%

Evaluation of the Study Measures

Two separate measures were formulated for the study. This reflects the conceptual distinction between self-efficacy beliefs and outcome expectations and tests this distinction, empirically. Analyses are done, separately, with each measure.

The Physician Self-Efficacy Measure (PSEM). The PSEM is an 11-item measure. For this initial sample, the range of scores is between 26 and 55; the mean is 42.11 and the standard deviation is 5.80. The distribution of scores is roughly normal.

To evaluate the reliability of this measure, a coefficient of internal consistency was calculated. The Cronbach's alpha for the PSEM is .84. The standardized item alpha is .85, indicating that the item variances are uniform. The correlations between individual items and the scale range from .36 to .66 and the reliabilities of the scales, if each item is deleted from the scale, in turn, range from .82 to .85. This measure has a high degree of internal consistency and each item contributes equivalently to its reliability.

The Physician Outcome Expectations Measure (POEM). The POEM has 14 items. The range is 37 to 65, on this administration; the mean is 47.83 and the standard deviation is 5.25. On a sample of 178 scores, the distribution appears relatively normal, but is positively skewed.

The coefficient of internal consistency for this measure is a Cronbach's alpha of .62. The standardized item alpha is .62, indicating uniform item variances. The correlations between individual items and the scale range from -.03 to .54 and the reliabilities of resulting scales, if each item is deleted, range from .56 to .64. This measure has a lower degree of internal consistency than the PSEM.

Factor-Analysis (PSEM). The principal-components analysis for the PSEM indicates that this is a measure with three factors. Three uncorrelated linear combinations of item values have eigenvalues that are greater then 1.0. These three factors account for 67% of the total variance in PSEM scores. On varimax rotation (which minimizes the number of items that have high loadings on a factor), the three factors that result are consistent with the substantive areas which were identified as salient. The three areas are obesity knowledge unique to medical practice, interpersonal skills and dealing with one's own negative feelings about obesity. The first factor, which loads on items 4,7,8 and 10, embodies the construct of physician self-efficacy in interpersonal relationship skills with patients. These items ask if doctors believe they can "help" patients, "engage" patients, "adjust" their advice to patients. This factor accounts for approximately 40% of the variance in scores.

The second factor (which loads in items 1,2,5,6 and 9) encompasses physician self-efficacy in knowledge of and teaching about, obesity and treatment, which is unique to medical practice. These items ask doctors about their confidence in diagnosing obesity with health risks and in selecting, explaining and rationalizing a treatment plan to and with patients. These two factors, together, account for 55% of the variance in PSEM scores.

The third factor (loading on items 3 and 11) accounts for 12% of the variance in scores and represents the area of self-efficacy in managing negative affect. Third factor items ask how capable physicians believe themselves to be in managing their own negative feelings about obese persons and in maintaining good relationships with obese patients who do not lose weight. Table 2. summarizes information about the factor structure of the PSEM.

Table 2. Principal-Components Analysis and Rotated Factor Matrix - PSEM

Factor	Eigenvalue	Pct. of Var.	Cronbach's a (adj.a)
1	4.43513	40.3	.84 (.84)
2	1.60108	14.6	.79 (.80)
3	1.30626	11.9	.70 (.71)

	Factor 1	Factor 2	Factor 3
PSEM 4	.86601	.02984	.14565
PSEM 8	.85073	.16313	-.00694
PSEM 10	.83050	.16057	.11185
PSEM 7	.56188	.37766	.35070
PSEM 5	.11992	.82422	.09928
PSEM 9	.15513	.78904	.12873
PSEM 1	-.00641	.77426	.07817
PSEM 6	.54742	.56757	.11559
PSEM 2	.41496	.55082	.05502
PSEM 3	.13917	.06849	.86523
PSEM 11	.08339	.16705	.84103

Factor-Analysis (POEM). The principal-components analysis for the outcome expectations measure produces five factors with eigenvalues greater than 1.0. On varimax rotation, the five resulting factors reflect areas which were judged to be salient aspects of obesity treatment outcome expectations: whether or not obesity treatment is important, whether or not obesity is treatable and, if so, with whom does responsibility for treatment lie--the physician, the patient or both. These five together account for 63% of the variation in POEM scores.

The first factor, which loads on items 5,6,7 and 8 and accounts for 20% of the variation in scores, encompasses the idea that obesity is treatable and that treatment is the

responsibility of both patients and doctors ("patients who try, can lose weight," "doctors have influence on their patients," "doctors can be effective counselors.")

The second factor, which accounts for 15% of score variation and which loads on items 1, 2 and 3 (obese patients are at risk, losing weight makes a positive difference, patients who restrict calories lose weight) illustrates the idea that obesity is detrimental to health and happiness, that treatment for it is important and that treatment is effective. Inherently, this factor subsumes that obesity is treatable.

The third factor (loading on items 4,9 and 10 "patients do what they want", " patients attempt, but do not lose weight") is the idea that obese patients are non-compliant and obesity is untreatable. This factor accounts for 11% of POEM variance.

The fourth factor accounts for 10% of score variation and encompasses the idea that obesity is treatable, but that weight loss is often temporary, not permanent. This factor loads on items 11 and 12.

The fifth factor (loading on items 13 and 14) and accounting for 8% of total score variance is the idea that obesity is not treatable ("whatever patients or doctors do, weight loss is only temporary.") Table 3. summarizes information about the factor structure of the POEM.

Table 3. Principal-Components Analysis and Rotated Factor Matrix - POEM

Factor	Eigenvalue	Pct. of Var.	Cronbach's a (adj.a)
1	2.82247	20.2	.70 (.71)
2	2.07753	14.8	.66 (.68)
3	1.49493	10.7	.51 (.51)
4	1.32669	9.5	.43 (.43)
5	1.10836	7.9	.46 (.47)

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
POEM 7	.79476	.11266	.01176	.04813	.09821
POEM 6	.79109	.13539	.14929	.05970	.09577
POEM 5	.65423	.17780	-.17080	-.18513	.22271
POEM 8	.56831	.01169	.10672	.27056	-.22959
POEM 2	.12708	.85444	-.02816	.06424	.04658
POEM 1	.00294	.77519	-.28953	.12448	-.09966
POEM 3	.22066	.65138	.11892	-.17402	.00966
POEM 9	-.15430	-.02288	.70620	.00723	.30283
POEM 10	.20896	.07071	.70247	-.01286	.04575
POEM 4	.00374	-.31528	.63728	.08723	-.29909
POEM 11	-.04105	.04792	.04905	.85514	.11589
POEM 12	.42893	-.11543	-.07439	.58912	-.16516
POEM 14	.14622	-.10938	.00225	-.09099	.81605
POEM 13	.02166	.16482	.26096	.45020	.65701

Relationship Between the PSEM and the POEM. When plotted against each other and correlated, the total PSEM and POEM scores show a moderately strong, positive relationship (r = .46) that is linear. Doctors whose self-efficacy beliefs about treating obesity are strong are also more likely to have high outcome expectations for obesity treatment. This correlation coefficient suggests that though they are not independent of one another, self-

efficacy beliefs and outcome expectations are empirically as well as conceptually distinct.

The first two factors of each measure also correlate with each other and with each total score. A correlation matrix of the total scores and the first two factor scores for each measure follows (Table 4.).

Table 4. Correlation Matrix of PSEM and POEM Total Scores and First Two PSEM and POEM Factor Scores

Correlations	PSEM	POEM	PSEFAC1	PSEFAC2	POEMFAC1	POEMFAC2
PSEM	1.0	.459**	.695**	.588**	.432**	.316**
POEM		1.0	.397**	.254**	.647**	.413**
PSEFAC1			1.0	-.006	.468**	.094
PSEFAC2				1.0	.186	.365**
POEMFAC1					1.0	.094
POEMFAC2						1.0

* signif at .05 ** signif at .01

The interrelationships between PSEM and POEM factor scores, with each other as well as with both total scores, is further evidence of the relatedness of the constructs of self-efficacy and outcome expectations.

When placed on the same metric, to compare the scores to each other, the mean of the PSEM is 3.83 (s.d. = .38) and the mean of the POEM is 3.40 (s.d. = .53). PSEM scores are

significantly higher (t = -11.45, p < .01) than POEM scores. In general, doctors' beliefs about their own capability in treating obese patients are greater than their beliefs about the outcomes of obesity treatment.

Evaluation of the Physician Behavior Variables

Items 10 a.,b.,c. and d., items 11.a. and b. of the Physicians Practice Measure asked physicians about their behavior with patients in the past month and the past year. These first six items related directly to study hypotheses. The final two questionnaire items were more general. Item 12. attempted to determine whether knowing when to refer a patient to an obesity expert is part of primary care obesity treatment self-efficacy.

The final question (whether a physician would be willing to be interviewed about obesity treatment) sought to test whether stronger self-efficacy doctors would be more willing to be interviewed than would weaker self-efficacy doctors. The answer to this item also determined the pool of study subjects who were approached for an interview.

The spread of scores for the reported percent of patients seen in the past month who were obese (item 10a.) ranged from 0% to 100%. The mean for this variable is 28% ($s.d.$ = 18%.) The distribution of scores is steep and is positively skewed. More doctors see a low percent of obese patients than a high percent. This variable is not normally distributed.

The distribution of scores for the reported percent of obese patients with whom the physician discussed weight loss (10b.) ranges from 0% to 100%. The mean is 52% (s.d.= 33%). The distribution of scores is not normal; it is steep and irregular and the numbers do not coalesce in to a smooth shape, but instead in to a jagged, irregular "mountain range" shape. Doctors discuss obesity with many different percents of their patients.

The distribution of scores for item 10.c. also has a steep, jagged, irregular shape. Its values range from 0% to 100% with a mean of 50% (s.d. = 38%). Doctors initiate a discussion of obesity with many different percents their patients.

The distribution of scores for the reported percent of patients on a weight loss program (10d.) ranged from 0% to 100%, the mean was 30% (s.d. = 28%). The distribution of scores is steep and is positively skewed. Lower, rather than higher, percents of study doctors' patients are on weight loss programs.

The scores on item 11.a. (number of patients for whom doctors sought consultation) are very abnormally distributed. Scores range from 0 to 4,000. The distribution of scores is very steep and very positively skewed. Some subjects responded to this item idiosyncratically (e.g. "all of my patients") and many responded by naming "dietician" or "nutritionist" as the

person to whom patients were most often "referred out". The majority of respondents sought consultation on none of their obese patients. Due to the irregularity of item responses, this item was not used in the study analyses.

The scores on item 11.b. (the number of patients referred out of a practice for primary care) are also extremely abnormally distributed. It is extremely positively skewed and steep. It is rare for a patient to be referred elsewhere for primary care, among study doctors. This behavior has a low base rate and, therefore, was not used in study analyses.

The responses for the final two Physician Practice Measure questions are dichotomous. For question #12., 77 doctors (43%) have a patient currently in their practice who they would like to refer to an obesity specialist and 96 (54%) do not. Four doctors did not answer this question. For the final question, "Are you willing to be interviewed?" 76 doctors (43%) agreed to an interview and 101 (57%) did not.

