

THE EFFECT OF FIVE FACTORS
ON UNIVERSITY FACULTY MEMBERS'
PARTICIPATION IN INSTRUCTIONAL
IMPROVEMENT

Dissertation for the Degree of Ph. D.
MICHIGAN STATE UNIVERSITY
ROBERT EUGENE YOUNG
1976



This is to certify that the
thesis entitled
The Effect of Five Factors
On University Faculty Members
Participation In Instructional Improvement
presented by

Robert Eugene Young

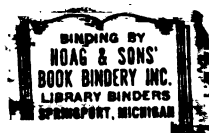
has been accepted towards fulfillment
of the requirements for

Ph. D degree in Educational Psychology

Walter G. Haplin
Major professor

Date November 10, 1976

O-7639



ABSTRACT

THE EFFECT OF FIVE FACTORS
ON UNIVERSITY FACULTY MEMBERS'
PARTICIPATION IN INSTRUCTIONAL IMPROVEMENT

By

Robert Eugene Young

The number of programs and formal campus agencies devoted to the improvement of college instruction has grown tremendously in the past few years. These programs and agencies have employed a variety of strategies in attempts to encourage faculty members to make special efforts to improve their instruction. Yet, little empirical evidence exists as to the effectiveness of these strategies.

The present research attempted to provide a partial remedy to this situation. This study specifically tried to answer the following questions: What approaches can be used to stimulate a university faculty member's interest in instructional improvement? and Which of these approaches have the most promise of success?

The avenue taken to answer these questions followed three basic steps. First, a review of the existing literature resulted in the identification of five basic factors related to faculty members' participation in instructional improvement. Each of these factors seemed to underlie similar strategies for encouraging instructional improvement. For purposes of this research the five factors were labeled: Perceived Need to Improve, Knowledge of Alternatives, Reward, Peer Support, and Institutional Support.

A second step involved the operationalization of these factors such that each could be experimentally tested. Operationalization involved choosing strategies under each factor which seemed to have the most promise of success and which were used most frequently by instructional improvement programs and agencies. For example, "time released from regular duties," a strategy often used and often recommended in the literature, was one of the operationalizations chosen for the factor of Institutional Support. Each factor was operationalized by four separate strategies.

Finally experimental procedures were design and implemented to test the effect of the operationalized factors on a faculty member's willingness to make special efforts to improve his instruction. The research design and methodology required a sample of Michigan State University faculty members to indicate the degree to which they would be influenced to participate in instructional improvement by each of the factors individually or in combination. Three hundred and seventy-three faculty members each responded to a set of "situation descriptions" which combined the five factors into a distinctive influence situation. Each possible combination of factors and levels (present and absent) was tested. The operationalized factors were not investigated in vivo, rather they were studied through the use of a paper-and-pencil simulation. The design and procedures allowed the determination, using appropriate statistical analyses, of main and interaction effects of the five factors and an assessment of the relative effectiveness of each factor.

Results indicate that the operationalized factors of Perceived Need to Improve, Knowledge of Alternatives, Peer Support, and Institutional

Support produced in a faculty member a greater stated willingness to make special efforts to improve his instruction. The presence of Reward did not, on the other hand, result in greater movement toward teaching improvement. The only significant interaction of factors occurred between Perceived Need and Reward and between Perceived Need and Institutional Support. The presence of Reward was more effective than its absence only when Perceived Need was also present, whereas the presence of Institutional Support was more effective when Perceived Need was absent. Perceived Need itself was enhanced when Reward was also present and when Institutional Support was absent.

Perceived Need to Improve was by a large amount the most potent factor, as measured by the amount of variance accounted for in subjects' stated willingness to improve their instruction. This factor was responsible for 15 percent of the variance, while Knowledge of Alternatives and Institutional Support each accounted for one percent, Peer Support for eight-tenths of one percent, and Reward for nine-hundredths of one percent. Considered together the five factors accounted for 19 percent of the total score variation.

These results have implications for both the practice of instructional improvement and future research. The results also have important limitations. The factors of Perceived Need to Improve, Knowledge of Alternatives, Peer Support, and Institutional Support, as operationalized in this study, can be recommended for use by improvement programs and agencies with the support of some evidence as to their potential effectiveness. The Perceived Need factor in particular (as operationalized by formal evaluation of instruction, departmental self-study, curriculum revision, and analysis of personal goals for

teaching) merits consideration as an important component in any effort to encourage faculty members to make efforts to better their courses and teaching skills. Reward, on the other hand, should perhaps not be emphasized as a factor used to stimulate instructional improvement. A number of possible explanations for this result (offered in the report of this study) do suggest, though, that Reward may in fact be effective under certain circumstances and that strategies which emphasize it should not be completely abandoned.

Future research should attempt to investigate these five factors in institutions dissimilar to major research universities such as Michigan State University. Factors should also be tested in vivo where faculty members are actually subjected to the influence situations described by the situation descriptions used in this study. Additional operationalizations of the five factors considered in this research and additional factors not considered might be tested in order to expand the number of strategies and factors for which some evidence exists as to their effectiveness in stimulating instructional improvement. Finally, individual and sub-group characteristics should be investigated for their mitigating effect on the influence of each factor.

The principal limitation of the study concerns its simulated nature. Faculty members were asked to indicate the degree to which they would be influenced by the factors and combination of factors. They were not actually submitted to the influence situations described to them. This condition prevents direct statements about the actual behavior of faculty members in these situations. But (as argued in the research report) evidence as to how college teachers say they would respond to certain factors provides at the very least a general direction for future instructional improvement practice and research.

THE EFFECT OF FIVE FACTORS
ON UNIVERSITY FACULTY MEMBERS'
PARTICIPATION IN INSTRUCTIONAL IMPROVEMENT

By

Robert Eugene Young

A DISSERTATION

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

DOCTOR OF PHILOSOPHY

Department of Counseling, Personnel
Services and Educational Psychology

1976

To the memory of my father
and all he wanted for me

ACKNOWLEDGEMENTS

A project of the magnitude of a doctoral dissertation requires the cooperation of many, many people. To acknowledge all those special individuals who have made a contribution to this one would be impossible. But, each knows who he is and the important role he has played.

I would like to publically thank the members of my doctoral committee for their guidance and encouragement throughout my program and my research: Professor James Phillips, Professor Louis C. Stamatikos, Professor Harvey F. Clarizio, and Professor Walter G. Hapkiewicz, Dissertation Director and Committee Chairman. To Professor Hapkiewicz I owe a special debt for all he has given to me as a teacher, advisor, and friend. Any success that I might have realized as a doctoral student is in great part due to this man.

The great balance of my appreciation must go to my wife Marjorie. No one has had a more patient and supportive partner. Her contribution to my personal and professional development can never be recompensated; it can only be continually acknowledged.

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CHAPTER I

PROBLEM AND OVERVIEW

Introduction to the Problem

The improvement of college teaching has become a "movement" in higher education (Gaff, 1975b). For a host of reasons, many revolving around the current financial retrenchment of American colleges and universities, programs devoted to instructional improvement and innovation and the professional development of college teachers have proliferated across the country (Young, 1976).

These programs employ a variety of strategies to achieve their purposes. Predicated on the assumption that teaching is a learned configuration of knowledge, attitudes, and abilities, a typical instructional improvement program might employ growth groups to help faculty members clarify personal goals for teaching, individual consultation and group workshops to generate ideas and develop teaching skills, and small grants to promote experimentation.

Most programs have been characterized by their work with only those faculty members who themselves perceived a need to improve and are willing to expend the necessary effort to upgrade their course materials and teaching abilities. As the movement expands, however, a dissatisfaction has been expressed with this limitation on the potential impact of these instructional improvement activities. Programs that satisfy themselves with "volunteers" may not reach those instructors who most need this type of assistance. Gaff (1975b) argues:

It may be possible to launch a program with volunteers who have intrinsic interests and pursue their own agendas, but that is no basis to sustain a program (p. 134). Unless greater numbers become involved, including those who are most in need of help but who elect not to participate under completely voluntary arrangements, the idea will not achieve its full potential (p. 178-179).

Popham (1974), in a article critical of present instructional improvement efforts in higher education, suggests that institutions will have to go beyond the low profile, usually voluntary, approach onto more formal and required activities in order to reach most faculty. He states, "I would seriously doubt whether many of the tokenistic and half-hearted efforts currently underway will lead to any genuine improvements in the instruction capabilities of many faculty members" (p. 13). The problem becomes how to work effectively with those faculty who do not voluntarily participate in instructional improvement activities.

Gaff (1975a) suggests that limited participation is not due to a lack of interest on the part of faculty or institutions but rather to conditions that characterize the current academic climate. These conditions include the lack of pre-service preparation for college teachers, absence of in-service activities and resources for improvement, and the inadequacy of academic policies to promote teaching and its improvement.

The recent research by Spitzer (1975) gives evidence to Gaff's assertion. Eighty-four percent of the faculty members in Spitzer's study reported possessing either a "very large" or "considerable" commitment to instructional improvement. But only five percent indicated that they would participate without additional incentives.

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In many universities, research and service activities enjoy support of promotion and compensation policies while teaching does not. In addition, the availability of funds outside the university means that teaching and efforts to improve it often compete at a sizeable disadvantage with these other activities. Spitzer's findings suggest that, even though faculty members see themselves as committed to teaching and instructional improvement, additional inducements seem to be required.

With this situation in view, the emphasis in instructional improvement programs has been on providing opportunities and incentives that will encourage individuals and groups to attempt to upgrade the quality of their teaching. Although Popham's criticism applies justly to many existing instructional improvement programs, there have been some efforts to go beyond volunteers and begin to enlist the participation of greater numbers of faculty (Gaff, 1975b). Very specific strategies for promoting improvement have been proposed and tried in many different types of institutional contexts (Brown and Hanger, 1976; Bergquist and Phillips, 1975b; Criteria, 1975; Eraut, 1975; Francis, 1975; Gaff, 1975b; Munson et al, 1975; Group for Human Development in Higher Education, 1974; Ack, 1973; DeBloois and Alder, 1973; Freedman, 1973; Centra, 1972; Noonan, 1972; Eble, 1972; Sanford, 1971; Johnson et al, 1968; Hall, 1964; McCarthy, 1964; Neuberger, 1964; Miller and Wilson, 1963).

Many of the approaches in fact have a considerable history in the literature of instructional improvement (Gray, 1930; AAUP, 1933; Haggerty, 1937; President's Commission on Higher Education, 1947; Tead, 1949; Blegan, 1952; Dobbins, 1956; Garrett, 1957; Sheedy, 1957; Grundstein, 1969; Crawford, 1961).

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The problem with these approaches, though, is that in many cases they are merely propositions, with little theoretical or empirical underpinnings and little evidence as to their efficacy in higher education. If evidence has been collected, it usually takes the form of impressionistic reports. Few attempts have actually been made to systematically test strategies of instructional improvement and faculty development. Diamond (1976) describes the situation with respect to strategies for instructional improvement: }

On many campuses the decision as to how [limited] funds [for teaching improvement] are actually going to be used is based on hunches, the salesmanship of an advocate to a particular approach or technique, or on a cursory review of the literature. Rarely has the time been taken to explore the impact of various approaches . . . While one campus may institute a program of faculty seminars and workshops, others may stress the use of microteaching and individual faculty consultation, the implementation of a faculty grant program, a faculty evaluation program, an outstanding teacher award, the establishment of a support center emphasizing media production, or in some instances, the systematic design of courses and curricula. Some campuses may have the option of implementing several of these approaches (the list is certainly not complete). The resources available, however, rarely permit a comprehensive approach using all the various options. Thus, the administration must answer the question, if we can't do everything, what can we do? (p. 3).

The research that has been done is usually of the survey variety. Spitzer (1975) questioned faculty members at the State University of New York at Albany to determine their attitudes toward instructional improvement and to find out reasons for participation and resistance in improvement activities. Studies by Norris (1953) and Almira (1968) surveyed faculty at New York and Michigan colleges of education respectively to determine which approaches to faculty development and the improvement of instruction were thought to be helpful.

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Also, W.F. Kelly (1950) has synthesized 20 studies of in-service improvement of college teaching.

In studies not yet completed Centra and Neff have proposed to survey faculty development practices and programs (Smith, 1975). Centra's investigation, funded by the Exxon Foundation, will be nation-wide. Neff will gather information at State University of New York institutions on the potential value of a number of faculty development programs and the priority they have in SUNY system.

These studies, though, do not produce the kind of evidence necessary to determine the effectiveness of the kinds of strategies that have been proposed. To guide practical efforts and to provide a better understanding of the important variables involved when working with faculty on instructional improvement, research of an experimental character is needed. This kind of investigation has been virtually non-existent. In their review of research on teaching in higher education, Trent & Cohen (1973) observed that "experimental studies in which significant variables have been systematically manipulated are exceedingly rare" (p. 1052).

The action-research pursued by Jack Lindquist for the Union of Experimenting Colleges and Universities, to be described in more detail later, may represent the only comprehensive attempt to conceptualize and test strategies for eliciting college faculty participation in instructional improvement and innovation. But as he began his investigation, Lindquist (1974a) lamented:

It would help us sort out these different strategies if we had good evidence about the outcomes of each . . . (p. 2). Unfortunately there is not much evidence to go by, especially regarding the comparatively new practice of systematic teaching improvement programs in postsecondary education.

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Bergquist and Phillips (1975a), who have become among the leading commentators on faculty development, reinforce Lindquist's view:

In the recent past, efforts at faculty development have been largely cosmetic in nature or based, at least in part, on faulty assumptions about the way in which faculty, as well as students, learn, change, and grow. We are left with very few guidelines for new programs in faculty development . . . (p. 181).

Bergquist and Phillips attempt to answer their own challenge by conceptualizing some of the components of an effective faculty development program and suggesting specific techniques to use in improving instruction. But, they too are able to cite little systematic evidence for the effectiveness of these activities.

This situation is not a new one. After World War II, as colleges and universities prepared for the influx of veterans of World War II, a flurry of activities were undertaken in the areas of instructional improvement and faculty development. Eckert (1951) observed at that time:

A survey of the available literature reveals a growing concern for the problems [of improving college and university faculties]; it also underscores the dearth of scientific studies of these problems. Many methods of inservice education have been advocated, but only in rare cases do these proposals rest on more than the personal preferences or the considered judgment of individuals' making the recommendation. (p. 176)

Rationale for the Study

A serious problem faces the instructional improvement movement. Few programs go beyond working with volunteers. And, those that do attempt to reach great numbers of faculty members propose and attempt strategies for which little data exists as to their effectiveness.

In other words, at this stage we have relatively little experience in designing and implementing approaches for enlisting the participation of faculty in instructional improvement activities and even less knowledge of their outcomes.

The obvious, though not simple, solution to this problematic situation requires that approaches not simply be proposed but that they be empirically and systematically tested as well. The questions become: 1) which strategies work? and 2) how do we produce evidence necessary to make recommendations to those who would go beyond the volunteer approach? The research project reported in this volume has attempted to address itself to these basic issues.

The problem in its entirety cannot be solved by any one research study. But, hopefully the present investigation builds on what previous writing and research there has been and produces information useful to the practical efforts of instructional improvement. If more solid evidence can be produced on the question of which strategies prove effective in inducing faculty to participate in improvement activities, programs of faculty development will be able to proceed more systematically and more assuredly. Programs that have not chosen to go beyond working with volunteers, for thought that any efforts would be futile, may be encouraged to attempt riskier activities. Much in demand have been effective approaches for overcoming faculty resistance to change.

In addition to this boon to faculty development programs, each bit of systematic evidence contributes to a better theoretical and empirical underpinning for the emerging fields of faculty development, instructional improvement, and educational change. Models of

improvement and change (of the type developed by Lindquist), supported by evidence, would give considerable legitimacy to these activities as a formal part of postsecondary education. It is hoped that this research may lead to further conceptualizing and empirical investigation in the general areas of faculty behavior and the improvement of college teaching.

Overview of the Study

The principal problem to which this research is addressed can be stated succinctly: what approaches can be used to stimulate faculty members' interest in instructional improvement activities? And, which of these approaches have the most promise of success? This section briefly describes the plan used to pursue an answer to these questions.

Previous Research

As a first step the existing literature on the topics of instructional improvement and faculty development was reviewed to identify those strategies which seem to have the most promise based on previous experience and research. The term "strategy" refers to those practices which a university might employ to stimulate faculty members to improve their courses and teaching skill. Examples would include student evaluation of instruction, faculty workshops and seminars, released time to pursue improvement projects, etc. From this review a small number of psychological, sociological, and organizational phenomena or factors, which serve as the basis for many of these strategies, were identified. Psychological factors included Perceived Need to Improve, Knowledge of Alternatives, and Reward.

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Peer Support and Institutional Support represent the sociological and organizational factors identified. Some strategies no doubt make use of a number of these type of factors. The five factors identified are described in detail in Chapter II of this report.

Identifying and testing these more general factors hopefully make the results of such a study more generalizable. If, for instance, Reward is found to have a significant impact on whether or not a faculty member participates in instructional improvement activities, then strategies which make use of this factor can be used more confidently. Lindquist (1974a) suggests that notions about how people change tend to group into recognizable and separate categories. It is the assertion of this research that strategies of faculty development and instructional improvement can be clustered according to the more basic psychological, sociological, or organizational factors that underlie them.