Association of Physician Characteristics with Self-Efficacy Scores

When self-efficacy (PSEM) and outcome expectations (POEM) scores are examined for differences on the basis of medical specialty, sex, practice type, practice size, patient load per week, state of residence and medical degree, few differences emerge. After critical values are

adjusted for experimentwise error rate, using Tukey multiple comparison procedures, there are three differences.

Type of medical degree is associated with a difference in POEM scores. D.O.'s have significantly higher outcome expectations than do M.D.'s for their obesity treatment behaviors (Table 5.). One type of medical practice is associated with a difference in both PSEM and POEM scores. Doctors in solo practice score significantly higher on both measures (Table 5.).

Table 5. Medical Degree, Practice Size and PSEM and POEM Scores

Medical Degree	Means and SD		F	
	PSEM	POEM	PSEM	POEM
entire pop.	42.11 (5.8)	47.83 (5.25)		
M.D.	42.08 (5.3)	47.31 (4.9)		
D.O.	42.48 (6.9)	49.88 (6.1)	.15	7.60**
Practice Size	PSEM	POEM		
solo	44.67 (5.5)	50.13 (5.4)	2.89*	3.38*
2-3 doctors	42.2 (6.6)	47.98 (4.5)		
4-6 doctors	41.19 (5.3)	47.55 (6.3)		
6+ doctors	41.18 (5.2)	46.47 (4.4)		

* signif at .05 ** signif at .01

There is also one patient load size which is associated with a difference in scores. Doctors who see fewer than 20 patients per week score lower on the self-efficacy measure than doctors seeing more than 175 patients each week. When patient load size is regressed on self-efficacy scores, this number predicts both the PSEM and the POEM, in the expected direction. The more patients seen per week, the higher are

higher are the self-efficacy beliefs and the outcome expectations (Table 6.).

Table 6. Patient Load and PSEM and POEM Scores

Patients	Means and SD		F		R-square	
per week	PSEM	POEM	PSEM	POEM	PSEM	POEM
<20	38.68 (5.0)	45.83 (3.7)	3.91*	6.49**	.04	.04
20-75	42.25 (5.6)	47.21 (4.9)				
75-125	42.58 (5.3)	47.88 (4.4)				
125-175	42.73 (6.1)	48.63 (6.5)				
175+	42.80 (7.6)	50.0 (6.0)				

* signif at .05 ** signif at .01

With a few exceptions, demographic and practice characteristics are not associated with differences in self-efficacy beliefs or in outcome expectations. No hypotheses were made about these relationships.

Association of Physician Behaviors and Self-Efficacy Scores

Physician-reported practice behaviors are of particular significance for this study because they provide evidence for the validity of study measures. To explore physician self-efficacy, as exemplified by behavioral choice, effort and persistence, Physician Practice Measure items 10 a.,b.,c. and d. and 11 a. and b. asked for quantitative estimates of recent practice behaviors. These behaviors were considered, for this study, to be independent evidence

of self-efficacy beliefs in obesity treatment. The behavioral estimates were regressed on the self-efficacy scores to test if self-efficacy scores predict self-efficacious behaviors.

First a correlation matrix was calculated for self-efficacy measure scores and physician behavior variable scores (Table 7.).

Table 7. Correlation Matrix of Physician Behavior Scores and PSEM and POEM Scores

Correlations	PSEM	POEM	PPM10a.	PPM10b.	PPM10c	PPM10d.
PSEM	1.000	.459**	.194	.320**	.292**	.343**
POEM		1.000	.096	.252*	.252*	.237*
PPM10a.			1.000	.151	.190	.032
PPM10b.				1.000	.807**	.512**
PPM10c.					1.000	.423**
PPM10d.						1.000

* signif at .05 ** signif at .01

When self-efficacy scores (PSEM) are used in a univariate regression analysis, they predict the percent of patients seen in a doctor's practice who are obese, the percent of obese patients with whom the physician discusses weight loss, the percent of patients with whom the physician initiates such a discussion and the percent of patients who are on a weight control program. The higher a doctor scores

on the self-efficacy measure, the higher a proportion of efficacious behaviors of choice, effort and persistence in obesity treatment he or she reports (Table 8.).

Table 8. Physician Behaviors and PSEM Scores

Physician Behaviors	B	SE B	Beta	F	R-square
Proportion of patients who are obese	.007283	.002337	.237101	9.71*	.06
Proportion of patients discussed weight loss with	.020286	.004177	.355863	23.58**	.13
Proportion of patients initiated discussion with	.020290	.004796	.325274	19.16**	.11
Proportion of patients on a weight loss program	.017997	.003577	.373548	25.30**	.14

* signif at .05 ** signif at .01

A similar pattern emerges when physician behaviors are regressed on PSEM factor scores. The first factor predicts the latter three behaviors; it does not predict the first. The second factor scores (obesity knowledge) predicts behaviors in an identical pattern to the total PSEM score; it predicts behaviors 10a. through 10d. The third factor scores (affect management) predicts no behaviors. The reliability of the third factor (a = .70) is less than those for the first and second factors (a = .84 and .79, respectively), but not very much less, so it is unlikely

that lack of reliability accounts, totally, for the lack of predictive power of the third factor. This information is summarized in Table 9.

Table 9. Physician Behaviors and PSEM Factor Scores

Physician Behaviors	B	SE B	Beta	F	R-square
Proportion of patients who are obese					
PSEFAC 1	.016359	.013849	.092128	1.40	.01
PSEFAC 2	.044140	.013236	.252731	11.12**	.07
PSEFAC 3	.009869	.014363	.053739	.47	.01
Proportion of patients discussed weight loss with					
PSEFAC 1	.094711	.024937	.283540	14.42**	.08
PSEFAC 2	.073116	.025143	.220797	8.46**	.05
PSEFAC 3	.020577	.026889	.059251	.58	.00
Proportion of patients initiated discussion with					
PSEFAC 1	.092166	.028580	.245611	10.40**	.06
PSEFAC 2	.082227	.028536	.220806	8.30**	.05
PSEFAC 3	.018359	.030666	.046694	.36	.00
Proportion of patients on a weight loss program					
PSEFAC 1	.093654	.021096	.334911	19.71**	.11
PSEFAC 2	.055723	.021524	.202961	6.70*	.041
PSEFAC 3	.009420	.022980	.032802	.16	.001

* signif at .05 ** signif at .01

The outcome expectations scores predict physician behaviors almost as well as do the self-efficacy scores. Outcome scores predict the proportion of patients with whom a physician discusses weight loss, the proportion with whom he or she initiates such a discussion and the proportion of

his or her patients who are on a weight control program. It does not predict proportion of a physician's patients who are obese (Table 10.).

Table 10. Physician Behaviors and POEM Scores

Physician Behaviors	B	SE B	Beta	F	R-square
Proportion of patients who are obese	.004132	.002663	.120986	2.4	.01
Proportion of patients discussed weight loss with	.017360	.004785	.272588	13.16**	.07
Proportion of patients initiated discussion with	.019830	.005436	.276300	13.31**	.08
Proportion of patients on a weight loss program	.044137	.004106	.266533	11.85**	.07

* signif at .05 ** signif at .01

When physician behaviors are regressed on POEM factor scores, only the first factor (obesity is treatable and treatment is a shared responsibility) has good predictive power. It predicts all of the physician behaviors. Factor two (obesity is treatable and treatment is important) predicts two behaviors and factor three (patients are non-compliant and do not try) predicts one behavior. Only the first two POEM factors have respectable reliability coefficients (a = .70 and .66, respectively). A summary of POEM factor scores is contained in Table 11.

Table 11. Physician Behaviors and POEM Factor Scores

Physician Behaviors	B	SE B	Beta	F	R-square
Proportion of patients who are obese					
POEFAC 1	.026132	.013686	.153047	3.65*	.02
POEFAC 2	.009352	.013913	.054442	.45	.00
POEFAC 3	.004618	.014556	.025726	.10	.00
POEFAC 4	-.033493	.014789	-.180666	.52	.00
POEFAC 5	.009468	.014171	.054111	.45	.00
Proportion of patients discussed weight loss with					
POEFAC 1	.080292	.025594	.246600	9.84**	.06
POEFAC 2	.061865	.026092	.188852	5.62*	.04
POEFAC 3	.026023	.027686	.076018	.88	.01
POEFAC 4	-.088247	.028636	-.051615	.41	.00
POEFAC 5	-.021078	.027009	-.063173	.61	.00
Proportion of patients initiated discussion with					
POEFAC 1	.072698	.029547	.195707	6.05*	.05
POEFAC 2	.059190	.029931	.158378	3.91*	.04
POEFAC 3	.028782	.031624	.058334	.52	.00
POEFAC 4	.016523	.032686	.040967	.26	.00
POEFAC 5	.000573	.030875	.001508	.00	.00
Proportion of patients on a weight loss program					
POEFAC 1	.063613	.021371	.234692	8.86**	.06
POEFAC 2	.034391	.021942	.126111	2.45	.02
POEFAC 3	.050765	.022745	.178140	4.98*	.03
POEFAC 4	-.025364	.023782	-.086185	1.14	.01
POEFAC 5	-.021477	.022462	-.077325	.91	.01

* signif at .05 ** signif at .01

The self-efficacy and outcome expectations measures were also used together in a multiple regression analysis. When behaviors are regressed on both scores in a stepwise

fashion using a criterion of $p < .05$, PSEM scores, alone, predict physician behavior (Table 12a.).

Table 12a. Physician Behaviors and PSEM and POEM Scores with a Criterion of .05.

Physician Behavior	B	SE B	Beta	F	R-square
Proportion of patients who are obese	.006886	.002356	.223829	2.9*	.05
Proportion of patients discussed weight loss with	.019707	.004215	.342919	4.7**	.12
Proportion of patients initiated discussion with	.020468	.004846	.315853	4.2**	.10
Proportion of patients on a weight loss program	.017759	.003623	.366383	24.02**	.13

* signif at .05 ** signif at .01

POEM scores do not meet the criterion of .05 and are dropped out of the equation (Table 12b.).

Table 12b. Physician Behaviors and PSEM and POEM Scores with a Criterion of .05

Physician Behaviors	Beta In	Partial	Min toler	T
Proportion of patients who are obese	.021034	.019003	.781860	.24
Proportion of patients discussed weight loss with	.139769	.130365	.767658	1.7
Proportion of patient initiated discussion with	.161290	.148801	.766227	1.9
Proportion of patients on a weight loss program	.124419	.118756	.788746	1.5

* signif at .05 ** signif at .01

However, when physician behaviors are regressed on PSEM and POEM scores with no criterion, both show some predictive power (Table 13.).