Strategies and factors to be studied were identified from the instructional improvement and faculty development literature, despite its limitations, rather than directly from the more robust theory and research in general and social psychology and sociology. This approach was taken for at least one important reason. If the results of this research are to be useful to practical programs of instructional improvement and to future conceptualization and inquiry in this area, then it seems wise to select variables for study which already have some familiarity and acceptance to practitioners and which have some literature and research (albeit a small amount) devoted to them.

Because of the inadequacies in the existing theorizing and empirical research on college faculties, the literature on teachers at

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the elementary and secondary levels was searched for effective strategies of teacher improvement and change. Also, sources in general psychology, social psychology, and sociology were consulted. For example, the effects of Peer Support (one factor to be considered) on individual behavior has been extensively studied in "lower" schools and in non-education contexts (e.g., Hartup, 1970; Schmuck and Schmuck, 1975; Cartwright and Zander, 1968). In each case these two categories of previous research serve principally to further define strategies and factors initially identified from the instructional improvement and faculty development literature.

Operationalization of Factors

The second phase of the study involved operationalizing the factors chosen so that they could be studied experimentally. At this step factors, which were initially extracted from a study of strategies, were transformed back into these practical approaches. For instance, the factor defined as Institutional Support can be represented by the strategy of "released time from regular duties to pursue an instructional improvement project."

The major ways in which each factor has been operationalized by instructional improvement programs is described in Chapter II. In Chapter IV the four specific operationalizations chosen for purposes of testing each factor are presented.

Design and Implementation of Experimental Procedures

Finally, experimental procedures were designed and implemented to test the effect of the factors chosen on faculty members' willingness to make special efforts to improve their instruction. The research

design required a sample of faculty members to indicate the degree to which they would be influenced to participate in instructional improvement by each of the operationalized factors. These faculty members were asked to respond to four "situation descriptions," each of which combined the five factors into a distinctive "influence situation." In this way each influence situation became a treatment in a completely crossed factorial design.

Treatment effects were determined by appropriate analysis of variance. Interactions among factors and rank order of factors as to their effectiveness were also determined from the data of this study. These results provide one type of indication as to whether or not the factors chosen for study have a significant impact on faculty members' willingness to participate in instructional improvement activities.

The independent and dependent variables and the research hypotheses to be investigated are presented in Chapter III. In Chapter IV the methodology used in the study is detailed. Results are described in Chapter V and discussed in Chapter VI.

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CHAPTER II

REVIEW OF LITERATURE

As stated in Chapter I there exists little direct theory or empirical research to recommend strategies for stimulating college and university faculty members to commit themselves to becoming better teachers. There has recently developed, though, a rapidly accumulating literature on faculty development and instructional improvement in postsecondary education in which strategies for solving this problem have been proposed (Brown and Hanger, 1976; Behymer and Blackburn, 1975; Bergquist and Phillips, 1975b; Criteria, 1975; Eraut, 1975; Francis, 1975; Gaff, 1975b; Munson et al, 1975; Richardson, 1975; Toombs, 1975; Group for Human Development in Higher Education, 1974; Martin, 1974; Ack, 1973; DeBloois and Adler, 1973; Freedmen, 1973; Centra, 1972; Ebel, 1972, 1971, 1970; Noonan, 1972; O'Banion, 1972; Eble, 1971; Sanford, 1971; Almira, 1968; Borders-Patterson, 1968; Johnson et al, 1968; Lee, 1967; Soffen, 1967; Pullias, 1963; Commack, 1964; Gustad, 1964; Hall, 1964; McCarthy, 1964; Neuberger, 1964; Miller and Wilson, 1963). Also, prior to this present era there have been periods of formal concern for the improvement of instruction and the development of college teachers and some writing and research on conditions and strategies for facilitating each (Gray, 1930; AAUP, 1933; Haggerty, 1937; Wilson, 1945; Weaver, 1948; President's Commission on Higher Education, 1947; Tead, 1949; Kelley, W.F., 1950; Eckert, 1951; Kelly, F.H., 1951; Blegan, 1952; Norris, 1953; Corman, 1955; Dobbins, 1956; Garrett, 1957; Sheedy, 1957; McCoy, 1958; Grundstein, 1960;

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Crawford, 1961; McCall et al, 1961). As argued in the first chapter, the most important contribution to be made at this time would appear to be an empirical test of the most promising of the strategies that have been proposed, looking particularly at the psychological, sociological and organizational phenomena which underlie them.

The purpose of this review is to look at strategies and techniques of instructional improvement and to identify those phenomena or factors which may be effective in stimulating faculty to approach the upgrading of their teaching. The search has focused on the faculty development and instructional improvement literature. But, research on elementary and secondary teacher improvement, as well as more general psychological, sociological, and organizational theorizing and empirical investigation, has been brought to bear on the problem. This has been done particularly as this information provides support and elaboration for the strategies and factors identified in the more central college and university faculty literature.

For each factor identified an attempt was also made to determine which of the strategies associated with it might be most effective in facilitating instructional improvement. These strategies represent the operationalizations of each factor. (Specific operationalizations chosen to test each factor and the methodology of the study are described in Chapter IV).

Identification of Factors

Potentially there exists many basic factors and many operational strategies which might be used with faculty members toward the goal of teaching improvement. It would seem, though, that most can be grouped under a few general categories. In fact, a number of category schemes

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Perhaps the most familiar is the distinction between instructional development (of courses), personal development (of faculty members), and organizational development (of departments and institutions) (Bergquist and Phillips, 1975b; Gaff, 1975b; Richardson, 1975; Toombs, 1975).

This carving-up of strategies into three categories has proven useful to authors and practitioners of instructional improvement and faculty development. As will be seen, the strategies and factors chosen for study in this present research might very well be fit under one or another of these rubrics.

Lindquist (1974a), working within the Strategies for Change and Knowledge Utilization (SFCKU) project, has provided another, somewhat different, way of grouping strategies. Using the work of Havelock (1971, 1973) on the dissemination and utilization of innovations as a basis, he suggests that change can be thought to take place in at least four distinct ways: through Problem-Solving, Social Interaction, Research and Development, and Legitimate Authority. Each approach depends on somewhat different assumptions about individual behavior and the nature of organizations. Each can be thought to represent a distinctive approach to seeking change in individual and/or organizational behavior.

Lindquist's conceptualization has important advantages over other category systems. First, it has a more substantial theoretical and empirical basis. Each approach has been built on more general

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knowledge of human and group behavior. Havelock's ideas, which provide the bedrock for Lindquist's scheme, were originally based on a massive review of over 4,000 diffusion and change studies, including many in education (Havelock, 1971). More importantly the SFCKU project has attempted to collect evidence of the success or failure of each strategy in a number of different institutional contexts.

In addition to proposing four distinct approaches to change in higher education, Lindquist suggests that they compliment each other in a comprehensive approach to instructional improvement and innovation. Again beginning with Havelock's notion of "linkage" of innovation components, he argues that particular combinations of strategies will be more effective than approaches used in isolation. Although other authors propose distinct categories of strategies, they do not make it clear how these interact to facilitate instructional improvement.

The Lindquist system does, though, have limitations. First, each approach invokes more than one psychological, sociological, or organizational phenomenon. This is certainly not a weakness when it comes to practice. But, for research purposes it would be advantageous if only one unique factor could be associated with each strategy. For example, the first strategy proposed by Lindquist-- Problem-Solving--invokes a perceived need to change, peer group support, and institutional assistance. In the way the term is used in this present research, each of these may be considered a separate psychological, sociological, or organizational factor which underlies the particular operational strategy. For research purposes, these need to be distinguished if we are to know which specific factors prompt a certain faculty member to approach instructional improvement. The key

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variable in each of Lindquist's strategies needs to be identified.

Second, the set of strategies is incomplete. There is little direct emphasis given to what may be called support for improvement, direct or indirect, particularly peer support and institutional support. As will be argued later, these factors seems critical in any attempt to enlist faculty for teaching improvement activities.

Because of these limitations, any new attempt to generate and test factors which underlie instructional improvement strategies must go beyond Lindquist's work and that of the others who propose categories of strategies. The research reported in this volume uses Lindquist's work as a foundation. But, an attempt has been made to improve on it by 1) identifying the unique and essential psychological, sociological, or organizational phenomenon in each approach and 2) proposing additional factors which focus on support for instructional improvement. By these efforts a set of factors have been identified which can be empirically tested.

The remainder of this chapter describes the five factors chosen for study: Perceived Need to Improve, Knowledge of Alternatives, and Reward (suggested by Lindquist's work); and Peer Support and Institutional Support (proposed by other writing and research in the areas of instructional improvement and faculty development). The first three have been considered as psychological factors, while Peer Support and Institutional Support are sociological and organizational factors.

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Factor Number One: Perceived Need to Improve

Lindquist refers to his first change strategy as the Problem-Solving approach. The critical variable or factor in this approach is the identification of the need to change. In the case of this research, this need would be to improve one's instruction. The change process involves the desire to reduce the need or resolve the discrepancy between how a faculty member wants to behave or thinks he ought to in his teaching and how he is now behaving. The presentation of some kind of data which points out this discrepancy becomes the action component in this strategy. Lindquist (1974a) offers that "change occurs when a catalyst . . . intervenes in the life of the campus or professor to stimulate and assist a fairly sequential problem solving process . . ." (p. 2)

For Lindquist and the SFCKU project this approach involves both stimulating and assisting faculty members to seek improvement or innovation. But, as mentioned in the previous section, it seems advantageous to identify a single, unique element of each strategy to distinguish it from others for research purposes. In the opinion of this investigator, the key to this approach lies with the first component: stimulating, via the presentation of discrepant information, a perceived need to change. The assisting component is not unique to this approach, rather it seems more central to other strategies to be discussed below, such as Knowledge of Alternatives and Peer and Institutional Support.

As conceptualized by Havelock (1971), the Problem-Solving model of innovation and change involves development of a perceived need, diagnosis of the need into a solvable problem, seeking alternative

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solutions, and, finally, acting on the most promising alternative. Again, it seems to this researcher that the first component--developing a need to change--is the unique and essential key to this approach. This study focuses on it as a major factor underlying attempts to facilitate instructional improvement. Francis (1975) suggests that "the first task of instructional development must be to raise that consciousness, to attract attention, to unfreeze traditional faculty disinterest in the methodology of instruction and to establish a critical awareness of the necessity and desirability of instructional improvement" (p. 722).

The theoretical basis for this phenomenon can be thought to come from Lewin's idea of "unfreezing-moving-refreezing" of individual and group behavior (Lindquist, 1974a; Bergquist and Phillips, 1975a; Francis, 1975; Lippitt et al., 1958; Lewin, 1951, 1947). Old ideas and old ways of behaving are challenged by new information and become "unfrozen." There is a realization that something needs to be changed or improved. Movement can then result in the direction of more preferred activities, as new attitudes and capabilities are substituted for the old ways of behaving. These new ideas and performances eventually become "refrozen" as fixed and reliable characteristics until new unsettling information is presented. For example, a professor who wants his lectures to be complete and stimulating, but receives feedback from students that this is not the case, may find his belief and behavior become "unfrozen." To resolve the discrepancy he "moves" in the direction of improving his lectures or trying a new method. This behavior then becomes "refrozen" until students (or someone or something else) tell him again that his teaching behavior is not what he

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wants it to be. Francis (1975) again offers that "individuals, groups, and institutions, obeying the psychological equivalent of Newton's First Law, tend to remain in a given stage until pressure toward change overcomes inertia" (p. 722).

Another explanation derives from consistency theories of human behavior (Osgood et al, 1955; Festinger, 1957; Heider, 1958; Zajonc, 1960, 1968; McGuire, 1966; Abelson et al, 1968). In particular Festinger's cognitive dissonance ideas (Festinger and Aronson, 1968; Festinger, 1957) explain how a perceived need to change or improve gets translated into actions aimed at change or improvement. Information (a cognition) which challenges previously held intentions (a cognition) results in some attempt to resolve the psychological dissonance created. Taking a dissonance position, Berquist and Phillips (1975a) propose that "an individual must have experienced some discrepancy, dissonance, pain, or stress before he will commit himself to the difficult task of change" (p. 185). A faculty member can reduce the dissonance created by information telling him that he is behaving in his teaching counter to his intentions or beliefs by making some changes or improvements designed to bring behavior and intention closer together.

In one application of this idea to reform in higher education, Chickering (1969) presented faculty with survey feedback from his study of student development. He found that this information became a catalyst for change on many of the campuses involved (Bonham, 1975). Taking this particular lead, Lindquist included the approach as part of the SFCKU project and, indeed, has found that the interjection of discrepant information does stir faculty concern for teaching improvement (Lindquist, 1974a).

Operationalization of the Factor--Perceived Need to Improve

There are at least two general ways in which instructional improvement programs have tried to elicit a perceived need for improvement. Both involve presenting data of some form to faculty members in order to bring how one wants to teach into a discrepant relationship (within the person) with how one is now teaching.

Evaluation and Feedback

The first might be called the evaluation and feedback approach. Information gathered about one's present teaching behavior might indicate that personal teaching goals and standards have not been met. A number of authors cite evaluation of instruction and feedback of results to professors as a condition related to the improvement of college teaching (Zook and Haggerty, 1936, President's Commission on Higher Education, 1947; Eckert, 1951; Reeves, 1948; W.F. Kelly, 1951; Reeves, 1948, Almira, 1968; Musella, 1968; Eble, 1970, 1972; Rous, 1970, 1972; Centra, 1972; DeWolf, 1974; Miller, 1971, 1974; Aleamoni, 1975; Criteria, 1975; Eraut, 1975; Munson et al, 1975; Blackburn and Clark, 1975). This information might take the form of an evaluation of present teaching practices by students, peers, and oneself.

One of the goals of most student evaluation systems is to provide faculty members with feedback on their teaching performance. The hope becomes that the teacher will be stimulated to improve in those areas where students rate him as deficient. Centra (1972a, 1972b, 1973a) has gathered evidence that students' ratings do indeed lead to improvement where there is a significant discrepancy between students' assessment and a professor's belief about how he was doing. He states



that "the greater the discrepancy--where discrepancy reflected the extent to which students rated teachers less favorably than the teachers apparently expected--the greater the likelihood of change" (p. 21). Centra cites Heider's (1958) equilibrium theory to explain his finding. Aleamoni (1973) has reported results similar to Centra's. Students' evaluations of their teachers have also been shown to lead to improved instruction at the secondary school level (Tuckman and Oliver, 1968; Bryan, 1963) and elementary school level (Gage, Runkel, and Chatterjee, 1963).

Colleagues can also provide useful feedback (Centra 1972a, 1975; Batista, 1973). Although the evidence shows these judgments not to be reliable enough to be used in personnel decisions, colleagues can be the best source of information on a faculty member's command of his subject matter and his course objectives, materials, reading assignments, and examinations (Centra, 1975). Colleague assessments, if discrepant from one's goals and standards, should also generate a Perceived Need to Improve.

Considering self-rating, research suggests that there usually exists a large discrepancy between self-assessments made by faculty members and those made by students, colleagues, and administrators. Instructors generally rate themselves more favorably (Centra, 1972a, 1973a; Blackburn and Clark, 1975; Choy, 1969). Thus, self-evaluation of teaching performance alone would seem to have little promise for improving instruction. But if supplemented with student, colleague, and administrator evaluation and feedback, and possibly audio or video-tape playback, it can be an effective source of information.

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Bergquist and Phillips (1975a) recommend an evaluation approach, where the discrepancy between current operations and desired outcomes is assessed. These authors state that "an attempt at instructional improvement on the part of the faculty member will take place only if he evaluates his own performance as inadequate or below his own personal standards" (p. 185). In addition to the standard types of evaluation they propose an instructional diagnosis process, in which the professor 1) contracts for what he would like to accomplish as a teacher, 2) agrees to have data collected concerning his performance, and 3) receives feedback which he uses to determine whether he has accomplished his goals and to plan corrective action. A contract system has also been proposed by Buhl and Greenfield (1975). In this approach the instructor is helped to understand evaluation and feedback in terms of his own goals.

Another type of evaluation and feedback procedure involves a departmental or institutional study which indicates how well curricular or instructional goals are being met by the unit as a whole. If important goals and objectives are not being met, this information may enlist an individual's Perceived Need to Improve the parts of the curriculum or program for which he is responsible. Student achievement on graduate school tests and reports from employers provide good sources of data. Although a number of authors have proposed this approach in the past (Reeves, 1948; President's Commission on Higher Education 1947; W.F. Kelley, 1951), it seems to have been largely ignored of late in the literature of instructional improvement. Lindquist (undated), though, provides examples of change that takes place after this type of information is collected and reported back to the faculty.

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New Goals for Teaching

A second general way of eliciting need to improve involves information or changes which suggests new goals for teaching. New goals often require new behaviors discrepant from those in a faculty member's present repertoire. New goals can come in the form of a cooperative decision (e.g., on the part of a department) or an individual decision to change or improve instructional practice.

Gaff (1975b) cites the thinking of Nevitt Sanford and his colleagues at the Wright Institute and other faculty development programs who use this approach as a basis for their work (Sanford, 1971; Freedman and Sanford, 1973; Noonan, 1972, 1974; Bevan, 1974; Ack, 1973). A major proposition of this approach suggests that:

Change . . . requires a challenge to [the faculty member's] habit patterns, one strong enough to stimulate new forms of behavior but not so strong as to overwhelm him. In childhood there are many such challenges, but in adulthood this may require a change in social roles or relationships that tend to protect people from growth (Gaff, 1975b, p. 17).

This means that confronting a faculty member with new goals which upset the present equilibrium and necessitate new forms of activity may be an effective strategy for instructional improvement and change; a strategy which elicits the Perceived Need to Improve.

Involving faculty in the development of new forms of curriculum might represent one means of presenting new instructional goals and challenging habitual patterns of teaching behavior (Bergquist and Phillips, 1975a; Gaff, 1975b; Brawer, 1968; Noonan, 1971, 1972).

Assistance in clarifying presently latent or ambivalent goals, rather than suggesting new goals for teaching might be another productive strategy. Of all the means of eliciting a Perceived Need to Improve,

this type of self-examination, aimed at self-insight, might be the most potent. Sanford and his colleagues at the Wright Institute have developed an interviewing procedure to help college teachers clarify their values and beliefs about teaching and their role in it (Sanford, 1971; Sanford and Freedman, 1973). Ack (1973) and his associates at the Menninger Foundation use a similar approach. After thinking about and articulating his beliefs about teaching and learning, and after looking into his background and experiences to discover the origins of these beliefs, a faculty member decides for himself how much change is needed and in what areas. Both groups have worked with a considerable number of faculty members at a variety of institutions and have reported that this strategy has been successful in stimulating instructional improvement efforts.

Sanford (1973) suggests that "attempts to produce change by behavioral or mechanical means will not be effective nor long lasting unless they are understood, accepted, and integrated within the person" (p. 9). This may mean that other factors such as Reward or Peer Support, which rely on behavioral mechanisms, may not be effective stimulants to instructional improvement unless there is first an accepted realization that change is necessary. Purdy (1973) reinforces this view with his insight that "support staff and resources for faculty . . . are vital to improvement but only after the faculty themselves have decided to take advantage of them" (p. 56). This suggests that this first factor may interact with another to be presented later--Institutional Support.

Although this factor and the operationalizations described (evaluation of instruction, institution or department self-study,

curriculum revision, and analysis of values and beliefs about teaching) appear to be promising for explaining participation in instructional improvement, there are problems and limitations inherent in attempts to elicit a Perceived Need to Improve. Defensiveness as a reaction to discrepant information may be the most serious. A number of faculty development authors express this concern (Bergquist and Phillips, 1975a; Gaff, 1975b, Ack, 1973; Alexander, 1973; Sanford, 1971). Specifically, the research on cognitive dissonance suggests that discrepancy may not only be resolved by new behavior in the direction of the new information (Festinger and Aronson, 1968). Other, less desirable, reactions may take place. Assessment data or sources might be discredited or new goals may be rejected, resulting in a retrenchment to present patterns.

Gaff (1975b), in his syntheses of the ideas of other authors, suggests that stimulation for change via discrepant information may exist on a continuum. Beyond a certain point on the continuum, a person can be overwhelmed. When this occurs, a reaction against the information and intended behavior change will likely result. But if pursued carefully, this approach will result in change in the desired direction, in this case toward instructional improvement.

Bergquist and Phillips (1975a) and Gaff (1975b) suggest steps that can be taken to minimize counterproductive reactions by faculty. Feedback from students, peers, or non-personal means (such as video-tape) or reports on student achievement and curricular success should be given in a non-evaluative, descriptive, and helpful manner. Also, rather than providing faculty with only one source of information, data from many sources could be provided. Messages consistent across student ratings, colleague assessments, and self-

assessment procedures will be most likely harder to ignore than discrepant information from only one of these sources.

Another important limitation results when a faculty member perceives the need to change, but either is not aware of alternative forms of behavior (e.g., new methods), does not have the assistance necessary to make necessary changes (e.g., expert consultation), or is prevented from changing. Little or no improvement will occur if a faculty member perceives any or all of these to be true. Wilson and Gaff (1970) suggest that "the main problem for educational reformers lies not in convincing faculty members of the need to change, but rather in mobilizing existing sentiment into action" (p. 11). A comprehensive approach to teaching improvement, though, depends on more than one factor. The other factors to be identified in this research hopefully compliment efforts to elicit a Perceived Need to Improve and mitigate, in part, this limitation. It has also already been suggested that this factor may be an important pre-condition to the effectiveness of the other factors.

Factor Number Two: Knowledge of Alternatives

Lindquist (1974b) has observed that "most college and university members are isolated from new teaching-learning information" (p. 326). The second model for change which he proposes is explicitly designed to remedy this problem. It begins not with the identification of a need to improve but rather an awareness of innovations or alternatives to present instructional practices. Francis (1975) states that "participants move from questions of whether or not instructional development is worthwhile or feasible to questions of what specifically can be done" (p. 724). Putting faculty members in touch with new ideas

represents the action component of this strategy. The approach focuses on an individual's perception of a response to knowledge coming from outside (Grimes and Doyle, 1971). Knowledge usually takes the form of products or practices made available to the person for his consideration. Again following from Havelock (1971), Lindquist calls this general approach Social-Interaction or Communication of Innovations. As a factor to be studied in the present research, it has been labeled Knowledge of Alternatives.

As adapted by Lindquist (1974a), the Social-Interaction Model concerns the communication network and stages by which potential users of information gain awareness and interest in an idea, evaluate its relative advantages, and then adopt or reject it. But, consistent with the approach taken in this present research, the awareness component has been singled out for study as a more general factor underlying instructional improvement. Gaining knowledge of new ways of behaving appears to be the unique aspect of this general approach. An attempt has been made in the present research to determine if new knowledge results in faculty member's participation in instructional improvement.

Other faculty development authors also emphasized this factor and propose strategies based on it (Kelley, W.F., 1950; Norris, 1953; Almira, 1964; Eble, 1972; DeBloois and Alder, 1973; Group for Human Development in Higher Education, 1974; Eraut, 1975). Bergquist and Phillips (1975a) recommend the infusion of educational methods and technology into the improvement process. Gaff (1975b) suggests that faculty members will change when, among other things, they have knowledge about alternative ways of behaving, such as information about

alternative teaching-learning practices. Finally, Smith (1976) proposes a communication model based on the ideas of Havelock (1971) and Lindquist (1974b).

In his discussion of methods for changing elementary and secondary school teacher attitudes, Lorree (1971) proposes information input as one approach. The assumption is that newly acquired information or knowledge alters the belief system of the individual.

Operationalization of the Factor--Knowledge of Alternatives

This factor--Knowledge of Alternatives--can be operationalized in a number of ways. Group presentations (seminars and workshops, conferences, courses, etc.), individual consultation with experts on teaching and learning, and written materials have been the standard techniques for transmitting information on instructional methods to faculty members. Personal communication with other faculty or university staff represents another major source of new ideas. Any means by which information (which may be used to pursue instructional improvement) can be passed to college teachers falls under this basic approach.

There are, though, some qualifications that need to be made if this factor, and strategies it might spawn, are to be applied successfully. First, Lindquist (1974a) stresses the interpersonal nature of the linkage. He offers:

Because interpersonal interaction tends to be the strongest way to communicate new information, especially to people who are not particularly open to change, the linking agent works interpersonally herself, one-to-one when possible, and links persons to persons more often than papers and articles to persons. (p. 5)

More generally he makes the observation that:

Only the small percentage of people who are very open to change will improve on the basis of impersonal messages. The rest of us have to talk with our colleagues, talk with data-gatherers, talk with detached consultants before we are ready to take new actions (p. 14).

This interpersonal aspect of change will be proposed as a separate factor below. But, it is noted here because of its possible importance to the optimal uses of the Knowledge factor. If Lindquist is right, communicating innovations in a personal context (e.g., group presentations, individual consultation, and communication with colleagues) may lead to more change than information presented impersonally (e.g., written information). If information communicates alternatives accepted by important reference groups (e.g., colleagues), then its effectiveness may be further enhanced (Havelock, 1971, Loree, 1971). The particular source of the information may also be important (Lorree, 1971). In addition to the implicit support involved, the information itself may take on a different value and provide a differential impetus for approaching improvement activities depending on its source.

Second, the effect of knowledge of new methods and techniques may depend, in part, on the attractiveness of these alternatives. In addition, as suggested earlier, knowledge of new teaching procedures may not move a faculty member toward improvement unless he has perceived a need to change and use that information. Knowledge which is consistent with the needs of an individual will most likely have more impact than that which is not (Lorree, 1971). McCall (1961) concludes from a study of the problems faced by faculty members that "an orientation

or in-service program can be effective . . . only to the extent that it treats adequately those matters that [a faculty member] perceives to constitute problems" (p. 1).

Third, college faculty members may resist borrowing ideas, especially when evidence indicates that the methods are no better than what they are presently using (Lindquist, 1974a).

Finally, faculty members may both perceive a need to improve and know of alternatives to their present practices but be blocked by lack of institutional support and/or by lack of skill needed to pursue a particular alternative.

Lindquist refers to his third major change strategy as Research and Development, an extension of Havelock's (1971) third and final innovation model. This approach focuses on the design and testing of new instructional procedures. The key to the change process is the research and development process itself; once a program demonstrates its merits and is diffused to potential users, the assumption is that the idea will be adopted.

This strategy for instructional improvement has not been considered in this present research. In the assumptions it makes about change, it appears to have similarities with other approaches. Research and Development typically begins with the formation of a problem based on a perceived need to change. The diffusion and adoption components then seem to follow the Social-Interaction Model. Designing one's own instructional procedure and gathering one's own evidence about its success or failure may make the procedure more attractive and more likely to be adopted. But, there seems to be no unique

and generalizable psychological, sociological, or organizational factor identifiable in the strategy. This strategy may be the most basic of Havelock's three models but only because it relies on the essential factors of the others (Grimes and Doyle, 1971).

DeBloois and Alder (1973) make the following comment about the Research and Development approach to instructional improvement in higher education:

Several research and development centers [e.g., Indiana, Oregon System, Michigan, Michigan State, Syracuse, Brigham Young] have adopted processes (or models) to produce validated instructional materials which are then disseminated nationally to individuals who are anxious for innovation. However, the centers have proven only modestly successful in bringing about wide change among less motivated professionals in their own instruction. The research and development products are often viewed with suspicion, little known, or sometimes ignored. This is not to dispare the research and development centers, but rather to suggest the need for another kind of effort to accompany the research and development of validated instructional processes (p. 2).

Factor Number Three: Reward

The fourth and final strategy proposed by Lindquist (1974a) relies on Legitimate Authority. This approach does not depend on evidence or persuasion, as did the previous strategies, but rather on pressure of formal policy via academic governance, personnel policy, or administrative fiat and reward and punishment for adherence to or violation of that policy.

Under this model specific curricula or methods of instruction or a code of teaching responsibility (M.S.U., 1969) or code of professional ethics (Von Blum, 1974) might be proposed and legislated through the governance or administrative systems. The assumption is

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that once legitimate authorities give approval, most faculty will choose to implement the new procedures and not defy the authority. The anticipation of reward and/or punishment becomes the key variable.

The Legitimate Authority model, though, does not have to emphasize threat of punishment. An institution might easily rely, instead, exclusively on positive opportunities and reinforcement (Zeckhausen and Zeckhausen, 1975). Learning theory indicates that these mechanisms tend to increase motivation more than do threats and punishment (Lindquist, 1974a; Skinner, 1971).

For purposes of the present research, Reward has been considered the important factor underlying the Legitimate Authority approach. When Reward is emphasized, the central avenue to promoting improvement activities involves making good teaching an important criteria for professional advancement. An evaluation of some sort provides evidence of teaching effectiveness¹ upon which decisions of salary, promotion, and tenure are made in accordance with this formal policy. Since college and university faculty members, like all humans, seek reward, it can be assumed that they will do what they can to maximize their chance for success under the policy (Luthans, 1965).

If the policy emphasizes teaching, professors can be expected to participate in those activities which will help them improve their instructional capabilities. Korn (1974) comments:

There is, of course, the motivation inherent in the tasks of teaching and research: the discovery of truth, the creation of ideas. This intrinsic motivation is strong

¹Evaluations of teaching used only for diagnosis and feedback to the instructor would fall under the Problem-Solving--Perceived Need to Improve category.

for most faculty. However, it is obvious that extrinsic incentives have a significant effect as well. The evaluating and rewarding of teaching by a promotion committee could prevent the dedicated researcher from ignoring his teaching and assure the dedicated teacher that his efforts will not cost him his job (p. 132).

Gaff (1975b) argues that although intrinsic interests rather than extrinsic demand should be the basis for any improvement program, "when external motivation is used . . . , the carrot--not the stick--is the most common form of incentive" (p. 7). Many faculty development and instructional improvement authors agree with Gaff (1975a) that lasting change can only be brought about by supporting and reinforcing positive efforts of faculty members (Haggerty, 1937; Wilson, 1947; Kelly, W.F., 1950; Eckert, 1951; Norris, 1953; Corman, 1955; Commack, 1964; Gustad, 1964; Weeks, 1964; Balyeat, 1965, 1966; Almira, 1968; Johnson et al, 1968; Shank, 1968; Eble, 1972; Ack, 1973; DeBloois and Alder, 1973; Group for Human Development in Higher Education, 1974; Eraut, 1975; Criteria, 1975).

Hodgkinson (1971), in an article concerned with academic incentives, recommends that rewards be increased for those jobs that must be performed at the highest level of competence. This principle underlies our entire economic reward system. Thus, if teaching and teaching improvement are activities to which we want to assign great competence, then reward becomes necessary to attract the kinds of people and the type of effort desired.

There exists a paradox, though, concerning the academic reward system. In their recent survey of American college and university faculties, Ladd and Lipset (1976) found that three-quarters of faculty members sampled hold a greater commitment for teaching than they do for research. A similar percentage felt that teaching effectiveness,

not publications, should be the primary criterion for pay and promotion. This is consistent with research on this subject by Spitzer (1975) and Gaff and Wilson (1971). Yet, according to the same Ladd-Lipset investigation, higher education as an institution values research more than teaching when it comes to dispersing salary and promotion awards.

Many faculty desire to be rewarded for their teaching effectiveness and are dissatisfied with the inordinate emphasis on research (Spitzer, 1975; Gaff and Wilson, 1971). But, the reward system changes slowly, if at all. According to Spitzer (1975) many faculty find this over-emphasis on research and lack of incentives for teaching and teaching improvement to be among the chief barriers to participation in improvement activities.

Operationalization of the Factor--Reward

What kinds of rewards will be effective with a college faculty? This will depend eventually on the individual faculty member involved, but a few general ideas have been offered which can be applied to this group as a whole. First, Korn (1974) proposes that "in general, what is needed to improve teaching effectiveness are incentives that are as highly valued as the incentives provided for research" (p. 132).

Rewards for teaching and teaching improvement need to be commensurate with rewards for activities that compete for faculty time and effort.

Brandis (1964), in an article titled "The Rehabilitation of Undergraduate Teaching" argues:

If a university is serious about the rehabilitation of the teaching function, the first step is to make the rewards for excellence in teaching equal to those for excellence in research. The university cannot by edict order teaching to be as prestigious as research. But, it can treat them equally in terms of pay and rank. No doubt, if this were done, a good deal of prestige would quickly

accrue to teaching. It cannot be over emphasized that this step is the sine qua non of the rehabilitation of university undergraduate teaching (p. 58).

As a second means of reward for instructional improvement Gaff (1975b) offers that recognition may be as effective as any material reward which could be given to faculty for participating in improvement activities:

Faculty members are a peculiar breed in that, more than most workers, they have an intrinsic interest and are highly ego involved in their work. Perhaps more than anything they want to be recognized and appreciated for their professional competence (p. 91).

Thus, in addition to (or even in place of) more tangible rewards (such as salary increases and academic promotion), formal praise and recognition (such as awards or citations from colleagues, students, and administrators in prominent forums) may be an effective means of motivating approach toward instructional improvement.

Of the types of reward common in colleges and universities, there is evidence that salary may be the most favored. Shank (1965) studied the reward structure at six Michigan universities and found salary most important, followed by academic rank and fringe benefits. In Spitzer's (1975) study at SUNY at Albany, salary increment was favored by 35.1 percent of the respondents as an effective incentive for instructional improvement. The highest ranking reward in this study was "counting instructional improvement efforts on a par with research and publication in decisions of promotion and tenure (58.2%). Merit award was next highest (44.9%), followed by administrative commendation (24.6%).

It is interesting to note from Spitzer's survey that less than five percent of the faculty questioned felt that no additional

incentives were needed to encourage instructional improvement. This fact has been recognized by an eleven college project recently funded by the Fund for the Improvement of Postsecondary Education which seeks, among other things, to study ways of rewarding faculty for special efforts to better their teaching (Criteria, 1975).

Factors Number Four and Five: Peer and Institutional Support

Lindquist's Problem-Solving strategy involves not only stimulating a perceived need to change but also assisting the faculty member to arrive at and carry out a solution to the perceived problem. In describing the Problem-Solving approach, it was suggested that the stimulating component compromised the unique and essential element of that strategy, and that assistance in making necessary changes was more central to other approaches. The Social Interaction model seems to provide one aspect of that assistance--knowledge of alternative ways of behaving. But, as mentioned as a limitation to the knowledge approach, the faculty member may not have the resources or abilities necessary to pursue these alternatives. Support for improvement becomes another aspect of assistance and, of itself, an essential variable in determining whether faculty will approach the improvement of their teaching.