Table 13. Physician Behaviors and PSEM and POEM Scores without Criterion of .05

Physician Behaviors		B	SE B	Beta	F	R-square
Proportion of patients who are obese	PSEM	.006583	.002672	.214005	4.28	.05
	POEM	.000718	.002966	.021034		
Proportion of patients discussed weight loss with	PSEM	.015835	.004785	.275547	12.46**	.13
	POEM	.008901	.005303	.139769		
Proportion of patients initiated discussion with	PSEM	.015414	.005491	.237870	10.88**	.12
	POEM	.011576	.006082	.161290		
Proportion of patients on a weight loss program	PSEM	.14987	.004063	.309198	13.31**	.15
	POEM	.006599	.004464	.124419		

* signif at .05 ** signif at .01

Self-efficacy (PSEM) scores predict all physician-reported behavioral estimates. This tests the validity of the measure. The higher a doctor scores on the self-efficacy measure, the more often he or she reports efficacious behaviors of choice, effort and persistence in obesity treatment behaviors.

Outcome expectations scores (POEM) predict physician behaviors also, but they are a less powerful predictor. The reliabilities of the two predictor variables are quite different: the PSEM has a reliability coefficient of $\underline{a}$ =.84 and the POEM as a coefficient of $\underline{a}$ = .62. The lesser predictive power of the POEM may be, at least, partly accounted for by this lesser reliability.

Relationship Between Other Study Variables and Scores

The self-efficacy measure score was tested for its association with whether doctors had a patient currently in practice whom they would like to refer to an obesity specialist. There is no significant difference in scores for those who have such a patient and those who do not. Knowing when to refer to an obesity expert is not associated with a higher self-efficacy score.

When scores were tested for their association with willingness to be interviewed, there was found to be a positive association ($t = 2.23$, $p < .05$.) Those scoring higher, more often agreed to be interviewed.

The outcome expectations measure was similarly tested. There was not found to be a difference in scores for those who had an obese patient they would like to refer to an expert and those who did not. Higher outcome expectations are not associated with wishing to refer a patient to a specialist. There was also no difference found on this measure between those willing to be interviewed and those who were not. Those with higher outcome expectations were not more willing to be interviewed.

Interpretation (Quantitative)

Study Sample. The original group of 365 doctors was every primary care physician who could be readily identified in the two areas. It was assumed to be broad-based on the

study demographic and practice variables because it sought to include all primary care physicians, practicing under a variety of auspices, in two different geographic areas.

The return rate for questionnaires, about 50%, was good, when compared to other studies of primary care physicians. The sample of doctors who returned their questionnaires was representative of the study target sample, with regard to medical degree and geographic area of residence. On these variables, the doctors who participated and those who did not were similar.

The similarity, between those who returned their questionnaires and those who did not, on other study variables is not known. However, there is wide variation, on all variables--demographic, practice and behavioral--among the doctors who participated in the study.

There is also wide variation in the scores on the self-efficacy measures of those who participated. Self-efficacy in treating obesity appears to be roughly normally distributed among study subjects. The scores on the outcome expectations measure are not as normally distributed; they are positively skewed. More doctors have low outcome expectations for obesity treatment than high outcome expectations.

Generalizability. The high degree of variation on study variables and measure scores is supporting evidence that the actual study sample is similarly as broad-based, as

was the study sample sought. The sample appears to be representative of the study population. The generalizability of study findings, therefore, is fairly strong.

The return rate for D.O.'s was better than it was for M.D.'s (54% as opposed to 46%). D.O.'s are slightly over-represented in the study sample, as compared to the general population of doctors. However, overall, many more M.D.'s than D.O.'s participated in the study. This reflects the reality of more M.D.'s than D.O.'s being in medical practice in America.

Goals of the Study. Two measures were developed and tested. Self-efficacy beliefs were the primary focus of the study, but outcome expectations were measured also. Outcome expectations are of interest in themselves because they are a closely-related construct. They are also a potential confound, for doctors reporting their self-efficacy beliefs.

The scale developed to measure self-efficacy is a highly reliable one. The PSEM's items add weight to it's reliability uniformly. The distribution of scores is roughly normal, providing supporting evidence that self-efficacy, like many other human abilities and characteristics, is normally distributed throughout the population and that the study sample is an adequate one.

The three areas of importance in measuring self-efficacy in the treatment of obesity--obesity knowledge

unique to medical practice, interpersonal skills and management of negative affect--are reflected in the analysis of factors for the measure. These three factors, together, account for 67% of the variation in the scores. A doctor's interpersonal skills with patients, that accounts for 40% of the variation in scores, is clearly the most important factor in physician self-efficacy, as measured here. Obesity knowledge (15%) and management of negative affect (12%) are the other factors that contribute to self-efficacy in treating obesity.

The scale developed to measure outcome expectations is a less reliable scale and the distribution of scores is less normal; it is positively skewed. Doctors, therefore, whether they have strong or weak self-efficacy beliefs, tend to have low outcome expectations for obesity treatment.

Interpreting the pattern of factors that emerges from the analysis for the outcome expectations measure is difficult. The important factors for treatment outcome--whether a physician thinks that obesity can be treated, whether she or he thinks it is important to treat obesity and with whom the physician thinks responsibility for treatment lies--with the doctor or with the patient--are present. They do not as clearly distinguish between separate items, as expected. The issue of the "treatability" of obesity (or its untreatability) is explicitly or implicitly a part of each item.

When the scores (self-efficacy and outcome expectations) are compared to each other within individuals, outcome expectations scores are lower than self-efficacy scores. Doctors are more self-efficacious about their own treatment behavior than about treatment outcome. Maintenance of normal weight, as a health "endpoint," especially over a life span, is notoriously multidetermined. It seems reasonable that physicians are more sure of something over which they have personal control (their own knowledge and skills,) rather the than other factors which influence that endpoint.

Research Questions

There are few differences in self-efficacy scores on the basis of age, sex, medical specialty, year of medical school graduation, practice type or size, number of patients normally seen per week, percent of patients seen who are female, area of residence or medical degree. There are a few exceptions.

Doctors in solo practice score significantly higher on both measures. This is an uncommon practice type, particularly in Michigan and this group is most likely highly self-selected. One assumption that might be made about this group is that solo practitioners are different from doctors who practice in a group, on a number of personality variables. The high degree of autonomy and

self-sufficiency that solo practice necessitates may "over-determine" self-efficacy in any area.

Self-efficacy scores increase with number of patients seen per week. This increase is gradual, but significant and the biggest difference is between doctors seeing fewer than 20 patients each week and doctors seeing more than 175 patients each week. "Performance enactment", or doing the required behavior, is the most powerful source of efficacy information, according to Bandura's theory. Consistent with theory, doctors who see more patients and, therefore, are most likely do more of the requisite obesity treatment behaviors are more self-efficacious.

One other demographic difference in scores emerges--those with D.O. degrees score significantly higher on the outcome measure than M.D.'s do. Osteopathic physicians have higher outcome expectations than do M.D.'s. It may be that the philosophical underpinnings of osteopathy contribute to that optimism.

Study Hypotheses

The self efficacy measure predicts 4 out of 6 self-efficacious behaviors (Hypotheses 1 through 4.) Higher self-efficacy scores predict a higher percent of patients seen in a practice who are obese, a higher percent with whom obesity is discussed, a higher percent with whom the doctor initiates such a discussion and that a higher percent of patients in the practice will be on a weight loss program.

These behavioral reports represent choice, effort and persistence, i.e. efficacious obesity treatment behavior.

Hypotheses 5 and 6 dealt with scores that predicted behaviors that happen only rarely. Therefore, these hypotheses were not formally tested. Interestingly, whether doctors feel themselves to be efficacious or not, they keep obese patients in their practices and do not refer them to another doctor for primary care.

When each of the three PSEM factors is used as a separate scale, the predictive power of each of the first two factors (interpersonal skills and obesity knowledge) compares to that of the total scale. Individually, knowledge and interpersonal skills, each, predict physician behaviors.

The affective component of the scale, when examined on its own, has poor predictive power. From a counseling point of view, this is surprising. It was expected that the way a doctor feels about obese patients, particularly obese patients who do not lose weight, would be important to her or his self-efficacy in obesity treatment. This does not appear to be the case. Interpersonal skills and knowledge about obesity are far more important in predicting efficacious behaviors.

The affective scale is a two-item scale. Though its reliability is less than that of the other two factor scales, (by approximately .10,) it still respectable ($\underline{a}$ =

.70,) so it seems unlikely that lack of reliability, alone, accounts for its lack of predictive power. The lack of a relationship between negative feelings about obesity and self-efficacious obesity treatment behaviors appears to be a bona fide finding and not just a statistical artifact.

Poem scores also predict physician behaviors, in the expected direction. Higher outcome expectations scores predict that a doctor will discuss obesity with higher percent of patients, will initiate this discussion with a higher percent and will have a higher percent of patients on a weight loss program than do doctors with lower scores. Outcome expectations scores do not predict that a higher proportion of patients seen in practice will be obese.

Neither self-efficacy nor outcome scores were associated with knowing when to refer a patient to an obesity expert. Self-efficacy is associated with a willingness to be interviewed. The interviewed group, however, is a diverse one.

Qualitative

Introduction

The qualitative part of the study was designed to address the question of what attributions physicians make,

themselves, for the development and maintenance of their self-efficacy in obesity treatment.

The results of the qualitative data analysis are presented according to principles of qualitative analysis: they are sorted and examined to generate categories; patterns are identified, that are based on self-efficacy principles of efficacy information sources and self-efficacy dimensions. Practice themes emerged from the interplay of these self-efficacy principles and the manner in which the problem of obesity and its treatment was conceptualized by primary care physicians. Physician attributions, within these conceptualizations, were identified which support or which weaken the link between self-efficacy beliefs and behavior.

Qualitative Sample. A total of 10 primary care physicians were interviewed for the qualitative part of the study. Of the 10, two were females, two were D.O.'s and two were African-American. Five were family practitioners and five were internists; two were community practitioners and eight practiced primarily in university clinics. Their ages ranged from 38 to 57, their weights from normal to moderately obese. They all resided in Michigan.

By the criteria of the study measures, six scored above average in self-efficacy and four below average. Five scored above average in outcome expectations and five scored below. Seven subjects had "consistent" scores, four had

above average scores on both measures, three had below average scores on both. Of the three who were "inconsistent" scorers, two were high on self-efficacy and low on outcome expectations and, for one subject this was reversed.

Although the initial recruitment of interview subjects was done on the basis of study scores, many doctors refused the request for an interview. Those interviewed were selected solely on the basis of their agreeing to an interview, not on the basis of measure scores. It was, therefore, partly fortuitous that the interviewees were a varied group. A doctor's score was not noted immediately prior to the interview to provide some control for interviewer bias.

The qualitative sample was quite varied on all study variables including the study measures. There was no strong evidence that this group was not fairly representative of the study sample as a whole or, indeed, of the study population. University-affiliation, however, is over-represented in the study sample (25%) and even more in the qualitative sub-sample (80%).

Sources of Efficacy Information

Behavioral Enactment. All 10 doctors mentioned that experience in practice treating obese patients has been their primary means of their learning how to treat obesity, how to assess their competence and how to improve their

skills. All subjects used phrases like "I've gotten more comfortable in addressing the problem over time," "I've become more effective with my patients over time" and "my patients have been my teacher and their response is my guide." Seeing patients, particularly the same patients over time, has provided a feedback loop, so that treatment approach, it's outcome (positive or negative) and possible modification developed along with and as a part of the doctor-patient relationship. All the doctors brought up the "tempering" of their outcome expectations over time: "I'm more humble now in having limited goals with patients;" "I see that 'holding the line' is a success for some obese patients."