The Group for Human Development in Higher Education (1974), in one of the seminal works on faculty development, cites a lack of success for much of the previous work in faculty development and instructional improvement. They propose, instead, the creation and sustenance of a "pedagogical culture." Comstock, writing for the Group, states:

What has not been done is to develop an adequate system of supports resting on a network of new kinds of relationships between a teacher and his or her colleagues, students, administrators, and experts on the process of learning (p. 18).

Buhl and Greenfield (1975) reinforce this position by observing that "institutional environments largely determine whether faculty members find it worthwhile to devote their time to increasing learning effectiveness" (p. 111).

A study done for the Project to Improve College Teaching also has found that the nature of a college's environment relates significantly to the improvement of instruction on the campus (Gaff and Wilson, 1971). These authors conclude that "the policies and practices of the institution and the people with whom faculty work closely are environmental factors which have a considerable impact on college teachers" (p. 476). Purdy (1973) adds that "we are just beginning to see that the whole college environment can influence the outlook of the people who work in the institution" (p. 57).

Finally, Gustad (1960), writing more than 15 years ago, suggests that the pre-requisite for a program of faculty development is a working environment perceived as adequate for faculty accomplishment and reward for achievement. This includes work aids, provisions for material, facilities, and services, etc.

When instructional improvement authors concern themselves with the sociology of higher education and organizational development of colleges and universities, issues of peer and institutional support, as well as formal policies and reward structures, become their focus (Bergquist and Phillips, 1975a; 1975b; Gaff, 1975a, 1975b; Boyer and Crocket, 1973). Organization development approaches assume that

individual change must receive support from group policies and procedures if it is to be sustained. Gaff (1975b) states that:

Teaching and learning are individual but not solitary activities; they occur within a social context. The climate of the institution, the relationships between faculty, administration, and students, and the policies and practices of the school effect the characteristic of teaching and learning. The improvement of instruction requires attention to those social and institutional factors as well as to individuals (p. 7).

Rewards for teaching and teaching improvements have already been discussed; but in this research Peer and Institutional Support, deriving generally from the faculty member's social and organizational environment, are considered factors of equal importance in whether or not he will make special efforts to improve his instruction.

Peer Support: Factor Number Four

Peers can be thought to provide the bearing necessary for a professor to commit himself to the risk and effort involved in improving his teaching. Unless group norms sanction teaching and actions to improve it, a faculty member must act independently and possibly forego the respect and reward of his colleagues. Peer expectations and reward may have more effective importance for how a faculty member spends his time than those expectations of the larger institution (Borlund, 1974). Institutional expectations are emphasized in the college or university's reward structure, but peer expectations and the rewards gained from living up to these expectations are a phenomenon of one's most valued group of associates.

In his study of socialization after childhood, Brim (Brim and Wheeler, 1966) observes that an adult person "learns to take his part in society according to the realistic expectations of others

rather than attempting conformity to idealistic norms" (p. 29). To this Gaff (1975b) adds: "As much as an individual may want to change and develop, it will be difficult for him to do much unless he has the support and encouragement of his associates" (pp. 26-27). Finally, Sanford (1971) states that "even when a professor is ready to change, however, he finds that he has made commitments and must defend what he has done, while also dealing with the expectations of family and colleagues who, often at some pain, have grown used to him as he is (p. 361). These lines nicely describe the importance of Peer Support.

Hodgkinson (1971) suggests that one way to activate faculty is to decrease the level of threat that accompanies certain activities. If this can be accomplished, people will move into new tasks with greater feelings of security and well-being. Probably the best way to diminish threat is through the development of supportive peer groups. Bergquist and Phillips (1975a) also cite the need for non-threatening and supportive environments for faculty.

Many instructional improvement authors cite the support of important associates as an important condition of teaching improvement in higher education (Kelly, W.F., 1950; Eckert, 1951; Norris, 1953; Sheedy, 1957; McCoy, 1958; Pullias, 1963; Almira, 1968; Johnson et al, 1968; Gaff and Wilson, 1971; Eble, 1972; Group for Human Development in Higher Education, 1974; Eraut, 1975). Theorizing and study on the effects of peer groups outside of higher education also attest to the crucial role played by peer group norms and expectations (and the support or lack of support they imply) in influencing human behavior (Hartup, 1970; Schmuck and Schmuck, 1975; Cartwright and Zander, 1968; Lewin, 1951; Guba, 1951).

Operationalization of the Factor--Peer Support

Peer Support may take the form of "colleagueship" among members of an academic unit, where members assist each other in identifying and trying out new content materials and instructional techniques (Group for Human Development in Higher Education, 1974; Reisman, 1959). In his study of community college faculty, Purdy (1974) found that the type of relationships that existed among faculty was significantly related to the use of innovative or experimental techniques. Where there existed a high degree of colleagueship, there was found a high degree of innovativeness. Purdy attributes this to the trading of ideas and the existence of support for trying new approaches. A similar approach to using Peer Support as a stimulant to instructional improvement exists when colleagues (particularly older, established colleagues) set an example of innovation and change in their teaching (Sheedy, 1957). Purdy (1974) observes that "faculty would often ignore information or innovative practices . . . unless a colleague had tried [it] and gave a personal recommendation" (p. 55).

Peer Support is also operationalized when an individual behaves in such a way as to adhere to group norms and expectations. If reference group members expect special efforts to be made to improve instruction, then the likelihood increases that these efforts will actually take place.

Finally, if there is an articulated concern among group members for the quality of instruction and encouragement to continually improve it, then the influence will be strong on a faculty member to also be concerned and do his part to maintain the quality of teaching in the unit (Alexander, 1973; Ack, 1973).

An important issue concerns who is the most effective peer group for any individual. Borlund (1974) suggests that influence rests with the lowest organizational level at which a commonality of goals are perceived. This means that a faculty member's closest colleagues, most likely his fellow department members, will provide more effective support than more diverse and widely separated colleague groups. In fact, in Spitzer's (1975) study a significant number of faculty (20%) felt "lack of departmental concern" to be a hinderance to their attempts to improve instruction.

Borlund reports, interestingly, that faculty members who were most experienced with innovative practices needed the most support. This could be a result of this group continually taking new risks and expending efforts at some personal and professional cost.

Institutional Support: Factor Number Five

Support can also take a more direct form. The institution for which the faculty member toils can provide or withhold resources necessary for improvement activities.

Institutional Support, as an approach to teaching improvement, has similarities with the Reward and Peer Support models. All are organizational approaches, but here the emphasis is on institutional action directly related to improvement activities, not on formal policy backed by a system of rewards or reference group expectations. Again many authors mention this type of support as an important condition for instructional improvement (Haggerty, 1937; Kelley, W.F., 1950; Eckert, 1951; Norris, 1953; Corman, 1955; Pullias, 1963; Hall, 1964; Almira, 1968; Johnson et al, 1968; DeBloois and Alder, 1973; Eble, 1972; Group for Human Development in Higher Education, 1974; Eraut, 1975;

Lisensky, 1975; Criteria, 1975; McCall, 1961; Siehr, 1961). Little theorizing or research, though, has been done on the effect of direct Institutional Support (e.g., released time, funding, consultation, etc.), despite the fact that a considerable investment is made in these activities by colleges and universities each year.

Operationalization of the Factor--Institutional Support

Instructional development requires, at the very least, time and some expense. An institution can foster these activities if it provides the necessary released time and supplementary financing (e.g., small instructional improvement grants). Instructional improvement can also necessitate a certain amount of expertise on the faculty member's part and technical consultation where he does not have time or skill (Alexander, 1973). A school that invests in continuing professional development and teaching-learning resources is in a position to encourage improvement and innovation (Stickler, 1951, Alexander and Yelon, 1972). Without this type of assistance faculty members may perceive a futility in moving toward better teaching.

Spitzer (1975) asked faculty which types of Institutional Support they thought would be effective in encouraging faculty members to engage in improvement activities. Released time and instructional improvement grants were most favored (43.2%). A third of those responding also thought additional graduate assistants would be important. The released time finding is significant because Spitzer also found that time constraints represented the biggest hindrance to improvement (60%). Lack of administrative support and guidance (27.4%) and organization (15.1%) and administrative structures (10.2%) were also mentioned as hindrances. Finally, financial constraints were

reported to be a barrier to participation in teaching improvement (21.1%).

It is interesting to note that whereas almost every faculty member surveyed by Spitzer felt that he possessed a "very large" or "considerable" commitment to instructional improvement, only about one-third felt the same about other faculty and one-sixth about administrators.

Summary

This section has reviewed strategies for instructional improvement. Using those proposed by Lindquist (1974a) as a springboard, an attempt has been made to identify those psychological, sociological, and organizational factors which might be related to faculty members' participation in improvement activities. Five factors seem most promising: Perceived Need to Improve, Knowledge of Alternatives, Reward, Peer Support, and Institutional Support. Theoretical and empirical justification has been provided for each factor. Qualifications were suggested, and each was operationalized by suggesting approaches which have been taken by institutions to use the factor in their instructional improvement efforts.

This conceptualized set of factors is by no means unique. In addition to being abstracted from Lindquist's strategies for change, they are similar to the conditions which other authors list as important for change among faculty in higher education (Gaff, 1975a, 1975b; Bergquist and Phillips, 1975a, 1975b; Group for Human Development in Higher Education, 1974). The present review, though, has attempted to state them more precisely and to cite existing support for their potential efficacy in instructional improvement programs.

CHAPTER III

VARIABLES AND HYPOTHESES

Variables

As its primary objective this research intends to evaluate the effectiveness of the factors identified in Chapter II: Perceived Need to Improve, Knowledge of Alternatives, Reward, Peer Support, and Institutional Support. These five factors constitute the independent variables to be studied.

For purposes of the research each factor or independent variable will be either present or stated as absent in the influence situations to be presented to subjects.

Perceived Need to Improve (PN). Presence of this factor suggests to a faculty member some sort of dissatisfaction with his teaching and the need to change or improve. Absence tells him that he sees no particular need to change or improve at the present time.

Knowledge of Alternatives (K). Presence of the factor indicates that information on new approaches has been provided to the instructor. Absence suggests that he is not aware of teaching approaches different from those he is now using.

Reward (R). The presence of reward suggests that some positive inducement has been or will be made for the improvement of instruction. Absence means that incentive is generally not provided for teaching improvement.

Peer Support (PS). When peer support is present the faculty member will be told that he has the backing and encouragement of his close colleagues or that he is acting in accordance with group norms or expectations. At the absence level, the opposition or indifference of peers to instructional improvement will be indicated.

Institutional Support (IS). Presence of this factor means that the university has provided or will provide time, money, and other resources necessary for instructional improvement projects. Absence will be suggested by a stated lack of this type of support.

Each of these factors has been given specific operationalizations in the situation descriptions that were developed. Operationalizations chosen and the procedure for preparing situation descriptions are described in Chapter IV.

The "effect" of interest in this research is a university faculty member's stated willingness to make special efforts to improve his instruction. This constitutes the dependent variable of the study. The way in which this variable has been operationalized and measured is also described in Chapter IV.

Research Hypotheses

Following from the previous research and writing reviewed in Chapter II and from experience with these factors as they are operationalized in campus instructional improvement efforts, the following hypotheses were made:

Hypothesis 1. The presence of a Perceived Need to Improve will result in a greater stated willingness on the part of a faculty member to make special efforts to improve his instruction.

Hypothesis 2. The presence of a Knowledge of Alternatives to present instructional practice will result in a greater stated willingness on the part of a faculty member to make special efforts to improve his instruction.

Hypothesis 3. The presence of Reward for instructional improvement will result in a greater stated willingness on the part of a faculty member to make special efforts to improve his instruction.

Hypothesis 4. The presence of Peer Support for instructional improvement will result in a greater stated willingness on the part of a faculty member to make special efforts to improve his instruction.

Hypothesis 5. The presence of Institutional Support for instructional improvement will result in a greater stated willingness on the part of a faculty member to make special efforts to improve his instruction.

Hypothesis 6. There will be no difference in the amount of variance in the dependent variable (willingness to make special efforts to improve instruction) accounted for by each of the five factors (Perceived Need to Improve, Knowledge of Alternatives, Reward, Peer Support, Institutional Support). The impact of each of the factors will be of the same order of magnitude.

Hypotheses 7-10. There will be a separate significant two-way interaction between Perceived Need to Improve and each of the other factors (Knowledge of Alternatives, Reward, Peer Support, and Institutional Support). More specifically, each factor will be

more effective when a Perceived Need to Improve is present. Also, the converse was predicted to be true: Perceived Need will be more effective when each of the other factors is present.

The existing literature suggests that each of the five principal factors identified for study (independent variables) would have a significant main effect on subjects' stated willingness to improve instruction (dependent variable). Previous research and writing does not, though, indicate a particular rank ordering of these factors in terms of their effectiveness in stimulating instructional improvement efforts. It was considered quite possible that there would be a difference in the amount of variance accounted for by each factor. But, no prediction could be made as to which factors would be most and least potent.

In Chapter II it was proposed that Perceived Need to Improve may be an important prerequisite to the effective influence of the other four factors (p. 24 and p. 29). Previous writing and research suggest that if Perceived Need is present, the presence of the other factors will result in more stated willingness to improve instruction than when Perceived Need is absent. Existing literature also supports the idea that Perceived Need to Improve will itself result in more movement toward instructional improvement if the other factors are present (p. 26). Although it is reasonable to assume that there may be other interactions between and among factors, the existing literature indicates none in addition to those between Perceived Need and the other four factors.

CHAPTER IV

METHODOLOGY

A somewhat unique methodology was used to test the hypotheses proposed in the previous chapter. To the knowledge of this researcher it has been used in only three previous studies (Hapkiewicz and Schmidt, 1973; Miller and Lutz, 1966; Johnson and Stanley, 1955) and never to investigate the problem addressed by this thesis. But, as will be explained, the approach has several advantages which make it the best of all possible ways to have pursued this study. It also has significant limitations, which will be discussed. This chapter also includes descriptions of 1) experimental design, 2) sample, 3) instrumentation (construction of sets of situation descriptions), 4) administration procedures, and 5) statistical analysis.

General Method

The basic research approach involved assessing the judgments of faculty members as to which factors and combinations of factors might be influential in whether or not they would participate in instructional improvement activities. Rather than actually submitting faculty members to the strategies which operationalize each factor in vivo, subjects were simply asked what effect a particular combination of factors would have on their willingness to improve instruction.

The empirical work was carried out by developing a set of "situation descriptions", each of which combines the five factors previously identified (two levels of each--presence and absence) into

different "influence" situations which a faculty member might face. These situation descriptions were constructed in terms of a complete factorial design, a situation for each possible combination of factors and levels. Situations descriptions developed in this way can be regarded as experimental treatments and, if administered according to an appropriate experimental design, allow statistical determination of main and interaction effects of the factors tested (Miller and Lutz, 1966). The specific design and analysis to be pursued in this study allowed 1) determination of which factors are perceived as effective in facilitating instructional improvement, and 2) determination of which factors account for the variability observed in these perceptions (Hapkiewicz and Schmidt, 1973).

Advantages

The advantages of this methodology are numerous (Miller and Lutz, 1966), particularly when studying a group such as college faculty members. First, the systematic construction of situation descriptions, according to an experimental design in which situations are conceived as treatments, provides the advantages of any factorial design (Cox, 1959). These include a high degree of precision in estimating main and interaction effects.

Experimental design provides the opportunity to evaluate several factors and their interactions simultaneously rather than in separate experiments. If done in vivo, five factors would most likely be a prohibitive number to build into a single treatment. This approach allows, in the case of this study, the testing of thirty-two distinct treatments. Lindquist (1974a) has suggested that change strategies be combined when working with college faculty.

This methodology provides one way to do so economically, at least for research purposes. In addition, the factorial approach allows the definition of a framework within which a range of conclusions can be drawn and onto which further experimentation can be built. If certain main effects or interactions are found to be significant, these can be further analyzed. The most promising might be studied in vivo.

The idea that each situation description presents a multi-stimulus influence situation would seem to be a second major benefit of this method. Human beings are hardly ever influenced by only one factor, but rather are subject to complete situations. Underlying the approach is the assumption that faculty members view and respond to their professional work in multi-dimensional terms. This assumption suggests that higher-order interactions may be present in faculty responses to different pressures for instructional improvement.

A third major advantage concerns the methodological definition of experimental stimuli according to a standard framework. Operationally defining the content of experimental treatments is often difficult. The approach used helps remedy this problem by allowing an apriori definition of situation characteristics and specifying a manner of combining factors into situation descriptions. In this way the logical complexity of a situation can be defined before response measures are taken.

The fourth advantage, and possibly the most important one for this research, is a practical one. It would be very difficult to get faculty members to submit themselves to the strategies tested in this research, short of a long-term, action-research project

such as that undertaken by Lindquist (1974a). It proved feasible, though, to persuade a group of faculty members to respond to a small set of situation descriptions describing certain treatment conditions.

Limitations

The experimental procedure represents, in essence, a paper and pencil simulation of a number of influence situations. This simulated approach provides for the advantages mentioned above. But, it also presents some limitations to the conclusions that can be made from the results.

The foremost limitation concerns the fact that operationalized factors were not actually being tested for their effectiveness. Rather faculty were asked whether or not they would be influenced by the factors. From the results one technically can comment only on these faculty judgments, not on the application of the factors themselves in vivo.