Role Modeling. Vicarious learning through role-models, in a positive sense, was mentioned by only two doctors. This occurred because of specific qualities of a training site, for one doctor, and of "mentoring" individuals, for the other doctor.

More common was role-modeling in a negative sense. Doctors in training saw management of obesity being ignored; it was not specifically addressed as a training issue: "It wasn't discouraged, but it wasn't part of the program."

Two doctors mentioned the importance of their own life experience and use themselves as role models for their patients: "I've learned through my own successful and

unsuccessful experiences with diet and exercise" and "I'm an exercise nut."

Persuasion. Exhortative encouragement during training, during medical school, internship and residency, was considered by few doctors as a source of efficacy information. It was not a meaningfully remembered part of the medical education for eight doctors. Four specifically remembered that it had no place in their medical educations; these doctors' training occurred historically earlier than that of other subjects. Three were not sure if it had been a part of medical education or not, but knew that it had not been stressed.

One doctor remembered an occasional lecture about the causes of obesity, but nothing about the management of obesity. The two doctors whose training site or supervision had specifically included an obesity orientation did report that their self-efficacy was fostered by encouragement during training.

In general, doctors who trained more than 15 years ago had not had encouragement to consider obesity treatment to be a significant part of physician-provided medical care.

Physiological Cues. Emotional reactivity, as reported by subjects, represents cues about self-efficacy in the form of autonomic reactivity. All study doctors considered obesity treatment to be difficult; all study doctors stated that they have felt more comfortable over time, as they have

gained experience with treating obesity. Enactment behaviors have increased self-efficacy.

Four of the 10 doctors stated, unequivocally, that they enjoy treating obese patients, get satisfaction out of it and have a strong (though tempered) sense of their own effectiveness. Two are self-described "true-believers," who see themselves as proselytizers for healthy eating and exercise behaviors. One has a social mission and sees providing competent and compassionate obesity treatment as treating an under-served group. One doctor has a deeply felt sensitivity to and respect for patients whose sense of well-being is dependent on their being heavy.

Two other doctors describe treating obese patients with enthusiasm. Their outcome expectations are frankly low and their feeling of mastery is unusually independent of outcome. For one, early training experiences in obesity treatment were prominent. This doctor describes feeling "resigned," not demoralized about treating obesity and sees it as just an ordinary "problem of living."

For the other, obesity treatment is called "futile" but not "frustrating." The focus of obesity treatment is on alleviation of a specific medical condition which would be ameliorated by a loss of weight. Focus is at a very concrete level and on limited goals, e.g. a change in a lab value. These goals are shared with the patient.

Four doctors expressed neutral or negative feelings about treating obese patients. Reasons given include patients not being interested; patients only wanting to talk and not make behavior changes; lack of clarity for themselves (and for their patients) about whether obesity without concomitant medical problems is really a medical problem; lack of a clear medical treatment alternative, if patient behavior does not result in desired outcomes or results in outcomes which are temporary and, lastly, fear of offending patients.

Other Sources of Efficacy Information. The importance of protecting and maintaining a good doctor-patient relationship was spontaneously mentioned by most study doctors. Expressed positive patient response to physician treatment approach appears to be a primary criterion by which self-efficacy is judged.

An obese patient who is not well-engaged in making eating or exercise behavior changes or, who is engaged but is not making clear progress but who continues to stay in treatment and at least be monitored or who is not gaining weight or whose hypertension is not badly out of control, may still engender feelings of self-efficacy in his or her physician.

Physicians find patients' liking their approach to be rewarding in and of itself. Success in the doctor-patient

relationship is a desired outcome and can be construed as independent from any other outcome.

How the Problem of Obesity is Defined

One of the conclusions drawn from the interviews is that how the problem of treating obesity is defined, determines what goals are set for treatment, how they are arrived at, how progress toward them is measured and how evidence which potentially disconfirms treatment self-efficacy is handled.

Pattern One. Four study doctors consider obesity treatment to be necessary primarily when obesity is accompanied by, or is a partial cause of, medical problems which would be ameliorated with a loss of weight and an increase in activity. Problems most commonly mentioned in this regard are hypertension, diabetes and osteoarthritis. Goals for obesity treatment and measuring progress toward them flow in an orderly manner from treating this "other" medical problem (e.g. hypertension).

Dietary control of hypertension without medication is an example. The patient's blood pressure values, their placement in a healthy or pathological range and the change in values over time are the treatment focus. These may be shared in specific detail with the patient. Control of the "other" health problem (hypertension) is measure of treatment success, not control of weight. If dietary control is unsuccessful for any reason, medication treatment

of hypertension is implemented, with similar specific monitoring of blood pressure values.

Successful treatment is, therefore, possible under a plethora of doctor and patient treatment behaviors and outcomes. This view of obesity treatment was characteristic for doctors with "inconsistent" self-efficacy/outcome expectations scores.

Pattern Two. Four doctors consider obesity treatment to be an important part of on-going, preventive medical care and, as such, important for any patient who is obese. The primary measure for treatment success, in this case, is weight loss, though increase in activity level is also a measure. Increased activity level is not as verifiable and is, therefore, not as powerful a shared, "socially mediated" treatment indicator as is weight loss. The onus is necessarily on patient behavior. The physician's role is one of educator, facilitator, or even coach.

The problem comes, for the physician, with how to handle evidence that disconfirms his or her self-efficacy, i.e. when a patient does not verifiably change eating behaviors or increase activity level (does not lose weight). For a patient who is not very obese, (perhaps only 20% over recommended weight,) who has no current medical sequelae to his or her obesity and whose level of subjective distress is not high, the physician is left with self-doubt, when the patient does not lose weight.

Both physician and patient can get lost in the "maze" of health maintenance: for both patient and physician, in their hearts they know it is right, but the patient "fails" in terms of progress on the criteria to which both the patient and the doctor subscribe. The patient's failure then becomes the physician's and they are both left feeling lost and inefficacious.

Pattern 2a. One way out of the "maze" is to focus on the "bigger picture." Goals, then, become attached to something more general than those which are part of a particular practice with a particular patient. An example of such a transcendent framework is a belief that exercise is good and that one is a crusader for that good. An obesity treatment "true believer" can integrate failure, in a manner that protects self-efficacy, in the same way that a missionary can. Two study doctors, both with consistent and high self-efficacy and outcome expectations scores illustrated this approach to obesity treatment.

Pattern 2b. Another path out of the "maze" is for the physician to frame the problem of obesity as psychological and to look for the "meaning" behind the "symptom." The treatment, then, flows from this underlying meaning. This focus could be on any distressing emotional sequelae of obesity or of treatment. Emotional concomitants of obesity and obesity treatment include anxiety, depression, feelings of shame and poor self-esteem.

The overall treatment goal, then, becomes simply for the patient to feel better. The means which can be employed to achieve this end are extremely varied and include referral for psychiatric evaluation or psychotherapy, provision of supportive counseling and/or provision of a structured program to provide eating and exercise behavior changes. This is, at times, provided by the physician him or herself within the format of primary care, or a referral is made to community resources for structure and support.

The criterion for progress in this approach is broadly defined because "feeling better" can be individualized and is subjective. It can be also most any positive attitude or behavior change. The physician's self-efficacy is somewhat protected from disconfirming information because part of the job is just to try, to "be there" with the patient, independent of treatment outcome. This way of conceptualizing the problem and the treatment cuts across subgroups based on self-efficacy and outcome scores; it characterized two consistently high doctors and a consistently low doctor.

A variation of this psychological "reframing" of the problem is treatment of a significantly obese patient who has presently no medical sequelae, but who has multiple risk factors for these sequelae in the future. This patient associates being obese with a feeling of well-being and doesn't feel good when she or he is not. The physician

needs not only to educate the patient about the link between current habits and future quality of life, but will be pushed to adjust his or her own standards of care and health to include a diversity of body weights.

One study participant mentioned that the D.O. philosophy holds that the power of healing, regeneration and recovery lie within the body itself. This belief could also support the physician's ability to see the "bigger picture," and maintain self-efficacy, particularly in the face of disconfirming feedback. This viewpoint is also supportive of D. O.'s having optimistic outcome expectations.

Doctor-Patient Matching

Consensus between the doctor's conceptualization of the problem and the treatment and the patient's conceptualization are described by the doctors as important for their self-efficacy. The interplay between development and maintenance of the doctor-patient relationship and development and maintenance of self-efficacy in obesity treatment seems very close.

Enactment behaviors, particularly those which engender positive patient response are described as very powerful for the physician. There may be an on-going, implicit process of matching which goes on, so that patients "self-select" out of a doctor's practice if that doctor is not, from the patient's point of view, treating the "right" problem. This

"matching" should have the effect of supporting physician self-efficacy.

Interpretation (Qualitative)

What High and Low Self-Efficacy Doctors Have in Common. Even given that the interviewees were self-selected on the basis of their not being reticent and inexpressive, the degree of opinionatedness and strong feelings expressed was striking. Self-efficacious or not about obesity treatment, all study subjects had a lot to say about it and said it with strong convictions.

All study subjects considered treatment of moderate to severe obesity (25% or more over ideal body weight) to be a common problem, affecting between 1/4 and 1/3 of patients seen in their practices.

All interviewees considered obesity treatment to necessitate judgment and behaviors which have a high degree of difficulty. All considered obesity treatment to be as hard as or harder than treatment for other chronic problems which are dependent on patient behavior change.

Doctors referred patients to mental health professionals for help in treating symptoms of major mental illness, for eating disorders of anorexia nervosa and bulimia nervosa and sometimes for depression and anxiety. They did not, generally, refer their patients for treatment

of obesity. They did not seek psychological consultation for themselves in dealing with their obese patients.

Doctors view patients as referring themselves to community programs for treatment of the problem of obesity or treating themselves with information garnered from the mass media, rather than presenting themselves to their doctors for treatment of obesity as a medical problem.

All doctors thought that management of chronic disease was not well-covered in their medical educations. Some felt this was a real deficit because this would have been helpful in teaching them about management of obesity.

No physician felt it was appropriate not to treat obesity "just" because they don't like it. It was rare for obese patients to referred out of a practice for primary care elsewhere. Doctors who said that they like treating obesity think that they are unique and imagine that their colleagues generally like it less than they do.

Attributions That Foster Self-Efficacy. The two main issues that appeared to block the development and maintenance of high self-efficacy obesity treatment in physicians (besides the absence of experience) were ambiguity about the problem (and, therefore, the treatment goals) and coping with disconfirming evidence of one's self-efficacy beliefs and one's outcome expectations. The ability to resolve issues of ambiguity and disconfirmation,

therefore, was important in the fostering of one's self-efficacy.

There appeared to be two main ways of conceptualizing competence in this treatment area that foster resolution. One was to consider obesity to be a problem that was a part of other health problems a patient had and that treating it (including considering the appropriateness of treating it) was part and parcel of treatment of the other medical problems. Medical "ownership" of the problem was clear, as were the goals of obesity treatment. If treatment was unsuccessful, there was a medical "fallback" position, in treatment of the concomitant medical problems via medications or other medical means.

The other conceptualization of competence was to see obesity treatment as a part of on-going preventive primary medical care. This had more ambiguity in terms of treatment goals and more to deal with in terms of coping with disconfirming evidence of one's competence. Medical "ownership" was less clear. Identification with an overarching powerful idea, that transcends particular problems with particular patients, helped in resolving ambiguity about treatment goals and gave meaning to disconfirming evidence.

"Health maintenance" as the overarching idea seemed not to work very well, although it's time may yet come, particularly if medical education increases its emphasis on

management of chronic conditions and if it is given priority in health care system reforms. Faith in exercise as a religion appeared to work better in resolving issues of ambiguity and disconfirmation.

A broad reframing of the problem, to include mental health goals and a plethora of behavior change goals was another preventive conceptualization of treatment competence. The number of treatment criteria increases, but many of these are ambiguous and difficult to measure. They are often "internal" or private changes, rather than public ones that can be shared and which can more easily reinforce the doctor's self-efficacy. There may be the possibility of more "successes," but no one knows who they are.

Attributions That Undermine Self-Efficacy. There are some patient and problem characteristics that hindered self-efficacy. Apart from "feeling better" being an ambiguous goal, it is also not invariably attainable. Some patients will not ever "feel better." Some problems, including personality problems are very resistant to treatment. This treatment goal cannot be met by every patient and relying on it will undermine one's feeling of competence. Even if treatment goals are modest, the forces that maintain unhealthy behaviors may be more powerful than the most skillful treatment and care.

For some patients, an empathic approach that works towards a doctor-patient alliance is viewed negatively. It

may make a patient angry. The whole feedback loop of relationship-development and efficacy-building gets interrupted.

Food and eating behaviors have a multiplicity of meanings for doctors as well as for patients. The subjectivity of this area is illustrated by this quote from one questionnaire respondent: "An obese patient is fatter than his/her doctor. I'm quite fat, I have proportionally fewer obese patients."

If food is a valued aesthetic experience for a doctor and treatment outcome expectations are modest at best, ambivalence about treatment may undermine self-efficacy. One study doctor wrote about cholesterol-lowering studies: "the effectively treated groups have substantially greater risks of other important health problems. A program which changes patients' lives so much more than cholesterol reduction might bring on other health risks - medical or psychiatric."

Chapter V

Discussion

The goal of the study was to determine if the construct of self-efficacy is a useful one for studying primary medical care treatment of obesity. Towards this end, an instrument was formulated and tested that measured obesity treatment self-efficacy. Evidence of its reliability and validity was been presented. Demographic and practice variables were tested for their association with self-efficacy scores.

In addition, physicians' own attributions about the development and maintenance of their self-efficacy in this practice area were explored to see what, of theoretical or practical interest, could be learned from conceptualizing medical practice in this way.

Research Question One

The first research question--can self-efficacy in obesity treatment be measured with a degree of reliability and validity?--can be answered in the affirmative. Scores on the Physician's Self-Efficacy Measure (the PSEM) showed variability; they were roughly normally distributed. Individual item scores had uniform variability, the scale was highly reliable and it had a parsimonious factor structure. Factor subscales were readily interpretable in

terms of self-efficacy theory. The scale predicted self-efficacious physician behaviors, in a manner consistent with theory.

The self-efficacy scale has three factors. The most important factor, as measured here--competence in interpersonal skills--accounts for 40% of the variance in scores. Competence in one's professional knowledge base is also a factor in self-efficacy, accounting for 16% of the variance in scores. Both of these factor subscales have good reliability and are nearly as powerful in predicting physician behaviors, as is the total self-efficacy score.

The affective subscale of the PSEM accounts for 12% of total scale variance; it is reliable, but differs from the other two subscales in that it does not, on its own, predict self-efficacious physician behaviors.

The scores on the second self-efficacy measure, the Physician's Outcome Expectations Measure (POEM), also showed a variable range. Their distribution is positively skewed: doctors generally have lower, rather than higher outcome expectations for obesity treatment. POEM items have uniform variability and the scale has moderate reliability. The POEM also predicts self-efficacious physician behaviors.

Factor subscales of the POEM are less parsimonious than those of the PSEM and are more difficult to articulate clearly in terms of self-efficacy theory. The first factor of the outcome expectations measure--obesity is treatable

and is a shared responsibility between doctor and patient--and the second factor--obesity treatment is effective and it is important--were reliable and were as good at predicting self-efficacious physician behaviors as is the total POEM scale. These subscales, together, account for one third of the total variation in scores. The other three subscales of the outcome expectations measure have poor reliability and poor predictive power for physician behaviors.

The correlation between the two measures (self-efficacy and outcome expectations) is positive and is moderately strong, ($\underline{r}$ = .46) and the first and second factor of each measure correlate moderately strongly with each other and with each total measure score. For example, the first factor of the PSEM (interpersonal skills) correlates not only with the second factor of the PSEM (a competent professional knowledge base) and with total PSEM score, but it also correlates with the first factor of the POEM (treatability of obesity and shared responsibility of obesity treatment) and with the total POEM score.

Beliefs about one's interpersonal skills and professional knowledge base about obesity treatment (factors one and two of the PSEM) are closely related to beliefs that obesity is treatable and is a shared responsibility between doctor and patient, and that treatment is effective and important (factors one and two of the POEM). The degree of relatedness between self-efficacy factors and outcome

expectations factors, as well as total self-efficacy and outcome expectations scores, is moderately strong. This is consistent with self-efficacy theory: beliefs and behavior are linked, but there is not a perfect correlation; they are not independent, but they are also not identical.

Study Goal Two

High percepts of efficacy and high outcome expectations are, generally, not characteristic of any group with regard to demographic or practice variables. This information meets the second goal of the study. It supports that study findings can be generalized to primary care physicians, across these demographic and practice characteristic variables. It is evidence for the lack of a significant identified confound in the relationship between self-efficacy beliefs and self-reported, self-efficacious behaviors.

The more patients a doctor sees per week, the higher she or he scores on the self-efficacy measures. In terms of the theoretical base of the study, these physicians are engaging in more "enactment behaviors" and their higher scores are, therefore, expected. The experience of doing a behavior and the knowledge of one's capability at this behavior should mutually influence each other. Beliefs about one's capabilities are one of the determinants of one's behavior. At the same time, one's behavior provides opportunities to gain a sense of competence.

A major study strategy was to determine to what degree beliefs predict behaviors. In Bandura's theory, beliefs and behavior mutually influence each other and they develop together, in tandem, with each reinforcing the other. One could have, as logically, tested whether behaviors (i.e. physician-reported practice behaviors) predict beliefs (i.e. self-efficacy measure scores.)

Study Hypotheses

In addition to these overall study goals and research questions, specific hypotheses were tested regarding the relationship between beliefs as measured by the PSEM and POEM and physician behaviors. Behavioral measures designed to test the validity of the study belief measures supported the validity of these measures.

Hypothesis One. High self-efficacy doctors see a higher proportion of obese patients in their practices each week, i.e. a higher proportion of the patients seen by high self-efficacy doctors are obese. Self-efficacy beliefs influence behavioral choice of which patients are seen and which problems are identified for them.

Hypothesis Two. High self-efficacy doctors discuss obesity treatment with a higher proportion of their obese patients. Self-efficacy beliefs influence behavioral choice and effort.

Hypothesis Three. High self-efficacy doctors initiate a discussion of obesity treatment with a higher proportion

of their obese patients. Self-efficacy beliefs influence behavioral choice and effort.

Hypothesis Four. High self-efficacy doctors have a higher proportion of their obese patients on some kind of weight control program. Self-efficacy beliefs influence behavioral choice, effort and persistence.

Hypotheses Five and Six. These behavioral variables were not used in the analysis. Hypothesis five (proportion of patients on which consultation is sought) because of inconsistency in subject responses and hypothesis six (proportion of patients referred elsewhere for primary care) because of the low base rate of this behavior.

Research Question Two

Exploring how doctors view their own self-efficacy--how they understand the problem of obesity, how they see their own treatment behaviors and what outcomes they expect from these behaviors--was done via interviewing a small number of doctors. They were asked, also, what they felt fostered and what they felt undermined their self-efficacy in obesity treatment.

It was important to do this interviewing because the formulation of the study measures showed that there was, indeed, a difference amongst physicians in their self-efficacy, but it did not explain much about this difference.

Sources of Efficacy Information. "Behavioral enactment" or "experience" is the source of information most relied on for the development and maintenance of self-efficacy. This finding is consistent across both the qualitative and quantitative phases of the study and ties the two parts of the study together. This finding is consistent with self-efficacy theory. Development and maintenance of the doctor-patient relationship is behaviorally closely linked to self-efficacy.

Alternative methods for developing self-efficacy according to theory--"vicarious learning" and "exhortation"--are underutilized in medical training and practice. Role modeling occurs fortuitously, not by design. Persuasion is similarly underutilized in training. It is experienced more, post-graduately in practice, via continuing education.

"Autonomically-mediated learning" (represented by reported emotional reactions) was not related to the behaviors that doctors reported. It was not, therefore, related to self-efficacy in physicians. Feelings were strong across doctors, independent of their self-efficacy. Intensity of feelings--positive ones of satisfaction and negative ones of frustration--appear to be characteristic of many primary care doctors engaged in obesity treatment, whether they are self-efficacious or not.

"Generalization" of efficacious behaviors, whereby according to theory, skills can be generalized to similar

behavioral areas through the transfer of skills, is not being capitalized on. The management of chronic disease--the larger area of which obesity treatment is a part--is neglected in most medical training.

One study finding in the quantitative analysis was strongly counter-intuitive and was explored during the interviews. The "affective" scale on the self-efficacy measure was ineffective in differentiating between strong and weak self-efficacy doctors. This finding was consistent across the quantitative and qualitative phases of the study. Exploring this issue via interviewing, in the qualitative phase of the study did not clarify this finding: all interviewed doctors had strong feelings about their patients in this area.

One interpretation of this finding is that feelings really do not matter as much as mental health professionals think they do. For providers of a service in a complex practice area, interpersonal skills and a competent professional knowledge base are more important for self-efficacy, than is how the providers feel about their clients and their clients' problems. Affect is independent of self-efficacy.

Physicians strive to conform to a model of professional practice and emulating this model becomes a source of self-efficacy for them. They do not, it appears, rely on their own personal reaction to a patient or a patient problem. In

a "professional practice model" of self-efficacy, items on the self-efficacy measures which pertain to the substance of professional practice (e.g. knowledge) would get endorsed and those that do not, (e.g. items about feelings,) would not.

Another interpretation of this finding is that many doctors--both and high and low self-efficacy doctors--have strong, personal feelings, but they are the same feelings rather then different feelings. Even the high self-efficacy doctors, in the interview, used words like "futile" to describe their feelings about obesity treatment. The affective continuum, for this study, was conceptualized as "positive" to "negative" feelings about obese patients.