Simulation, though, has become a well-accepted tool in behavioral and social science research (Abelson, 1968). The simulation method, according to Crano and Brewer (1973), carries "the potential for representing some of the complexities of natural settings without abandoning the manipulative control required for cause-effect interpretations of results" (p. 115). They go on to argue that:

. . . the value of simulation techniques lies in providing an arena for the testing of theory which does not share many of the weaknesses of other research settings . . . Any theory designed to explain and predict the operation of real social systems will have implications for relationships in many different settings. Thus the outcomes of simulation can provide a probe for such theories, and a potential setting for weeding out among

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competing theories, even though there is no logical basis for direct generalization from simulated social interactions to real social systems. In addition, the simulation experiment provides advantages over real-world theory probing in allowing for cause-effect analyses and controlled replication of variable manipulations (pp. 115-116).

The eventual outcome to the line of inquiry suggested by this thesis must be a determination of which factors contribute most to participation in instructional improvement. This must ultimately be decided in the "real world." But as Crano and Brewer suggest, a first step may legitimately consist of "weeding out" potential explanations in a simulated context which allows a balance of complexity and control not possible with other methods. As described in Chapters I and II there has been little empirical research of any kind and virtually none of an experimental nature done on the questions raised by this research. Thus, despite the "one step from reality" nature of the present study, it contributes needed information.

No direct generalization can be made from faculty judgments of effectiveness to effectiveness in vivo. But, knowing which factors a representative group of university professors think would influence them to participate in instructional improvement provides valuable leads for future study (simulated and real-world) and suggestions for practice.

Despite this limitation, the advantages of the methodology for the particular purposes of this study suggested that the approach be tried. It may prove to be a useful technique for further research in this area of faculty behavior and instructional improvement. The field is now in as much need of promising methodology for research and evaluation as it is for substantive results.

Experimental Design

The five factors of interest have been investigated experimentally in this study. Since the desire was to determine the separate effect of each factor and any interactions between and among them, a 2^5 factorial design was employed. Subjects were considered as replicates randomly assigned to treatment cells of the design. The design and data matrix appears in Figure 4-1.

Each cell in the matrix represents a distinct combination of the factors and levels investigated in this study (five independent variables with two levels each). Thus, 32 separate treatments result from the design. These "treatments" consist of written situation descriptions corresponding to the particular combinations of factors and levels. A later section describes these situation descriptions and the specific procedure for constructing them.

To ensure reliability of response, four situation descriptions were developed for each combination of factors and levels. This was done to provide a sufficient number of observations per treatment to obtain a stable estimate of mean response for each combination. Thus, 128 situation descriptions were developed. The item construction phase of this study, to be described below, had as its result 32 sets of four situation descriptions.

Subjects, considered as replicates, were randomly assigned to treatment cells. This resulted in each individual subject being asked to respond to the four situation descriptions which represented one unique combination of factors or treatment.

Previous studies using this methodology have asked each subject to respond to either all or one-half of the total number of

			+ *		PN**		
			+	-	K	+	-
+	+	+	S ₁ . . . S ₂₀				
		-					
	-	+					
		-					
R	PS	IS					
		+					
	+	-					
		-					
-	-	+					
		-				S ₆₂₁ . . . S ₆₄₀	

* + Presence of factor
 - Absence of factor

** Variables:
 PN-Perceived Need to Improve
 K -Knowledge of Alternatives
 R -Reward
 PS-Peer Support
 IS-Institutional Support

FIGURE 4-1. Design and data matrix

situations (usually referred to as "items" in these studies). This allows a measurement on each treatment for each subject--a repeated measures design. Because of the limited number of subjects available to these previous researchers, and because of their easy access to the subjects they did have, this approach produced necessary advantages. But because of the relatively large pool of faculty subjects available at Michigan State University and because of obvious access problems, the random assignment method seemed more appropriate for the present study. It was assumed to be infinitely easier to persuade a large number of faculty to respond to four situation descriptions than it would a smaller group to answer 64 or 128 questions.

To insure a sufficiently powerful analysis, 20 subjects were assigned to each cell of the design matrix. It was assumed that there would be some attrition due to an expected failure of some subjects to return their inventory. A 50 percent return--at least 10 in each cell--provides sufficient degrees of freedom and statistical power to perform a meaningful analysis of the data. The statistical analysis is described in a later section of this chapter.

Sample

The 640 subjects (32 treatment cells x 20 subjects per cell) needed for this experiment were drawn from the population of "tenure system" faculty members at Michigan State University. This population consists of 1,802 full-time faculty members, tenured or eligible for tenure at some time in the future. It does not include those administrators at the Dean's level and above who also hold faculty rank. Although this population includes a number of individuals who teach very little or not at all, and excludes those part-time and

temporarily-appointed faculty members not in the tenure stream, it does represent the core of the teaching faculty at Michigan State University.

A random sample was taken from a list of these faculty members produced by the Office of the Provost. From this group of 640 faculty members, random assignment to treatments (sets of four situation descriptions) was made.

The sampling procedure allows generalization of results to the population defined--MSU tenure system faculty. But because this population is characteristic of teaching faculties at many other institutions, the results may be thought to apply more widely than this campus alone.

Instrumentation

As previously mentioned, the empirical work of the study was accomplished by sets of situation descriptions designed to test the factors identified in Chapter II: Perceived Need to Improve, Knowledge of Alternatives, Reward, Peer Support, and Institutional Support. For the purposes of this research, two levels of each factor were considered. Each factor was either present or stated as absent in each situation. Situation descriptions were developed according to a complete 2^5 factorial experiment (see Figure 4-1). Using this procedure 32 different treatments or unique combination of factors become possible. Four variations have been constructed for each unique combination, thus 128 descriptions were developed in total (Appendix B).

Situation Description Construction

The task of constructing situation descriptions involved 1) preparing several representations or operationalizations for each factor and 2) creating a writing scheme for drafting uniform situations which could be responded to by faculty members meaningfully. The content of each situation description was then selected from the list of alternative representations corresponding to each unique combination of factors.

Factor Operationalization

The factor representations have been drawn from the literature of faculty development and instructional improvement (which is reviewed in Chapter II), conversations with faculty and those who work with faculty on instructional improvement, and the experience of this researcher as an instructional developer. In Chapter II much of the needed operationalization has already been accomplished by listing the approaches under each factor which seem to have the most promise in influencing a faculty member to participate in instructional improvement.

Each factor was operationalized in four different ways for purposes of preparing a sufficient number of descriptions for each unique combination. The following statements served as the basic components for writing the complete situation descriptions.

Perceived Need to Improve (PN)

1. Evaluation of teaching performance - combination of student evaluations, peer evaluations, and self-evaluation.

Presence (+) - A recent evaluation of your instruction (a combination of colleague, student, and self-evaluations) indicates to you that you are

not succeeding with your teaching responsibilities as well as you would like.

Absence (-) - A recent evaluation of your instruction (combination of colleague, student, and self-evaluations) indicates to you that you are succeeding with your teaching responsibilities about as well as you would like.

2. Evaluation of departmental or institutional instructional program.

Presence (+) - A recent study by your department shows that majors (present and graduated) did not particularly like the courses offered by the department (including your own). Reports from graduate and professional schools and employers indicate that they were not taught as much as they might have been about their discipline.

Absence (-) - A recent study by your department shows that majors (present and graduated) liked the course offered by the department (including your own). Reports from graduate and professional schools and employers indicate that they were taught their discipline well.

3. Involvement in new curriculum or use of new teaching technology.

Presence (+) - Because of a recent curriculum revision by your department, a number of your courses will need to include new content and the use of new instructional methods.

Absence (-) - Your department has recently agreed to maintain its present basic curriculum, therefore the content covered and the instructional methods used in your courses will not necessarily have to be changed in the immediate future.

4. Clarification of goals for teaching.

Presence (+) - After some thinking about your own educational philosophy and personal goals for teaching, you have decided that the classroom approach (lecture, discussion, etc.) you are now using is not consistent with either your goals or philosophy.

Absence (-) - After some thinking about your own educational philosophy and personal goals for teaching, you have decided that the classroom approach (lecture, discussion, etc.) you are now using

is consistent with both your goals and philosophy.

Knowledge of Alternatives (K)

1. Group presentations: seminars, workshops, conferences, courses, etc.

Presence (+) - From your attendance at faculty seminars on various instructional topics, you have some knowledge of teaching approaches different from those you are now using.

Absence (-) - You have not been able to attend any faculty teaching seminars (your chief source of information on instructional matters), thus you have virtually no knowledge of teaching approaches different from those you are now using.

2. Consultation from an expert on teaching and learning.

Presence (+) - A knowledgeable instructional improvement consultant has given you some ideas for teaching approaches different from those you are now using.

Absence (-) - You have had no access recently to knowledgeable instructional improvement consultants (your chief source of information on instructional matters), thus you have virtually no knowledge of teaching approaches different from those you are now using.

3. Written materials.

Presence (+) - You regularly read written information on new curricular trends, instructional materials, and teaching techniques, thus you have some knowledge of teaching approaches different from those you are now using.

Absence (-) - You have not read recently the written information that comes to you on new curriculum trends, instructional materials, and teaching techniques (your chief source of information on instructional matters), thus you have virtually no knowledge of teaching approaches different from those you are now using.

4. Personal communication from colleagues.

Presence (+) - A fellow department member has recently told you about some instructional procedures different from those you are now using.

Absence (-) - You have recently gotten very few ideas from your fellow department members (your chief source of information on instructional matters), thus you have virtually no knowledge of teaching approaches different from those you are now using.

Reward (R)

1. Reward as great for teaching and teaching improvement as for research and publications and public and university service.

Presence (+) - Your department and the university reward special efforts at instructional improvement as highly as they do other activities (i.e., research and publication, public and university service).

Absence (-) - Your department and the university do not reward special efforts at instructional improvement as highly as they do other activities (i.e., research and publication, public and university service).

2. Public recognition

Presence (+) - You know from past experience that faculty members will be given special public recognition by colleagues, administrators, and students (e.g., mention in university publications, invitation to make presentations) for special efforts to improve their teaching.

Absence (-) - You know from past experience that faculty members will not be given any special public recognition by colleagues, administrators, and students (e.g., mention in university publications, invitation to make presentations) for special efforts to improve their teaching.

3. Salary, promotion, and tenure.

Presence (+) - In the past your department and the university have rewarded individuals' special efforts to improve courses and

teaching skills by counting these activities when it comes to determining salary increases, promotion, and tenure.

Absence (-) - In the past your department and the university have not rewarded individuals' special efforts to improve courses and teaching skills. These activities have not been counted when it comes to determining salary increases, promotion, and tenure.

4. Special awards for outstanding teaching.

Presence (+) - To encourage the improvement of instruction, special awards for outstanding teaching are given by the university in each department.

Absence (-) - As has been the practice at some other institutions, the university gives no special awards in each department for outstanding teaching.

Peer Support (PS)

1. Collegueship - working together to improve instruction.

Presence (+) - There has been a "colleagueship" built around teaching in your department. Members assist each other in identifying and trying out new content materials and methods of instruction.

Absence (-) - There exists little "colleagueship" built around teaching in your department. Members do not assist each other in identifying and trying out new content materials and methods of instruction.

2. Peer group norms and expectations as standards for one's own actions.

Presence (+) - There exists an expectation among members of your department that you should make special efforts to improve your courses and teaching skills.

Absence (-) - There exists no expectation among members of your department that you should make special efforts to improve your courses and teaching skills.

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3. Colleagues set an example by trying new instructional procedures.

Presence (+) - Since you have been a member of the faculty, a number of your colleagues have made special attempts to improve their instruction.

Absence (-) - Since you have been a member of the faculty, very few of your colleagues have made special attempts to improve their instruction.

4. Articulated peer concern for instructional improvement.

Presence (+) - Your colleagues are concerned about the quality of instruction in the department and encourage special efforts to improve it.

Absence (-) - Your colleagues are not particularly concerned about the quality of instruction in the department and do not encourage special efforts to improve it.

Institutional Support (IS)

1. Time released from regular responsibilities.

Presence (+) - The university will give faculty members released time from regular duties to pursue special instructional improvement projects.

Absence (-) - The university cannot give faculty members released time from regular duties to pursue special instructional improvement projects.

2. Financial support.

Presence (+) - The university will provide special financial support (e.g., small instructional grants) to assist faculty members with special attempts to develop or improve course materials and teaching skills.

Absence (-) - The university cannot provide special financial support (e.g., small instructional improvement grants) to assist faculty members with special attempts to develop or improve course materials and teaching skills.

3. Assistance with necessary skill development.

Presence (+) - The university provides a service on campus to assist faculty members develop skills in instructional planning, classroom presentation, and student testing.

Absence (-) - The university provides no service on campus to assist faculty members develop skills in instructional planning, classroom presentation, and student testing.

4. Technical assistance.

Presence (+) - The university has an instructional resources center to assist faculty members with technical aspects of improving instruction (e.g., media, special materials production, etc.).

Absence (-) - The university has no office, such as an instructional resources center, to assist faculty members with technical aspects of improving instruction (e.g., media, special materials production, etc.).

Situation Description Writing Scheme

The writing scheme was prepared with guidance from those studies that have previously used this methodology. As already mentioned, four distinct situation descriptions were required for each of the 32 unique combinations of factors and levels. For this reason four operationalizations were chosen for each factor. The purpose of a writing scheme becomes one of putting factors, operationalizations, and levels together in such a way that situation descriptions are standardized to satisfy the research design and meaningful enough to be responded to by a subject.

For each cell of the design the writing procedure was the same. First, the appropriate level of each factor was noted. For example, in Cell 1 (see Figure 4-1) all factors were intended to be present in the four situation descriptions given to faculty members for their response.

Next, the four situation descriptions were written. In each description, the position order of each factor in the description and the operationalization used were determined through random assignment.

In Cell 1 (to continue the example), through the use of a table at random numbers, factors were ordered in the four descriptions as follows: #1--PN, K, PS, R, IS; #2--IS, K, R, PS, PN; #3--PS, K, R, PN, IS; #4--R, IS, K, PN, PS. Miller and Lutz (1966) have suggested that the order of factors in an item may have biased the results of their study. To remove this possibility from the present research, an attempt was made to assign factor position in a random fashion.

Concerning the use of factor operationalizations, a random number procedure was also used to distribute them among the four descriptions. Again using Cell 1 as an illustration, the parceling looked like this: #1--PN3, K4, R1, PS4, IS2; #2--PN1, K3, R3, PS2, IS3; #3--PN2, K1, R2, PS1, IS1; #4--PN4, K1, R4, PS3, IS4.

Situation descriptions for all 32 cells of the design were developed using this same procedure. In the actual writing, transition words were added and minor changes in the wording of the operationalization were made in order to make the descriptions read smoothly.

The four situation descriptions developed for Cell 1 are presented below:

1-1. Because of a recent curriculum revision by your department, a number of your courses will need to include new content and the use of new instructional methods. A fellow department member, though, has recently told you about some instructional procedures different from those you are now using.

Your colleagues are concerned about the quality of instruction in the department and encourage special efforts to improve it. Also, your department and the university reward efforts at instructional improvement as highly as they do other activities (i.e., research and publication, public and university service).

In addition, the university will provide special financial support (e.g., small instructional improvement grants) to assist faculty members with special attempts to develop or improve course materials and teaching skills.

1-2. The university provides a service on campus to assist faculty develop skills in instructional planning, classroom presentation, and student testing.

You regularly read written information on new curriculum trends, instructional materials, and teaching techniques, thus you have some knowledge of teaching approaches different from those you are now using.

Your department and the university in the past have rewarded individuals' special efforts to improve courses and teaching skills by counting these activities when it comes to determining salary increases, promotion, and tenure. In addition, there exists an expectation among members of your department that you should make special efforts to improve your teaching.

A recent evaluation of your instruction (a combination of colleague, student, and self-evaluations) indicates to you that you are not succeeding with your teaching responsibilities as well as you would like.

1-3. There has been a "colleagueship" built around teaching in your department. Members assist each other in identifying and trying out new content materials and methods of instruction.

From your attendance at faculty seminars on various instructional topics, you have some knowledge of teaching approaches different from those you are now using. And, you know from past experience that faculty members will be given special public recognition (e.g., mention in university publications, invitation to make presentations) by colleagues, administrations, and students for special efforts to improve their teaching.

A recent study by your department shows that majors (present and graduated) did not particularly like the courses offered by the department (including your own). Reports from graduate and professional schools and employers indicate that they were not taught as much as they might have been about their discipline.

The university is willing to give faculty members released time from regular duties to pursue special instruction improvement projects.

1-4. To encourage the improvement of instruction, special awards for outstanding teaching are given by the university in each department. Also, the university has an instructional resources center to assist faculty members with technical aspects of improving instruction (e.g., media, special materials production, etc.).

A knowledgeable instructional improvement consultant has given you some ideas for teaching approaches different from those you are now using. In addition, after some thinking about your own

educational philosophy and personal goals for teaching, you have decided that the classroom approach (lecture, discussion, etc.) you are now using is not consistent with either your goals or philosophy.

Since you have been a member of the faculty, a number of your colleagues have made special attempts to improve their instruction.

Response Scale--Dependent Variable

For each description a subject was asked to indicate on a seven point scale (0-6) how much he would be influenced by the situation described to participate in instructional improvement. More precisely, each respondent was asked how much he would be willing to make special efforts to improve his instruction. Special efforts were defined for the faculty member in the directions that preceeded each set of descriptions.

To guide your response, "special efforts" refer to any improvement activity which would be considered "over and above the call of duty." Examples might include the development of a new course or redesign of an existing course when teaching assignment does not necessarily require it, change in instructional method (e.g., from group-based to individualized instruction), development of supplementary materials (e.g., student workbook, printed lecture notes, problems and exercises), introduction of new media or technology (e.g., special graphics, television, computed-assisted instruction), work to improve classroom skills (e.g., lecture presentation, discussion leadership).

Typical improvement practices such as changes in lecture materials, selection of more current or better texts and assigned readings, minor adjustments of course content and instructional method, or minor modifications of test items and procedures should not be considered as special improvement efforts. These represent an expected minimum commitment to instruction for any university faculty member. Special efforts to improve ones' instructional offerings go beyond these expected practices.

The stimulus question and scale that followed each situation description is presented on the next page. The scale score, as a measure of the degree of willingness to make special efforts to improve

instruction, represents the single dependent variable of interest in this study.

If this situation actually existed, to what degree would you be willing to make special efforts to improve your instruction?

0	1	2	3	4	5	6
Not willing		Slightly willing		Moderately willing		Very willing

A situation description, stimulus question, and scale were combined and presented to subjects in the following form (the first description from Cell 32, in which all factors are stated as absent).¹

32-1. Your department has recently agreed to maintain its present basic curriculum, therefore the content covered and the instructional methods used in your courses will not necessarily have to be changed in the immediate future.

In the past, your department and the university have not rewarded individuals' special efforts to improve courses and teaching skills. These activities have not been counted when it comes to determining salary increases, promotion, and tenure. Also, there exists little "colleagueship" built around teaching in your department. Members do not assist each other in identifying and trying out new content materials and methods of instruction. In addition, the university cannot provide special financial support (e.g., small instructional improvement grants) to assist faculty members with special attempts to develop or improve course materials and teaching abilities.

You have not been able to attend any of the faculty teaching seminars (your chief source of information on instructional matters), thus you have virtually no knowledge of teaching approaches different from those you are now using.

¹Because of space limitations all 32 sets of descriptions have not been reproduced in this volume. They are available on request from the author. An additional example--Cell 7-- is presented in Appendix B.

If this situation actually existed, to what degree would you be willing to make special efforts to improve your instruction?

0	1	2	3	4	5	6
Not willing		Slightly willing		Moderately willing		Very willing

Pilot testing

Situation descriptions were pilot-tested before data was collected for analysis (Appendix A). First, faculty and instructional improvement staff at Michigan State University were asked to evaluate the descriptions for their "face validity" and meaningfulness. The 32 sets of descriptions were then administered to a small group of MSU faculty members. Each set was given to one faculty member. These 32 individuals responded under conditions similar to those planned for the study itself. Subjects were not, though, randomly selected from the population of MSU faculty members or randomly assigned to treatments, and they did not receive the set of descriptions by campus mail. They represented a "sample of convenience," and they were given the inventory personally by the investigator or his representative. An attempt was made to choose a cross section of the MSU faculty as a whole for this pilot-testing.

The principle purpose of the pilot procedure was to gather reactions to the descriptions. Participants were asked to respond to each description on the scale provided. They were then invited to make written comments on whether each description was understandable and believable, whether the stimulus question and scale were comprehensible and sufficiently directive, and whether the cover letter and directions were adequate to explain the project.

Scale responses and comments provided the basis for revision of the situation descriptions, the stimulus question and scale, and the cover letter and directions.

Administration of Experimental Procedures

The appropriate set of four situation descriptions was sent to each subject via campus mail (Appendix B). An appropriate cover letter explaining the research project and providing inventory instructions accompanied each set of descriptions. After one week a reminder was sent to those who had not returned the set. This procedure produced a sufficient number of subject responses in each cell, thus additional follow-up procedures were not necessary.

Statistical Analysis

The research hypotheses concerning main and interaction effects were tested by employing a five-way, fixed-effects analysis of variance. Responses from each subject were averaged across the four descriptions to produce a single subject score. Scores were averaged across subjects to produce a mean for each cell. These subject scores and cell means served as the basic data for the analysis. As will be reported in the next chapter sets of situation descriptions were relatively internally consistent, thus averaging across descriptions to get a single subject score is appropriate. Averaging across subjects recognizes that subgroup characteristics were not being considered in the study.

Due to the failure of some subjects to respond to the study cell sizes are not equal with respect to the number of scores available for analysis. Despite this situation the "classical" approach to analysis of variance (Nie et al, 1975) was used to analyze the data.

In this model each main effect is tested while all other effects and interactions are controlled.

Overall and Spiegel (1969) propose that this method (which they label the "experimental design" method) is appropriate for designs with unequal cell frequencies under certain conditions: "whenever the problem is conceived as a multiclassification factorial design and where conventional analyses of variance might have been employed except for unequal cell frequencies . . . " (p. 319). This approach produces the results expected if in fact cell sizes had been equal. In the present research a factorial design was employed and an equal number of subjects were randomly assigned to cells. Some attrition of subjects occurred but did not appear to be systematic in any way that would bias the statistical results. Thus, in the analysis unequal cell frequencies are considered as a "nuisance" due to the nature of the experimental procedures used.

The amount or proportion of variation in the dependent variable accounted for by each factor--the other major research question to be answered by the analysis--was determined by computing η^2 (eta-squared) for each non-subject source of variation. Also, Multiple R^2 (multiple R-squared) was computed to indicate the amount of variation attributable to the combination of all the factors tested.

Both the ANOVA and η^2 procedures were accomplished using the SPSS Subprogram ANOVA (Nie et al., 1975). The analysis was performed through the facilities of the MSU Computer Laboratory.

CHAPTER V

RESULTS

This chapter includes a) an over-all data summary, b) a report on the statistical analysis, and c) a statement on the outcome of each research hypotheses. The chapter concludes with a brief summary of the results.

Data Summary

Using the experimental procedures described in Chapter IV, data was gathered from 373 Michigan State University faculty members. Two hundred and sixty-seven subjects either were unable or chose not to complete the set of four situation descriptions assigned and sent to them.

The group of subjects who did complete and return situation descriptions were virtually identical on four demographic variables to the group originally selected and assigned to treatments. Forty-seven percent of the "return" group held appointments in Natural Science departments (48% of the "assigned" group), 33 percent in Social Science departments (31%), and 19 percent in Arts and Letters departments (20%). Thirteen percent of those faculty members who responded were 35 years old or under (13%), 33 percent were 36-45 years old (33%), 41 percent were 46-60 years old (41%), and 13 percent were 61 years old or older (13%). Five percent had been faculty members at Michigan State University for three years or less (4%), 42 percent for 4-10 years (44%), 31 percent for 11-20 years (31%), and 22 percent

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for 21 or more years (21%). Eighty-eight percent were tenured (89%) and 12 percent were not tenured (11%).

For analysis purposes, subjects' responses to each situation description (on a 0-6 response scale) were averaged across the four situation descriptions to produce one score for each subject. These subject scores serve as a basic datum of the study.¹

Also for purposes of analysis, scores were averaged across subjects to produce a mean score for each cell (treatment). These means, along with the number of subjects per cell, are reported in the data matrix presented in Table 5-1.

As described in Chapter IV twenty subjects were originally assigned to each cell or treatment of the design. An expected attrition, though, resulted in fewer than twenty scores per cell. Since all scores have been used in the analysis, and since attrition was not equal in every cell, an unequal number of subject scores appear in each cell for the data summary and analysis. Each cell includes at least 10 subject scores.

From the data matrix mean differences between the presence and absence of each of the five factors under study can be determined:

Perceived Need to Improve -	Presence = 4.98(n=184) Absence = 3.95(189)
Knowledge of Alternatives -	Presence = 4.61(184) Absence = 4.31(189)
Reward -	Presence = 4.51(189) Absence = 4.41(184)

¹The raw data of this study (subject's responses to each situation description and subject's scores) are available on request from the author.

TABLE 5-1. Variable matrix with means for willingness to make special efforts to improve instruction.

Grand Mean = 4.46			+ * PN ** -			
			+	-	K +	-
+	+	+	5.55(14) ***	4.89(11)	3.93(11)	4.80(10)
		-	5.46(12)	4.89(11)	3.33(10)	3.43(15)
	-	+	5.19(13)	4.50(10)	3.98(12)	3.90(15)
		-	5.25(11)	5.23(13)	4.10(10)	3.73(11)
-	+	+	5.19(13)	4.85(10)	4.31(13)	4.94(12)
		-	4.82(11)	4.85(12)	4.33(10)	3.77(11)
	-	+	5.05(10)	4.73(13)	4.39(11)	3.50(14)
		-	5.03(10)	3.95(10)	3.67(13)	3.45(11)

* + = Presence of factor; - = Absence of factor

** PN=Perceived Need to Improve, K=Knowledge of Alternatives, R=Reward, PS=Peer Support, IS=Institutional Support

*** Number of subjects responding

Peer Support -	Presence = 4.59(186)
	Absence = 4.34(187)

Institutional Support -	Presence = 4.59(192)
	Absence = 4.33(181)

These results indicate that, for each factor considered, presence of the factor in the influence situation produced a higher score on the response scale than did its absence. The higher response on the scale, the greater the stated willingness to make special efforts to improve instruction.

The grand mean of all subjects' responses to all situation descriptions was 4.46 scale points. On the 0-6 scale a response of 4 indicated that a subject was "moderately willing" to make special efforts to improve his instruction and a response of 6 meant that he was "very willing." Thus, the value of the grand mean in this study indicates that across all 373 subject and all 128 situation descriptions there was a great deal of stated willingness to improve instruction.

The internal consistency of each set of situation descriptions represents another important source of data. Since each description in a set is intended to reflect the same combination of the underlying five factors and since responses to the four descriptions in each set were averaged to produce one score for each subject, responses to each description in a set should be reasonably similar. If responses are not similar, it would indicate a failure to represent the same factors, and the average score would not be a reliable indication of a person's response to the influence situation intended. If responses to situation descriptions in each set are similar (internally consistent), then they can be thought to represent the factors similarly (even though they involve different operationalizations of each factor). In this

case the averaging procedure would be appropriate and would provide a meaningful and reliable score.

The Coefficient Alpha (Cronbach, 1951) estimates of internal consistency for each set of descriptions (each cell of the design) are presented in Table 5-2.

From this data it can be said that the sets of descriptions developed for this study possess a reasonable degree of internal consistency. For the most part subjects respond similarly to the descriptions in each set. This result indicates that these descriptions present the particular combination of factors and level similarly and that the average scores provide a reliable indication of a subject's response to the particular influence situation intended.

Some sets, though, are questionable in terms of their internal consistency. Sets 1(.59), 4(.38), and 20(.57) have alpha coefficients of less than .60. On inspection Sets 1 and 20 have one description which correlates poorly with the other three; Set 4 has two descriptions which do not correlate highly with the others or with each other. In the case of Set 1, if description #1 was omitted, the alpha would raise to .67; and if description #1 were left out of Set 20, then the coefficient would be .83. Omitting either descriptions #1 or #4 from Set 4 would raise the coefficient considerably.

No pattern, in terms of the operationalizations used in these descriptions or the combinations of operationalizations or levels of the factor, could be discerned to explain these poor item-total correlations. An inspection of the sets of descriptions as a whole produced no indication that the characteristics of the descriptions themselves caused the low coefficients.

TABLE 5-2. Coefficient Alpha estimates of reliability for each set of situation descriptions

Set 1 [*] (+++++) ^{**} = .59	Set 17(-++++) = .91
Set 2 (++++-) = .77	Set 18(-+++-) = .94
Set 3 (+++-+) = .71	Set 19(-++-+) = .91
Set 4 (+++--) = .38	Set 20(-++--) = .57
Set 5 (++-++) = .86	Set 21(-+-++) = .88
Set 6 (++-+-) = .82	Set 22(-+-+ -) = .89
Set 7 (++--+) = .91	Set 23(-+--+) = .70
Set 8 (++---) = .86	Set 24(-+---) = .88
Set 9 (+-+++) = .87	Set 25(--+++) = .68
Set 10(+--+ -) = .79	Set 26(--++-) = .90
Set 11(+--+ +) = .74	Set 27(--+--+) = .86
Set 12(+--+ -) = .93	Set 28(--+--) = .90
Set 13(+--+ +) = .95	Set 29(---++) = .85
Set 14(+--+ -) = .77	Set 30(---+ -) = .88
Set 15(+---+) = .83	Set 31(----+) = .94
Set 16(+----) = .66	Set 32(-----) = .95

* Each set corresponds to one cell of the experimental design (see Figure 4-1 or Table 5-1).

***Indicates combination and level of factors; order of factors = Perceived Need to Improve, Knowledge of Alternatives, Reward, Peer Support, Institutional Support; levels = +(present) and -(stated as absent).

1

The alternative explanation for this kind of internal inconsistency emphasizes the nature of the individuals responding to these sets of descriptions. Since the alpha coefficients are quite high for the other 29 sets, and since different groups of subjects were assigned to respond to each set, it seems reasonable to assume that the variability among the individuals in the groups responding to the three sets in question produced inconsistency among the four descriptions in each set.

Statistical Results

Although the results reported in the previous section indicate that the presence of each factor produced more stated willingness to improve instruction than did an absence of the factor, there remains the possibility that this occurrence owes more to chance than to the effect of the factor. Since a sample of faculty members was drawn to take part in the experiment, and since there exists some variation in the way these subjects responded to similar treatments, the possibility arises that these results may not represent how the population as a whole would respond (even though the sample was randomly drawn from the population and subjects were randomly assigned to treatments). The computation of an inferential statistic is necessary to determine the effect of the factors and treatments under study given a specified level of certainty that computed mean differences are real differences.

Analysis of variance was used to determine any main effects of the factors under study and any interactions between and among these factors. An alpha level of .05 was selected as a standard for determining statistical significance (the probability that a true null hypothesis might be rejected). This standard, though, was not applied

rigidly, as can be seen in the next section in which research hypotheses are considered. The analysis was performed with an unequal number of subjects in each cell, using the "classical" ANOVA model (Nie et al, 1975). The rationale for this procedure is presented in Chapter IV. The ANOVA table for this analysis is presented in Table 5-3.

Any ANOVA procedure requires three assumptions: 1) observations are independent between and within treatment groups, 2) subjects in each treatment are sampled from populations that are normally distributed, and 3) variances of treatment populations are equal. Considering violations of these assumptions, the present study appears to be "robust" with respect to independence and normality. A statistical analysis is robust when the nominal chance of making a Type I error (the alpha level an experimenter assumes) and the actual chance of making this error (the actual alpha level) are approximately equal. In the present study subjects (whether assigned to similar or different treatments) were asked to respond to situation descriptions independently and not discuss their participation in the study with other faculty members on the campus (see Appendix B). Descriptions were mailed individually to each subject. Thus, the study was designed to maintain independence of observations. Regarding normality a simple plotting of the data indicates that few of the treatment populations can be considered normally distributed. ANOVA, though, has been found to be relatively unaffected by this situation and robust with respect to non-normality (Glass and Stanley, 1970).

The third assumption, on the other hand, appears to be somewhat problematic. Levene's test for homogeneity of variance (Levene, 1960, 1970) indicates that the variances of the 32 treatment groups in the

TABLE 5-3. ANOVA for main effects and interactions on stated willingness to make special efforts to improve instruction.

<u>Source of Variation</u>	<u>DF</u>	<u>MS</u>	<u>F</u>	<u>Alpha</u>
Factors (main effects)	5	23.87	17.36	.001
Perceived Need to Improve	1	97.04	70.74	.001
Knowledge of Alternatives	1	6.35	4.63	.030
Reward	1	.71	.52	.999
Peer Support	1	4.82	3.52	.058
Institutional Support	1	6.95	5.07	.024
Two-way Interactions	10	2.30	1.68	.084
PN x K	1	3.00	2.19	.136
PN x R	1	4.80	3.50	.059
PN x PS	1	.11	.08	.999
PN x IS	1	4.19	3.05	.078
K x R	1	.34	.25	.999
K x PS	1	3.10	2.26	.130
K x IS	1	.48	.35	.999
R x PS	1	3.13	2.28	.128
R x IS	1	.97	.71	.999
PS x IS	1	3.03	2.21	.134
Three-way Interactions	10	1.39	1.01	.432
PN x K x R	1	1.22	.89	.999
PN x K x PS	1	1.67	1.22	.270
PN x K x IS	1	1.38	1.01	.317
PN x R x PS	1	1.85	1.35	.245

TABLE 5-3 (cont'd)

PN x R x IS	1	1.47	1.07	.303
PN x PS x IS	1	1.24	.90	.999
K x R x PS	1	.70	.51	.999
K x R x IS	1	.93	.68	.999
K x PS x IS	1	1.26	.92	.999
R x PS x IS	1	3.03	2.21	.134
Four-way Interactions	5	.99	.73	.999
PN x K x R x PS	1	1.13	.83	.999
PN x K x R x IS	1	1.02	.75	.999
PN x K x PS x IS	1	2.89	2.91	.144
PN x R x PS x IS	1	.01	.01	.999
K x R x PS x IS	1	.03	.02	.999
Five-way Interaction				
PN x K x R x PS x IS	1	3.44	2.50	.110
Residual	341	1.37		
Total	372	1.70		

present study were not equal ($df\ 30, F = 2.08$), thus the assumption was violated. In addition, the magnitude of the individual cell variances were not proportional to cell sizes. Since cell frequencies are not equal the analysis is not robust. More specifically, the actual alpha level is most likely larger than the nominal level. Thus, the tests reported are considered "liberal." The chance of Type I error may in fact be larger than that indicated. Although the interpretation and discussion of results in this chapter and Chapter VI reflect nominal alpha levels the consequences of inequality of variances should be kept in mind.