Because feelings items did not differentiate between high and low self-efficacy doctors, does not mean that they are not important. Though the affective scale on the measure had reasonable reliability, it may have had poor validity. It could be that another "feeling continuum" should have been used, e.g. "mild" to "intense" feelings or feelings on a continuum from "professional uncertainty" to "professional mastery."

It may simply be that a doctor needs to have "positive enough" or "intense enough" feelings to allow self-efficacious behaviors to be developed and enacted. If liking obese patients a certain amount but no more is necessary, then a relatively small amount (e.g. an amount

easily mustered by a professional in practice) may be sufficient for physician self-efficacy.

Patterns of Obesity Treatment Experience. Different ways of viewing the problem of obesity lead to different ideas about treatment means and goals, different ways of measuring progress toward goals (or conceptualizing "success,") and different ways of dealing with information that disconfirms one's self-efficacy (or conceptualizing "failure").

The patterns did not differentiate between high and low self-efficacy doctors but, rather, provided a conceptual context of practice in which the dynamics of self-efficacy development and enactment were played out. Principles of self-efficacy development and enactment can also be discussed in these patterns of experience.

"Illness Eradication" Pattern. Viewing obesity as a precursor to, or sequela of, another medical problem provides a doctor with clear, unambiguous goals for treatment and a strong incentive to treat. It is also provides clarity of steps to attain the goals, e.g. restricted calorie diet, increased activity level. The success or failure of treatment is shared, explicitly, between doctor and patient. It is often shared, socially, in a broader sense, because patient behavior and even appearance changes (or fails to change.)

fe

cu

fa

ir

pr

co

do

we

pr

the

and

of

pat

of

rar

ind

cle

betw

posi

rein

conv

one'

In the illness eradication pattern, there is a tight feedback loop between efficacy belief and actual treatment outcome. There are also medical alternatives to treatment failure, so that treatment self-efficacy can be maintained in the face of disconfirming evidence.

"Health Maintenance" Pattern. Viewing obesity as a problem in and of itself, which is not a part of a concomitant health problem, is a different undertaking for a doctor. This conceptualization does not have the full weight of the medical profession behind it and, therefore, professional incentives for obesity treatment are less.

Health maintenance, as an end point, does not provide the same degree of clarity of goal, steps to attain the goal and clarity of treatment modality--particularly at the level of the individual patient--as does treatment of a specific pathology. A goal which it does provide, i.e. maintenance of a normal body weight over the life span, is extremely rarely attained by obese persons. At the level of the individual patient, failure is very clear; progress is less clear.

In a health maintenance approach, the feedback loop between behavior and outcomes is less tight. Outcomes, in a positive sense, are less shared and, consequently, less reinforcing of physician self-efficacy. There is no convenient way of dealing with evidence which undermines one's self-efficacy.

A health maintenance approach would work better, if practice is conceptualized in a "public health" model of health care delivery, rather than in a "private practice" model of health care delivery. The goal, in this conceptualization, would be population behavior change, rather than individual patient behavior change. Individual patient "failure" would not disconfirm physician self-efficacy because it would be the "success" of the whole population, not the individual patient, which would be the primary concern.

Focusing on concomitant mental health sequelae of obesity, as a part of health care in the broadest sense, provides a plethora of treatment goals. However, the goals may be ambiguous and progress toward them difficult to measure. The link between physician behavior and treatment outcome, is obscured, particularly information which serves to support self-efficacy. The link between physician treatment and failure of treatment may well be clearer. In fact, physicians may only routinely get feedback on their treatment when it fails and not, consistently, when it succeeds.

Features That are Independent of Pattern and of Self-Efficacy

There are some aspects of obesity treatment behavior which appear to be consistent across pattern of obesity treatment experience and across high and low self-efficacy

doctors. In terms of self-efficacy theory, the "level" of necessary behaviors is "difficult." All interviewed doctor stated this.

On physician report, obesity treatment behaviors generalize to other areas of management of patients with any kind of chronic disease or condition. Physicians also report that consensus or "matching" between doctor and patient on the definition of the problem is important because it supports self-efficacy and, more specifically, its absence undermines self-efficacy.

Treatment goals which are specific and which are shared facilitates the feedback loop between physician behavior and its different levels of expected outcome: patient behavior change and, in turn, patient health improvement.

Conditions exist in the obesity treatment which should, according to self-efficacy theory, promote misjudgments about one's capabilities and undermine the development of self-efficacy. Goals for treatment are often ambiguous and the quality of one's performance is often unclear. Therefore, making goals as concrete as possible and formulating them so that there exists a clearly articulated feedback loop between behaviors (physicians') and outcomes (patients') would promote self-efficacy development and maintenance.

<u>A Model of Physician Self-Efficacy in the Treatment of Obesity</u>

A summary of the features of self-efficacy theory which, when applied to obesity treatment should promote the development and maintenance of self-efficacy according to study findings follows.

Physician Self-Efficacy = Experience or "enactment behaviors," that are optimized by [professional incentives (persuasion, role-modeling) + goal-setting (specific, measurable, consensual) + clear feedback loop (including a means of dealing with disconfirming evidence)] + individual differences + error.

Practical Applications

Given this model, guidelines from theory can be applied to this practice area and could go across "illness" and "health" conceptualizations of obesity treatment.

These include: 1.) the formulation of treatment goals which are specific, measurable and about which there is a high degree of consensus between doctor and patient;

2.) the integration, within the treatment approach, of specific provisions for the completion of a feedback loop between physician behavior and outcomes of physician behavior, (often patient behavior);

3.) the formulation of a way of dealing with patient behavioral "failure," so that it is not construed as disconfirming evidence of physician self-efficacy; and

4.) the support for links that tie physician beliefs and physician behaviors together.

Clarity of goals and clarity of feedback on whether they are attained, support for links which tie beliefs and behaviors together, and a means of dealing with evidence which disconfirms one's self-efficacy are all prominent features of self-efficacy theory.

Specific guidelines from theory, which could serve to tie beliefs and behaviors together include: a.) the teaching of necessary "subskills" of obesity treatment behavior (e.g. interpersonal skills),

b.) providing clear professional "incentives" for treatment, (including obesity treatment being remunerated by health plans and its having a more legitimized place in medical training); and

c.) providing more explicit "social pressure," so that doctors are encouraged to have a high personal investment in, a feeling effectiveness in and a means of being rewarded in this treatment area.

Other implications for medical education, which are specifically gleaned from the interview data, include:

1.) tying teaching about doctor-patient relationships to self-efficacy training in practice areas which rely on interpersonal skills, since self-efficacy appears to be intimately connected to these skills;

2.) using role-modeling and encouragement for obesity treatment in medical school and residency;

3.) encouraging physicians to resolve subjective issues that they may have regarding experiences of food and eating behavior, so that their own feelings of helplessness about patient failure or ambivalence about treating obesity because of not wishing to be punitive with patients, do not interfere with their treatment self-efficacy.

Counseling psychologists could have a role in the "relationship skills" training of primary care doctors, in general, and specifically, in the teaching of behavior management skills to doctors.

Theoretical Implications

The original idea of studying physician self-efficacy because of its possible influence on patient self-efficacy (and, in turn, on positive patient health outcomes) is reinforced by this study. Almost without exception, interviewed physicians, as well as physicians who wrote comments on their returned questionnaires, spontaneously described their self-efficacy in obesity treatment as being dependent on their overall relationship with their patient. They report that there was something like an interplay between their patients' self-efficacy and their own.

This emphasis on the interpersonal relationship did not appear to be a based on the physicians voicing a fashionable catch phrase, but on stating a fact of life. Obesity treatment was virtually never considered independent of the

doctor-patient relationship, because it doesn't "work" (isn't effective) any other way.

This is one aspect of primary care medical practice that is similar to mental health practice. In mental health treatment, it is known that the relationship between therapist and client is important. In research on the differential effectiveness of various mental health treatment modalities, the importance of the "therapeutic" or "helping alliance," (the patient's experience that the treatment or the relationship with the therapist is helpful or potentially helpful) is documented in the research of Luborsky, Crits-Christoph, Alexander, Margolis and Cohen (1983), among others. It has been identified as one of the "common features" (Stiles, Shapiro, and Torrington, 1986) of treatment effectiveness that is consistent across treatment approach. It appears to be a kind of "necessary condition" for therapy to take place, independent of other features of the therapist, the client or the type of therapy.

The interviewed doctors, in the present study, described forming a "therapeutic alliance" with their obese patients and that it was within this alliance that obesity treatment took place.

Luborsky, Mintz, Auerbach, Cristoph, Bachrach, Johnson, Cohen and O'Brien (1980) have also looked at the similarity between therapist and client and found the "match" between client and therapist was positively related to treatment

effectiveness. In obesity treatment, the primary care doctors described that a consensus between themselves and their patients on what the problem and goals of treatment were was important for the maintenance of obesity treatment self-efficacy. They described the importance of the "match" between themselves and their patients.

The importance of the relationship between therapist and client, in counseling and psychotherapy, is well established in research, but the importance of the relationship in medical practice between doctor and patient is not. The doctor-patient relationship is typically considered adjunctive rather than central to medical treatment. Its influence on patient health outcomes has not been studied. It is rare for it to be stressed in medical training; students whose relationship skills are poor do not fail to graduate from medical school. It is not a basis for medical malpractice suits.

The importance of relationship may be central to medical treatment, especially in areas where a treatment is not unitary and straightforward, where treatment goals are unclear or rarely met, and where disease management is highly dependent on patient behavior. Using a framework from self-efficacy theory to focus on interpersonal factors within health care has the advantage of an established research base to draw from, including research about patient self-efficacy.

It is only a small step, from physician self-efficacy, to think about the influence of physician self-efficacy on patient self-efficacy (the doctor's ability to foster or to undermine patient self-efficacy) and, in turn, the relationship between physician self-efficacy, patient self-efficacy and patient health outcomes.

Appendices

Appendix A

PHYSICIAN SELF-EFFICACY MEASURE

completely 5
quite a bit 4
moderately 3
a little bit 2
not at all 1

How confident are you that you can:

1. Diagnose obesity?

2. Select and explain a weight loss treatment plan to obese patients?

3. Deal with any negative feelings you may have regarding obese persons, so that they do not interfere with your effectiveness in treating obese patients.