These results indicate that of the five factors (independent variables) studied three factors had a statistically significant effect on the dependent variable (using the .05 standard): Perceived Need to Improve, Knowledge of Alternatives, and Institutional Support. Peer Support was found to be significant at .058.

Reward, on the other hand, did not have a statistically significant effect. There were no significant interactions (at .05) between or among the factors, but the interactions between Perceived Need and both Reward and Institutional Support achieved marginal significance (.059 and .978 respectively). Each of these results will be explained more fully as the research hypotheses are considered in the next section of this chapter.

The amount of variation in the dependent variable accounted for by each factor was another statistic of interest in this study. This statistic, in effect, indicates the relative impact of each variable. One of the research questions posed in this research asked which factors would be most potent in influencing a faculty member's

willingness to participate in instructional improvement activities.

An answer to this question was determined by computing η^2 (Nie et al, 1975) for each independent variable. η^2 for each of the factors under study is reported in Table 5-4.

These figures indicate that Perceived Need to Improve accounted for the greatest amount of variance in subjects scores (15%); followed by Knowledge of Alternatives and Institutional Support (1%), Peer Support (0.8%), and Reward (0.09%). These figures will also be interpreted as the research hypotheses are considered in the next section.

The total amount of variance accounted for by all the factors under study is indicated by the Multiple R^2 reported in Table 5-4. In this study, 19 percent of subjects' scores on the dependent variable can be allocated to Perceived Need, Knowledge, Reward, Peer Support, and Institutional Support. This means that 81 percent is accounted for by other variables, such as subject individual differences, influence factors not considered in the study or measurement error. This finding will be elaborated in the Discussion section of Chapter VI.

Research Hypotheses

In this section each hypothesis has been re-stated and a statement made on whether it was confirmed or not confirmed. Each of these results will also be discussed more extensively in Chapter VI.

Hypothesis 1. The presence of a Perceived Need to Improve will result in a greater stated willingness on the part of a faculty member to make special efforts to improve his instruction.

This hypothesis was confirmed at the .001 level of statistical significance ($F(1,341) = 70.74$). This result means, when all other

TABLE 5-4. Eta^2 estimates of the amount of variance in MSU faculty members' willingness to make special efforts to improve their instruction accounted for by each factor.*

<u>Variables</u>		
Perceived Need to Improve	=	.15
Knowledge of Alternatives	=	.01
Reward	=	.0009
Peer Support	=	.008
Institutional Support	=	.01
Multiple R^2	=	.19

* Adjusted according to "classical" ANOVA analysis with unequal cell frequencies (Nie et al., 1975).

factors and interactions being tested are controlled, the presence of a Perceived Need to Improve, as operationalized in the influence situations presented to the subjects of the study, resulted in a greater stated willingness to make special efforts to improve instruction than did the absence of the factor.

There was a difference between the mean scores of subjects who received the presence condition and those who received the absence condition of 1.02 scale points in favor of the presence condition.

Hypothesis 2. The presence of a Knowledge of Alternative instructional approaches will result in a greater stated willingness on the part of a faculty member to make special efforts to improve his instruction.

This hypothesis was confirmed at the .03 significance level ($F(1,341) = 4.63$). From this finding it can be said that a presence of Knowledge of Alternative approaches to instruction, as operationalized in this study, produced a greater stated willingness to make special efforts to improve instruction than did its absence. This is true when all other factors and interactions are controlled in the analysis.

The difference in mean scores was .26 in favor of the presence condition.

Hypothesis 3. The presence of Reward for instructional improvement will result in a greater stated willingness on the part of a faculty member to make special efforts to improve his instruction.

This hypothesis was not confirmed at the .05 level of statistical significance; in fact, it only reached significance at .999 level ($F(1,341) = .52$). Even though the mean score for subjects exposed to the presence of the reward factor was greater than the mean for those

subjects exposed to its absence (by .08 scale points), this difference was so small as to be attributed to random error in subject responses. Thus, in this study the presence of reward for instructional improvement did not result in greater stated willingness on the part of a faculty member to make special efforts to improve his instruction.

This finding will be discussed in greater detail in Chapter VI.

Hypothesis 4. The presence of Peer Support for instructional improvement will result in a greater stated willingness on the part of a faculty member to make special efforts to improve his instruction.

This hypothesis was not confirmed at the .05 level. But, at the .058 level it can be considered a statistically significant result ($F(1,341) = 3.52$). Since this alpha level is nearly as stringent with reference to type-one error as the pre-set .05 standard, the difference in mean score of .22 scale points will be considered as meaningful as the significant results for Perceived Need, Knowledge, and Institutional Support.

Hypothesis 5. The presence of Institutional Support for instructional improvement will result in a greater stated willingness on the part of a faculty member to make special efforts to improve his instruction.

This last hypothesis concerning main effects was confirmed at the .024 level ($F(1,341) = 5.07$). The presence of Institutional Support, as operationalized in the influenced situations presented to subjects, was effective in stimulating a faculty member's stated willingness to make special efforts to improve his instruction.

The difference between mean scores of subjects who responded to a presence of the factor and those who responded to an absence was .27 scale points.

Hypothesis 6. There will be no difference in the amount of variance in the dependent variable (willingness to make special efforts to improve instruction) accounted for by each of the five factors (Perceived Need to Improve, Knowledge of Alternatives, Reward, Peer Support, Institutional Support). The impact of each of these five factors will be of the same order of magnitude.

This hypothesis was not confirmed. The η^2 estimates of the amount of variance accounted for by each factor indicates that factors had differential effects. Perceived Need to Improve was the most potent factor in effecting faculty members' willingness to make special efforts to improve their instruction. This factor accounted for 15 percent of the variation in subject scores. Knowledge and Institutional Support factors possessed the next greatest impact (1%), followed by Peer Support (0.8%). Reward for instructional improvement was the least effective factor tested (0.0%).

Hypotheses 7-10. There will be a separate significant two-way interaction between Perceived Need to Improve and each of the other factors (Knowledge of Alternatives, Reward, Peer Support, and Institutional Support). More specifically, each factor will be more effective when a Perceived Need to Improve is present. Also, the converse will be true: Perceived Need will be more effective when each of the other factors is present.

None of these interactions were statistically significant at the .05 level. The interactions between Perceived Need and Reward and

between Perceived Need and Institutional Support, though, achieved significance at .059 ($F(1,341) = 3.50$) and .978 ($F(1,341) = 3.05$) respectively.

The presence of Reward was more effective than its absence only when Perceived Need was also present. When there was not a Perceived Need to Improve, the presence of Reward produced a level of stated willingness to improve instruction that was not statistically different from that produced by the absence level.¹ This result is consistent with the specific hypothesis regarding this interaction. Concerning Institutional Support, when Perceived Need was absent the difference was greater in favor of the present level of Institutional Support ($z = 2.35$, $p < .05$). When Perceived Need was present there was not a statistically significant difference between the amount of stated willingness to improve produced by the two levels of Institutional Support ($z = .5$, $p < .05$). This runs counter to the specific hypothesis.

For the converse of these interactions, the presence of a Perceived Need had a greater impact than its absence at both levels of Institutional Support (for presence level $z = 5.28$, $p < .05$ and for absence level $z = 7.14$, $p < .05$). But when Institutional support is absent, the difference is even greater. This situation also was not the predicted result. Concerning Reward the interaction is also ordinal.

¹ Simple effects tests were done to determine if mean differences between presence and absence levels of Reward at both the presence and absence levels of Perceived Need were statistically significant differences. When Perceived Need was present, the presence of Reward ($z = 5.15$) resulted in significantly more stated willingness to improve than did its absence ($\bar{x} = 4.82$; $z = 2.64$, $p < .05$). At the absence level of Perceived Need the presence of reward ($\bar{x} = 4.03$) was not significantly greater than its absence ($\bar{x} = 3.88$; $z = .79$, $p < .05$).

The presence of Perceived Need was always more influential than its absence. Yet, in this case the difference is greater when Reward is present. This is consistent with the specific hypothesis. These two interactions have been graphed in Figure 5-1 and 5-2. These differences will be considered in more detail in Chapter V.

Summary of Results

The principle objective of this research, as stated in the Chapter III, was to evaluate the effectiveness of five factors (Perceived Need to Improve, Knowledge of Alternatives, Reward, Peer Support, and Institutional Support) in influencing a university faculty member to participate in instructional improvement. The results of this study indicate that four of these factors were effective, as they were operationalized, in stimulating faculty members at Michigan State University to state their willingness to make efforts to improve their instruction.

If confronted with situations in which either a Perceived Need to Improve, Knowledge of Alternatives, Peer Support or Institutional Support were present, the faculty members were more likely to state their willingness than if the situation lacked these factors. The presence of Reward for instructional improvement, on the other hand, did not seem to have any effect on faculty members' statements about their willingness to participate in instructional improvement.

Only two interactions approached statistical significance (using the .05 standard): Perceived Need and Reward and Perceived Need and Institutional Support.

When the factors were compared for relative impact on the dependent variable, Perceived Need to Improve proved to be the most potent; it accounted for the most variation (15%) in subjects' stated willingness to make special efforts to improve instruction. Considered together, all five factors accounted for only 19 percent of the total variation.

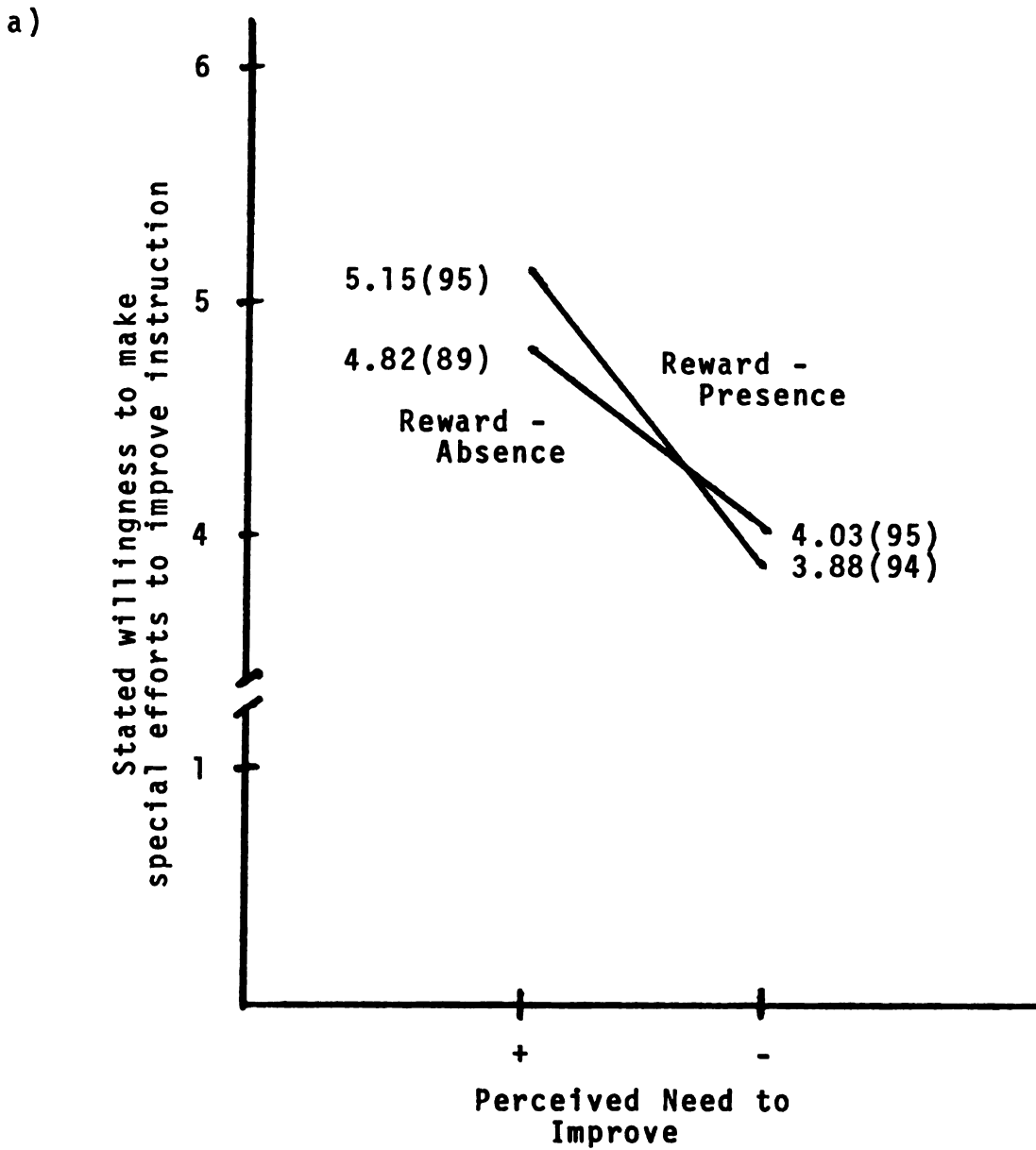


FIGURE 5-1. Interaction of a) Reward and b) Institutional Support on Perceived Need to Improve.

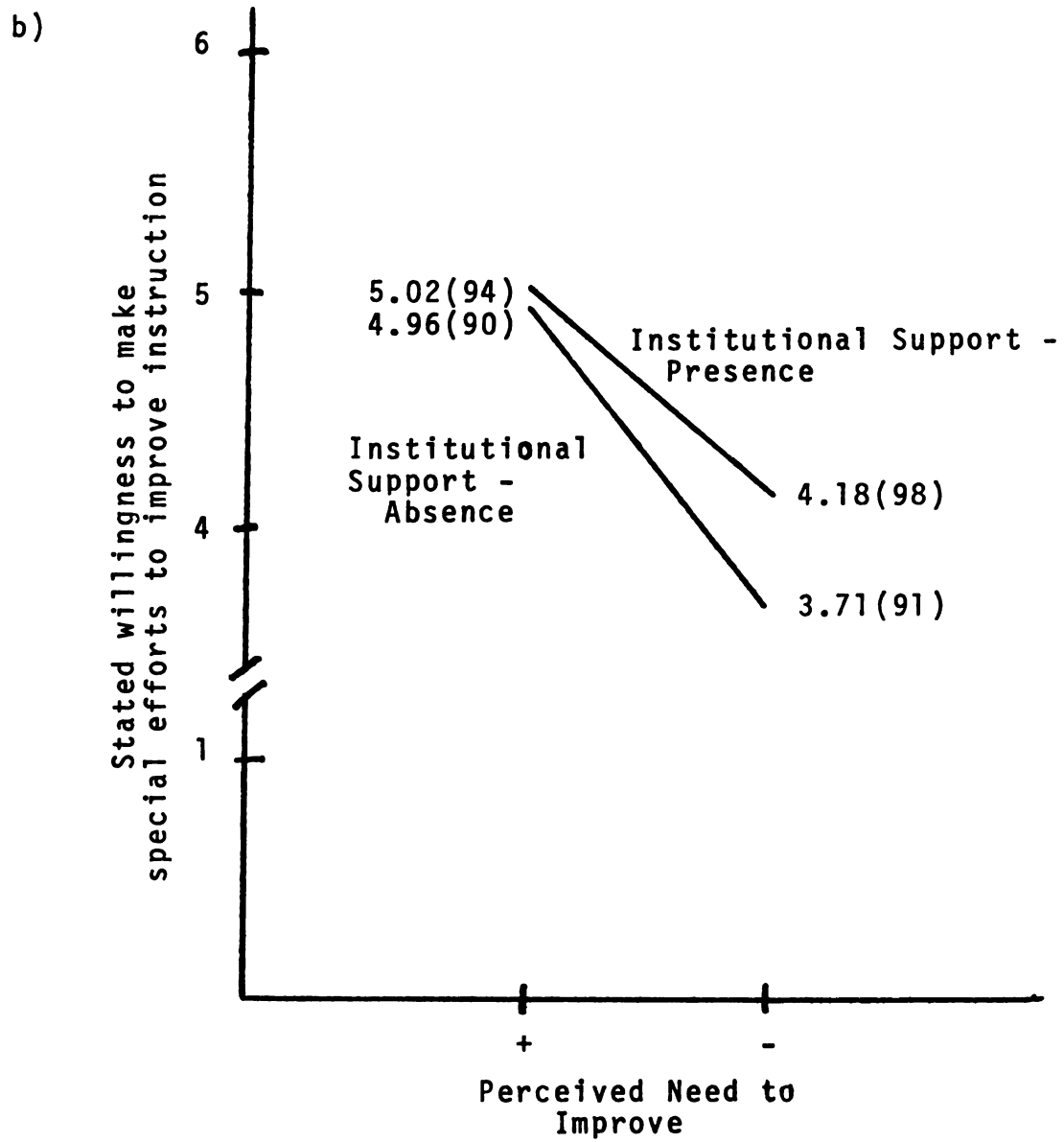


FIGURE 5-1 (cont'd)