4. Help obese patients to deal with their weight problem?

5. Diagnose obesity with health risks?

6. Provide a compelling rationale to obese patients for making changes in their diet and exercise habits?

7. Adjust your advice to obese patients depending on their circumstances?

8. Help obese patients to lose weight?

9. Explain the health risks related to obesity to patients?

10. Engage obese patients in a treatment plan to lose weight?

11. Maintain a good relationship with obese patients who do not lose weight.

Appendix B

PHYSICIAN OUTCOME EXPECTATIONS MEASURE

completely 5
quite a bit 4
moderately 3
little bit 2
not at all 1

Indicate your agreement
with the following statements:

1. Obese patients who fail to lose weight are at significant health risk.
2. Losing weight can make a significantly positive difference in a patient's life.
3. Obese patients who restrict their calorie intake can usually lose weight.
4. Obese patients do what they want, rather than following their doctor's advice regarding diet and exercise.
5. Most patients who conscienciously try to change their diet and exercise habits are able to lose weight.
6. Physicians have influence on whether their obese patients change their diet and exercise habits.
7. Doctors can be effective counselors (educating patients about their obesity, engaging them in weight loss programs, monitoring their progress) for their patients who are trying to lose weight.
8. Physician lack of effectiveness in obesity treatment is a factor in a patient's failure to lose weight.
9. Most patients will never even begin a weight loss attempt.
10. Most patients will begin an attempt to change their diet and exercise habits, but will not lose any weight.
11. Most patients are able to lose weight, but will gain most of it back.
12. Most patients are able to lose weight and to maintain the weight loss.
13. Whatever doctors or patients do, weight loss is only temporary.
14. Effective weight loss treatment is largely via pharmacalogic agents or surgical measures, rather than physician guidance.

Appendix C

PHYSICIAN PRACTICE MEASURE

1. Specialty: Fam. Pract.__ Int. Med.__ Gen. Pract.__.
2. Age____ 3. Sex: M ____ F ____ 4. Year of med. sch. grad._____
5. Which type of practice best describes your own: private practice ____, university clinic-based ____, HMO____, VAMC ____, PHS/IHS ____, USAF ____.
6. Which size of practice best describes your own: solo ___, 2-3 doctors___, 4-6 doctors___, more than 6 doctors___.
7. How many patients do you see in a typical week? none____, less than 20____, 20-75____, 75-125____, 125-175____, 175-225____, more than 225____.
8. What percentage of your patients are female? ____.
9. Do you have obese patients in your practice? yes____, no____.

10. If you do, thinking back, over the past month,
    a.) Approximately how many patients did you see who were obese?____
    b.) With approximately how many of these patients did you discuss weight loss?____
    c.) With approximately how many of these patients did you initiate a discussion of weight loss?____
    d.) Approximately how many of these obese patients are currently on a weight loss program of some type?____

11. Thinking back over the past year,
    a.) For how many of your obese patients did you seek consultation from a medical colleague, a psychologist or consult the medical literature about?
    _____
    b.) How many of your obese patients did you refer out of your practice and to another physician for on-going primary care? _____

12.) Do you currently have a patient in your practice that you would like to refer for medical care to a physician who specializes in treating obesity? yes ___ no ___.

Would you be willing to be interviewed on this subject? ___yes___no

Please make any additional comments you have on the back of this sheet.

Appendix D

Physician Self Efficacy Interview Guide

The self-efficacy interview is used in different ways. In addition to the structured questions which are asked everyone, I can use the written answers that the person had already provided as a spring board and ask the person to elaborate on points of interest.

The main body of questions is right out of the theory. I ask about choice of, effort in and persistence in behaviors which pertain to obesity treatment. I ask about the perceived level of difficulty of obesity treatment behaviors. I ask about the strength of efficacy beliefs, particularly in the face of disconfirming experience. I ask about generality of beliefs, in comparing them to physician beliefs in their efficacy in treating other chronic health problems, particularly those requiring dilligent patient effort and behavior change.

Short Introduction:

Thank you for agreeing to talk with me about your practice with obese patients. I would like to begin by asking you some general questions, and then, there is some specific ones that I'd like to ask also. Please feel free to elaborate, on these questions or on your answers, as we go along, or to ask me questions. If there is any question you would not like to discuss, please say so. What I am interested in is how you feel about your practice, your own perceptions about your work with obese patients. Do you have any questions to begin with? ok, let's start.

General Questions:

1.)How do you feel about treating obese patients? What's it like?

prompts - I'd like a general idea, are there things you like about it, things you don't like about it? Funny experiences, frutrating ones, ones where you feel a real sense of satisfaction? a real feeling of failure?

2.) What has been your hardest case (or cases) to treat?

3.) What's been the easiest case to treat?

4.) What's a typical case (or cases) like, in your practice?

5.) how important do you think it is, to address the problem of obesity ?

6.) How important do you think it is, to other doctors in your practice, to address the problrm of obesity?

Thinking of yourself and what is typical behavior for you, with patients in your practice, I'd like to ask you about some of the specifics about treatment:

7.b.) Do they ever initiate it with you?
if 7.a.) is yes, then,
8.) How do you decide when (and whether) to initiate a discussion of weight loss with an obese patient?
9.) Are there times when you decide not to address it? Under what circumstances?
10.a.) What kind of treatment goals do you set for/with your obese patients?
10.b.) How do you decide on these goals?
11.) How do you measure success in treating obesity, i.e. how do you know when the treatment is working?
12.) are there other measures besides weight loss?
13.) How do you know when you're doing a good job, in treating your obese patients?
14.) How do you decide whether to continue addressing the problem of obesity with patients or to stop addressing it?
15.a.) If an obese patient continues coming to you for treatment, but does not lose weight, even though it is medically recommended, how do you handle it?
prompts: b.) do you seek consultation from colleagues?
c.) from the medical literature?
d.) refer to a community weight loss program, e.g. Weight Watchers?
e.) do you seek other sources of assistance, which you've found to be helpful?
f.) is it frustrating, when this happens? If so, what helps you to cope? How does it affect your relationship with the patient, when this happens?
g.) If it's not, what do you think helps you not to get frustrated?
15.) On a scale of one to 10. how hard is it, in your estimation, to do the following activities which are involved in treating obesity (say what they are briefly):
a.) identifying when obesity is a significant health risk factor for a patient? 1 2 3 4 5 6 7 8 9 10
b.) educating a patient about obesity as a risk factor?
1___10
c.) engaging a patient in a treatment program to lose weight? 1----10
16.) Compared to other chronic health problems, how hard do you think it is to treat obesity? more difficult, less diffi cult, equally difficult? Why?
17.) Compared to other problems which can only be addressed through diligent patient effort (smoking cessation, exercising regularly, diet control of high blood pressure or diabetes, limiting or eliminating alcohol consumption), is treating obesity more difficult, less diffcult, equally difficult? Why?

18.) Compared to other problem areas you have to address commonly in primary practice, how would you rate your own

confidence in treating obesity? ____more confident, than many other areas; _____about as confident as other areas; ___ less confident, than in many other areas.
19.) How often, if ever, do you suggest patients try community based support groups for weight loss?_____
What is you opinion of these groups? prompt: what kinds of experiences have patients of yours had in these groups?
15.) In term of your experience in your training, what experiences did you have which taught you about treating obesity?
1.) Was there didactic material on obesity as a risk factor?
2.) didactic material on educating patients about obesity?
3.) didactic material about engaging patients in treating obesity?
a.)during your pre-clinical years? 1.) Y N, 2.) Y N, 3.) Y N
b.) during your clinical years? 1. Y N, 2.) Y N, 3.) Y
c.) as an intern? 1.) Y N, 2.) Y N, 3.) Y N
d.) a resident? 1.) Y N 2.) Y N 3.) Y N
e.) other experiences, formal or informal, during your training? 1.) Y N, 2.) Y N, 3.) Y N
What were they?
16.) What was the nature of this experience?
a.) did you have the opportunity to see your supervisors and mentors treat (diagnose, educate, engage in treatment) obese patients? a.) during pre-clinical years? b.) clinical years? c.) as an intern? d.) as a resident?
16b.) were you allowed and encouraged by supervisors to have experience treating (diagnose, educate, engage in treatment) obese patients?
c.) do you think that your training experiences were adequate to help you be confident in this area of practice?
prompts: can you tell me a little more about that? What was that like?, what had the greatest influence, do you think, in your learning how to treatment obesity? if answers are sparce.
17.) Has your confidence in your ability to treat obese patients changed over time? How? To what do you attribute the change?

References

Bandura, A. (1989). Human agency in social cognitive theory. American Psychologist, 44, 1175-1184.

Bandura, A., O'Leary A., Taylor, C.B., Gauthier J., Gossard, D. (1987). Perceived self-efficacy pain control: opoid and nonopoid mechanisms. Journal of Personality and Social Psychology, 53, 563-571.

Bandura, A. (1986). Social foundations of thought and action. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (in Press). Self-efficacy mechanism in physiological activation and health-promoting behavior. In J. Madden IV, S. Matthysse, & J. Barchas (Eds.), Adaptation, learning and affect. New York: Raven Press.

Bandura, A. (1982). Self-efficacy mechanism in human agency. American Psychologist, 37, 122-147.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. Psychological Review, 84, 191-215.

Bandura, A., & Adams, N.E. (1977). Analysis of self-efficacy theory and behavior change. Cognitive Therapy and Research,1, 287-308.

Bartlett, E. E. (1989). How can patient education help attain objectives for the nation? American Journal of Preventive Medicine, 5, 230-239.

Becker M.H., & Janz, N.K. (1990). Practicing health promotion: the doctor's dilemma. Annals of Internal Medicine, 113, 419-422.

Betz, N.E. & Hackett,G. (1981). The relationships of career-related self-efficacy expectations to percieved career options in college women and men. Journal of Counseling Psychology,28, 399-410.

Bloom, S.W. (1989). The medical school as a social organization: The sources of resistance to change. Medical Education, 23, 228-241.

Bray, G.A. (1984). The role of weight control in health promotion and disease prevention. In J.D. Matarazzo, S.M. Weiss, J.A. Herd, N.E. Miller, & S.M. Weiss (Eds.), Behavioral health: A handbook of health enhancement and disease prevention (pp.632-656). New York: John Wiley & Sons.

Brownell, K.D. (1982). Obesity: Understanding and treating a serious, prevalent, and refractory disorder. Journal of Counseling and Clinical Psychology, 50, 820-840.

Condotti, M.M. & Lichtenstein, E. (1981). Self-efficacy and relapse in smoking cessation. Journal of Consulting and Clinical Psychology, 49, 648-658.

Dembo, M.H. & Gibson, S. (1984). Teachers' sense of efficacy: An important factor in school improvement. The Elementary School Journal, 86, 173-184.

Craig, K.D. (1984). Emotional aspects of pain. In P.C. Wall & R. Melzack (Eds.) Textbook of pain. London: Churchill/Livingston.

DiClementi, C.C. (1981). Self-efficacy and smoking cessation maintenance: A preliminary report. Cognitive Therapy and Research, 5, 175-187.

Dillman, D.A. (1978). Mail and telehone surveys: The total design method. New York: John Wiley & Sons.

Ewart, C.K., Taylor, C.B., Reese, L.B., Debusk, R. F. (1984). Effects of early postmyocardial infarction exercise testing on self-perception and subsequent physical activity. American Journal of Cardiology, 51, 1076-1080.

Ell, K.O. (1986). Coping with serious illness: On integrating constructs to enhance clinical research, assessment and intervention. International Journal of Psychiatry in Medicine, 15, 335-357.

Fordyce, W., Fowler, R., Lehmann, J., DeLateur, B., Sand, P., & Treischmann, R. (1973). Operant conditonning in the treatment of chronic pain. Archives of Physical Medical Rehabilitation, 54, 399-408.

Freeman, S.H. (1987). Health promotion talk in family practice encounters. Social Science and Medicine, 25, 961-966.

Fuller, B., Wood, K., Rappoport, T., & Dornbusch, S.M. (1982). The organizational context of individual efficacy. Review of Educational Research, 52, 7-30.

Glaser B.G. & Strauss A.L. (1967). The discovery of grounded theory: Strategies for qualitative research. Chicago: Aldine Publishing.

Glass G. V. & Hopkins, K.D. (1984). Statistical methods in education and psychology (2nd Ed.) New Jersey: Prentiss-Hall, Inc.

Gorden, R.L. (1980). Interviewing: Strategies, techniques, and tactics. Illinois: The Dorsey Press.

Gottlieb, N.H., Mullen, P.D., & McAlister, A.L. (1987). Patients' substance abuse and the primary care physician. Addictive Behaviors, 12, 23-32.

Gruppen, L.D., Wolf, F.M., & Stross, J.K. (1990). Physician practice characteristics as a context for primary care treatment decision making: A preliminary study. Academic Medicine, 65, (September Suppl.), S9-S10.

Heppner, P.P., Kivlighan Jr., D.M., & Wampold, B.E. (1992). Research design in counseling. Pacific Grove: Brooks/Cole Publishing.

Hoshmand, L.L.S. (1991). Clinical inquiry as scientific training. The Counseling Psychologist, 19, 431-453.

Kaplan, R.M. (1990). Behavior as the central outcome in health care. American Psychologist, 45, 1211-1220.

Kaplan, R.M., Atkins, C.J., & Reinsch, S. (1984). Specific efficacy expectations mediate exercise compliance in patients with COPD. Health Psychology, 3, 223-242.

Lenker, S.-L., & Lorig, K. (1984). Reasons for the lack of association between changes in health behavior and improved health status: An exploratory study. Patient Education and Counseling, 6, 69-72.

Lewis, C.E., Clancy, C., Leake, B., & Schwartz, J.S. (1991). The counseling practices of internists. Annals of Internal Medicine, 114, 54-58.

Lorig, K., Chastian, R.L., Ung, E., Shoor, S., & Holman H.R. (1989). Development and evaluation of a scale to measure perceived self-efficacy in people with arthritis. Arthritis and Rheumatology, 32, 37-44.

Lorig, K., Seleznick, M. Lubeck, D., Ung E., Chastian, R.L., & Holman, H.R. (1989). The beneficial outcomes of the arthritis management course are not adequately explained by behavior change. Arthritis and Rheumatology, 32, 91-95.

Lorig, K., Lubeck D., Kraines, R.G., Seleznick, M., & Holman, H.R. (1985). Outcomes of self-help education for patients with arthritis. Arthritis and Rheumatology, 28, 680-685.

Luborsky, L. & Auerbach, A.H. (1985). The therapuetic relationship in psychodynamic psychotherapy: The research evidence and its meaning for practice. American Psychiatric Association Annual Review, 4.

Luborsky, L.,Crit-Christof, P., Alexander, L., Margolis, M. & Cohen, M. (1983). Two helping alliance methods for predicting outcomes of psychotherapy: A counting signs vs. A global rating method. The Journal of Nervous and Mental Disease, 171, 480-491.

Luborsky, L., Singer, B. & Luborsky, L. (1975). Comparative studies of psychotherapies: Is it true that "everyone had won and all must have prizes?" Archives of General Psychiatry, 32, 995-1008.

Lorig, K. & Laurin, J. (1985). Some notions about assumptions underlying health education. Health Education Quarterly 12, 331-343.

Maddux, J.E., Sherer, M. & Rogers, R.W. (1982). Self-efficacy expectancy and outcome expectancy: Their relationship and their effects on behavioral intentions. Cognitive Therapy and Research, 6, 207-211.

Maddux, J.E., & Stanley, M.A. (1986). Self-efficacy theory in contemporary psychology. Journal of Social and Clinical Psychology,4, 249-255.

Maddux, J.E., & Rogers, R.W. (1983). Protection motivation and self-efficacy: A revised theory of fear appraisals and attitude change. Journal of Experimental Social Psychology, 19, 469-479.

Maheux,B., Legault, C., & Lambert, J. (1989). Increasing response rates in physicians' mail surveys: An experimentalstudy. American Journal of Public Health, 79, 638-639.

Marshall, C., & Rossman G.B.. (1989). Designing qualitative research. Newbury Park, CA:Sage.

Mechanic, D. (1974). Social structure and personal adaptation: Some neglected dimensions. In Coelho C.V., D.A. Hamburg & J.E.Adams (Eds.), Coping and adaptation. New York: Basic Books.

Mehrens, W.A., & Lehmann, I.J. (1984). Measurement and evaluation in education and psychology, 3rd. Ed. New York: Holt, Rinehart and Winston.

Mintz, J. (1983). Integrating research evidence: A commentary on meta-analysis. Journal of Consulting and Clinical Psychology, 15, 71-75.

Neufeld, R.W.J., & Thomas, P. (1977). Effects of percieved efficacy of a prophylactic controlling meachanism on self-control under painful situations. Canadian Journal of Behavioural Science, 9, 224-232.

Newmann, F.M., Rutter, R.A., & Smith M.P. (1989). Organizational factors that affect school sense of efficacy, community, and expectations. Sociology of Education, 62, 221-238.

O'Leary, A. (1985). Self-efficacy and health. Behavior Therapy and Research, 23, 437-451.

Nunnally, J.C. (1978). Psychometric Theory. New York: McGraw- Hill

Orlandi, M.A. (1987). Promoting health and preventing disease in health care settings: An analysis of barriers. Preventive Medicine, 16, 119-130.

Raudenbush, S.W., Rowan B., & Cheong, Y.F. (in Press). Contextual effects on the self-efficacy of high school teachers. Sociology of Education.

Reid, D.W. (1984). Participatory control and the chronic illness adjustment process. In B. Dohenwend & R. Dohenwend (Eds.), Research with the Locus of Control Construct (Vol.3) (pp.361-389). Orlando:Academic Press.

Reese, L.B. (1982). Pain reduction through cognitive, self-relaxation and placebo means: A self-efficacy analysis. Unpublished Doctoral Dissertation, Stanford, CA: Stanford University.

Rodin, J. (1986). Aging and health: effects of the sense of control. Science, 233, 1271-1276.

Rodin J., & Janis, I. (1982). The social influence of physicians and other health care practioners as agents of change. In (Eds.). Interpersonal issues in health care. (pp.33-49). Orlando: Academic Press.

Rosenthal, R. (1983). Assessing the statistical and social importance of the effects of psychotherapy. Journal of Consulting and Clinical, 51, (1), 4-13.

Rubin, J.D., Sobal, J., & Moran, M.T. (1990). Health promotion beliefs and practices of fourth year medical students. American Journal of Preventive Medicine, 6, 106-111.

Schunk D.H., & Carbonari, J.P. (1984). Self-efficacy models. In J.D. Matarazzo, S.M. Weiss, J.A. Herd, N.E. Miller, & S.M. Weiss (Eds.), Behavioral health: A handbook of health enhancement and disease prevention (pp. 230-247). New York: John Wiley & Sons.

Shoor, S.M., & Holman (1985). Development of an instrument to explore psychological mediators of outcome in chronic arthritis patients. Trans.Association of American Physicians. In Press.

Sobal, J., Valente, C.M., Muncie, Jr., H.L., Levine, D.M. & DeForge, B.R. (1985). Physicians' beliefs about the importance of 25 health promoting behaviors. American Journal of Public Health, 75, 1427-1428.

Spradley, J.P. (1979). The ethnographic interview. New York: Holt, Rinehart and Winston.

Stiles, W.B., Shapiro, D.A., & Elliot, R. (1986). Are all psychotherapies equivalent? American Psychologist, 41,(2).

Stone, G.L. (Ed.) (1991). Counseling psychology and health applications. The Counseling Psychologist, 19 (3).

Strauss, A. & Corbin, J, (1990). Basics of qualitative research: Grounded theory procedures and techniques. Newbury Park, Ca: Sage.

Strupp, H.H. (1986). Psychotherapy research, practice, and public policy (how to avoid dead ends). American Psychologist, 41 (2).

Stunkard, A.J. (1975). From explanation to action in psychosomatic medicine: The case of obesity. Psychosomatic Medicine, 37, 195-236.

Sullivan, L. (1990). An evolving agenda for the AAMC's second century. Academic Medicine, 65, 226-230.

Taylor, C.B., Bandura, A., Ewart, C.K., Miller, N.H., & DeBusk, R.F. (1985). Exercise testing to enhance wives' confidence in their husbands' cardiac capability soon after clinically uncomplicated acute myocardial infarction. American Journal of Cardiology, 55, 635-638.

Tresolini C.P. & Stritter, P.T. (1992). Medical students' development of self-efficacy in conducting patient education for health promotion: An analysis of learning experiences. Presentation at the annual meeting of AERA, San Francisco, CA.

Turk, D.C., Meichenbaum, D., & Genst, M. (1983). Pain and behavioral medicine: A Cognitive-behavioral approach. New York: Guildford Press

U.S. Preventive Services Task Force. (1989). Guide to clinical preventive services: An assessment of 169 interventions. Baltimore: Williams & Wilkins.

Valente, C.M., Sobal, J., Muncie, H.L., Levine, D.M. & Antlitz, A.M. (1986). Health promotion: Physicians' beliefs, attitudes, and practices. American Journal of Preventive Medicine, 2, 82-88.

Wechsler, H., Levine, S., Idelson, R.K., Rohman, M., & Taylor, J.O. (1983). The physician's role on health promotion--A survey of primary care practitioners. The New England Journal of Medicine, 308, 97-100.

Weinberg, R.S., Gould, D., & Jackson, A. (1979). Expectations and performance: An empirical test of Bandura's self-efficacy theory. Journal of Sport Psychology, 1, 320-331.

Weinberg, R.S., Hughes, H.H., Critelli, J.W., Englan, R., & Jackson, A, (1984). Effects of pre-existing and manipulated self-efficacy on weight loss in a self-control program. Journal of Research on Personality, 18, 352-358.

Weinberg, R.S., & Agras, W.S. (1984) The weight reduction efficacy questionnaire. Stanford University, Stanford, CA.

Weiner, H. (1989). A medicine of human relationships. The Pharos, 52, 2-6.

Weisenberg, M., Kreindler, M.L., Schachat, R., & Werbof, J. (1975). Pain: Anxiety and attitudes in black, white and Puerto Rican patients. Psychosomatic Medicine, 37, 123-135.

Wilson, T.G. (1984). Weight control treatments. In J.D. Matarazzo, S.M. Weiss, J.A., Herd, N.E. Miller & S.M. Weiss (Eds.) Behavioral health: A handbook of health enhancement and disease prevention. (pp. 657-670). New York: John Wiley & Sons.

Yin, R.K. (1989). Case study research: Design and methods. Newbury Park, CA: Sage.