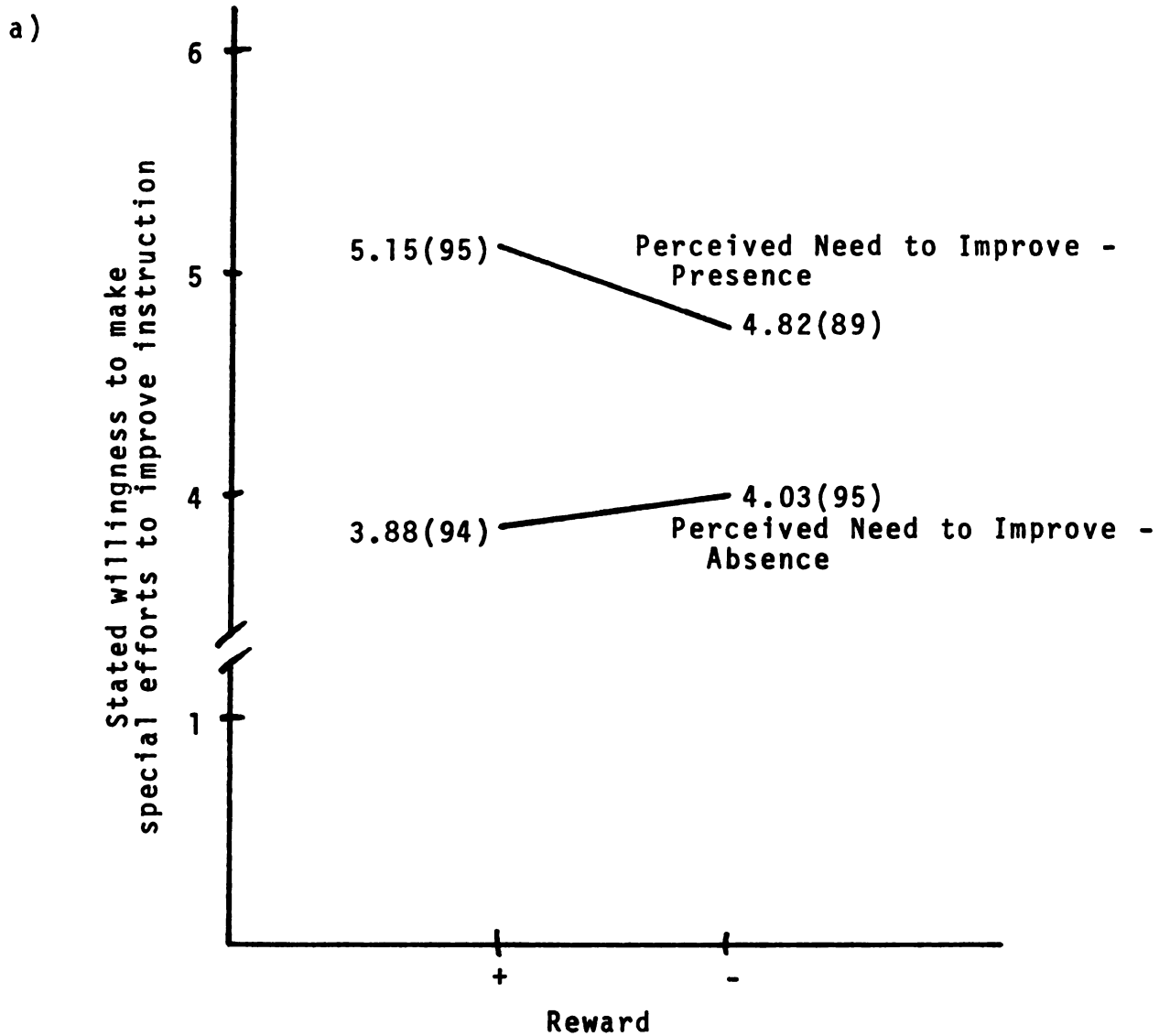


FIGURE 5-2. Interaction of Perceived Need to Improve on
a) Reward and b) Institutional Support

b)

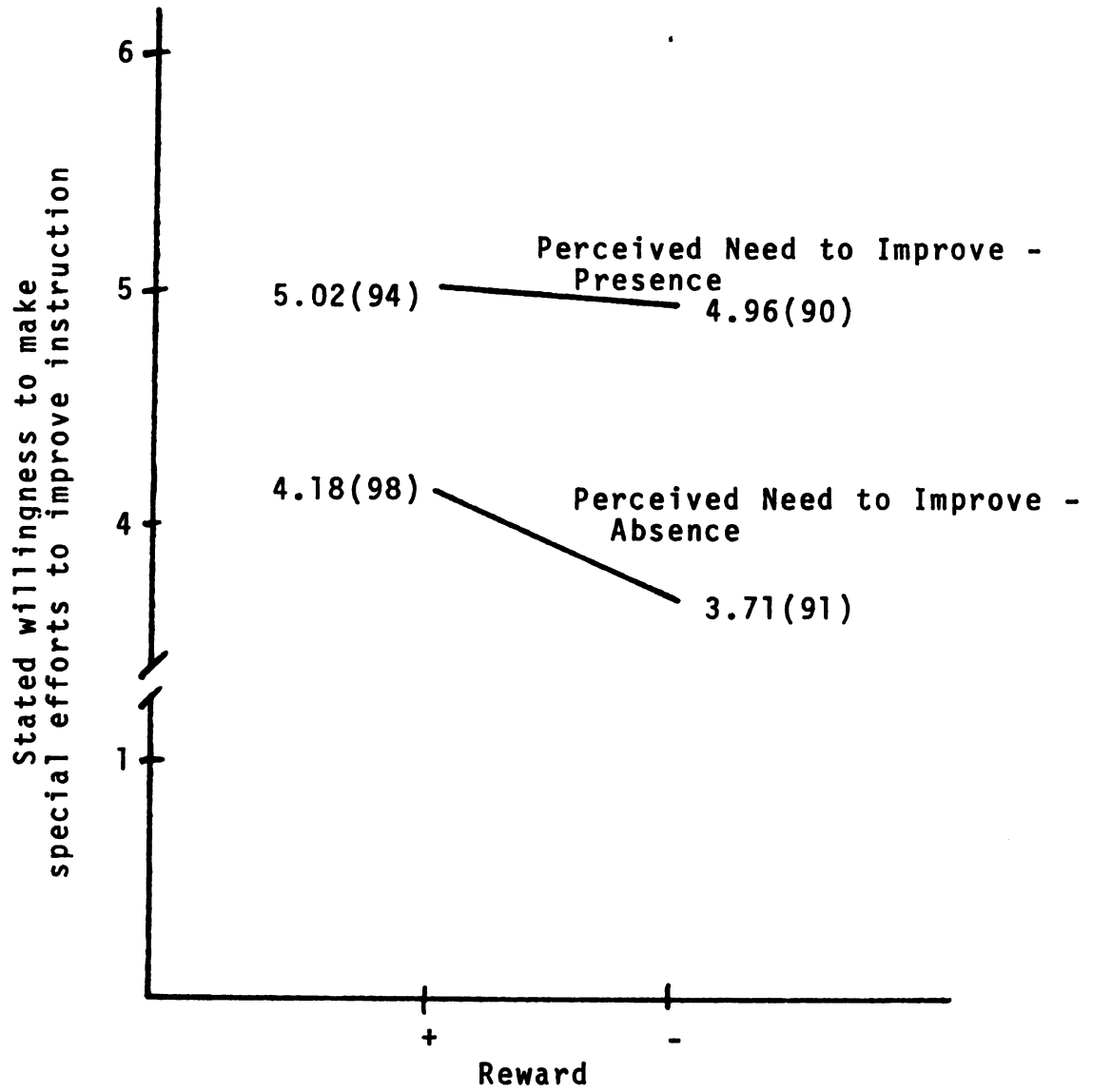


FIGURE 5-2 (cont'd)

CHAPTER VI

DISCUSSION AND IMPLICATIONS

A concern for the improvement of college teaching and the professional development of college faculty members is not a new phenomenon in American higher education. In Chapters I and II a number of reports were cited from as early as the 1930's focusing on these issues and proposing action strategies. A number of formal campus programs devoted to instructional improvement can be identified beginning in the 1950's. But, as a field of study and as a formal professional activity, with attempts to investigate and develop successful approaches, the instructional improvement "movement" is a child of the current era.

The emphasis in the field to date, though, has been on development and utilization of strategies and not on their systematic investigation. Few attempts have been made to test strategies for their effectiveness. The research reported in this thesis has tried to partially remedy this lack of empirical study.

In this final chapter the results of the present study (reported in Chapter V) are discussed in light of previous research and writing. Limitations that must be placed on the findings are also discussed. Finally, concluding the report, implications of the results for the practice of instructional improvement and for future study in this field are suggested.

This chapter serves as an over-all summary of the research reported in this thesis.

Discussion of Results

As described in Chapters I and II, an attempt was made to identify the more basic psychological, sociological, and organizational factors that underlie commonly employed strategies of instructional improvement. For example, group presentations on instructional topics, individual consultation with experts on teaching and learning, ideas from colleagues, and written materials on curricular issues all have in common the production of knowledge of alternative approaches to instruction. Thus, Knowledge of Alternatives becomes the more basic factor underlying these and similar strategies. In addition to Knowledge of Alternatives, the other factors identified through review of the literature, conversations with faculty and instructional developers, and the experience of the investigator are Perceived Need to Improve, Reward, Peer Support, and Institutional Support.

It was predicted that the presence of these factors in an individual's situation as a faculty member at a university would result in a greater willingness on his part to make special efforts to improve his instruction (see Chapter III for research hypotheses). The experimental and analytic procedures were designed to test this expectation (see Chapter IV for methodology).

The results show that for the most part these factors were effective in influencing instructional improvement; the findings support fairly well the little research and considerable speculation in the literature concerning these factors and the strategies which operationalize them.

Perceived Need to Improve, Knowledge of Alternatives, and Institutional Support are clearly effective; and, even though there is some question about its statistical significance, Peer Support also appears to be an influential factor. Only the main effect of Reward for instructional improvement went counter to predictions made about its impact. With the group of faculty members studied, this factor was not found to be influential in increasing stated willingness to make special efforts to improve instruction.

There was a general lack of interactions, but Perceived Need and Reward and Perceived Need and Institutional Support can be considered significant results and deserving of further study.

Finally, it was determined that Perceived Need to Improve was the most potent factor, as measured by the amount of variance in subjects' scores accounted for by each factor.

Each of these findings is discussed below in greater detail.

Perceived Need to Improve

As described in Chapter II, this factor was identified in the work by Lindquist (1974a) for the Strategies for Change and Knowledge Utilization Project. It is considered by the present investigator as the critical component in the general change strategy Lindquist terms Problem-Solving. As the literature of instructional improvement and faculty development was reviewed, Perceived Need emerged as a basic factor underlying many approaches to teaching improvement.

Strategies such as formal evaluation of instruction, department and institutional self-study, curriculum revision, and independent or aided reflection on personal educational philosophies and goals all appear to depend for their success on the perceptions of a need to change

or improve. Each allows a comparison of what one is now doing with that which one would like to do as a college teacher. If a discrepancy exist between intentions and actual behavior, then it is assumed that there will be some attempt to reduce the discrepancy.

The results of the present study indicate that Perceived Need, when operationalized by the strategies mentioned in the previous paragraph, can be influential in whether a faculty member states that he would be willing to make special efforts to improve his instruction. This finding is consistent with what Lindquist and others have predicted for faculty members in higher education and with the theorizing and research apart from higher education.

Possibly the most important result with respect to Perceived Need was its standing as the most potent factor of those considered in this research. It accounted for much more of the variance in subjects' scores than did the other four factors together: 15 percent for Perceived Need compared to three percent for the others combined. This is consistent with the thinking of some faculty development and change authors, particularly those with a psychoanalytic orientation (Ack, 1973; Sanford, 1971; Freedman and Sanford, 1973). They suggest that the first step toward behavior change rests with the realization that change is necessary and consistent with one's values and goals. The preeminence of Perceived Need may also be predicted from Lewin's "unfreezing-moving-refreezing" model of change. Francis (1975), using Lewin's notion, states: "The first task of instructional development must be to raise that consciousness, to attract attention, to unfreeze traditional faculty disinterest in the methodology of instruction and to establish a critical awareness of the necessity and desirability of

instructional improvement" (p. 22).

Also, Perceived Need to Improve may be considered an important factor when it interacts with other factors. Not only may it be the most potent factor, but as suggested in the Chapter II, the effect of other factors may depend on a Perceived Need to Improve. Results indicate that this may have been the case for Reward and Institutional Support. Interactions of Perceived Need to Improve and other factors were not statistically significant. With respect to Reward, it appears that Sanford may be right when he says "attempts to produce change by behavioral or mechanical means will not be effective nor long lasting unless they are understood, accepted, and integrated within the person" (p. 9). In addition to what this result indicates about Perceived Need, it may also help explain the lack of a significant main effect for Reward (to be considered later). Concerning Institutional Support Purdy (1973) has commented that "support staff and resources for faculty . . . are vital to improvement but only after the faculty themselves have decided to take advantage of them" (p. 2). Although Perceived Need and Institutional Support interact significantly, Purdy's point is not born out in this study. The presence of Institutional Support actually became more effective when Perceived Need was absent.

The converse of these interactions was also predicted: Perceived Need would be more effective itself if other factors were present. Again concerning the interactions considered significant, the prediction was accurate for Reward but not for Institutional support. Each of these interactions are graphed in Chapter V.

Knowledge of Alternatives

This factor was also extracted from Lindquist's (1974a) conceptualization of change in higher education. He calls this approach Social Interaction. As used in this present research it represents an awareness of innovations or alternatives to present instructional practice.

Many of the means used to advance the improvement of college teaching seem to converge on this basic psychological factor. Group presentations (such as seminars, workshops, conferences, etc.), consultation with experts on teaching and learning, written materials on curriculum and instructional topics, and ideas from colleagues are the specific operationalizations that have been tested in this study. It was assumed that if an individual possesses knowledge of alternative ways of behaving, he is more likely to act differently in the future than he does at the present.

In the present research the presence of this factor was found to be an effective stimulant to instructional improvement. This finding was in accordance with the previous research and writing presented in Chapter II.

Reward

The Reward factor studied in this research was suggested by Lindquist's (1974a) final general strategy--Legitimate Authority. Institutions and their component units, either through academic governance or administrative procedure, can make teaching and teaching improvement important functions for a faculty member. If the successful performance of these functions is formally rewarded by the institution or unit, then it might be assumed that there will be a greater chance that

time and effort will be allocated to them in the future. As mentioned in Chapter II, many faculty development and instructional improvement authors cite the need for adequate rewards if instruction and its improvement are to become important activities for university faculty members.

Strategies such as rewarding teaching on a par with research and scholarship, giving special public recognition to professors who make special attempts to improve instruction, counting efforts at improvement when determining salary, promotion, and tenure, and giving special awards for outstanding teaching all make use of the basic psychological factor of Reward. Of all the factors considered in this research, Reward has more written about it and has had more space devoted to recommending it as an important stimulant to instructional improvement. Brandis (1964) has proposed that "it cannot be overemphasized that this step [Reward for teaching equal to that for research] is the sine qua non of the rehabilitation of university undergraduate teaching " (p. 58). No stronger plea was found for any other factor or strategy.

Despite the emphasis on Reward in the literature, the present study found the main effect not to be significant in determining the degree to which a faculty member would be willing to make special efforts to improve his instruction. The presence of Reward in the influence situations presented to subjects resulted in a higher mean score than did its stated absence, but the difference was so small as to not be considered statistically significant. It was the least effective factor tested, as measured by the amount of variation accounted for in subjects' scores; Reward accounted for only .09 percent of this variation.

These results are surprising based on the previous research and writing and common sense about the effect of Reward on human behavior. Four alternative explanations for the finding are offered: 1) Reward may be effective but only in the presence of other factors; 2) Reward is an important factor but the operationalizations chosen for study were not effective; 3) Reward is influential but individuals are not willing to admit it; and 4) Reward is not effective because intrinsic interest is more important or because faculty members do not believe that improvement will be rewarded.

First, using the empirical results of this study it can be said that a presence of Reward is not effective unless a Perceived Need to Improve is also present. This finding has already been discussed with respect to Perceived Need. Sanford's comment about the effect of Reward (which he refers to as a "behavioral or mechanistic" means of change) would seem to have been the most predictive of all those made about the effect of this factor. Reward may be an important and effective factor, but based on this investigation it may not work in the absence of other important conditions.

The second major explanation for the lack of a Reward main effect concerns the operationalizations used to test the factor. Reward, as a general factor underlying instructional improvement, may in fact be effective, yet the specific operationalizations chosen for study may not have made very much difference to faculty members. An effective reward is usually characterized as a stimulus of some kind which results in a increase in the rewarded activity (Whaley and Malott, 1971). Since the operationalizations listed above in this section did not result in a significant increase in stated willingness

to improve instruction, it might be concluded that they were not effective rewards. Previous research and writing have suggested that these would be the most effective operationalizations, but with the group studied this may not be the case.

Third, even if Reward is an effective factor and the operationalizations are effective rewards, there remains the possibility that individuals may deny that their behavior could be motivated in this way. As will be shown below, it would appear that at least some of the faculty members studied prefer to think that they are intrinsically motivated to improve their instruction and do not need and do not respond to external incentives. In this study subjects were asked to make self-reports as to the degree they would be influenced to make special efforts to improve instruction. If there does exist an unwillingness among people to admit that they would be influenced by reward and punishment to behave in certain ways, then this research method would be particularly vulnerable to it. If subjected in vivo to the same reward contingencies described in the influence situations used in this study, faculty members may very well increase their participation in improvement activities. But when given the opportunity to rationalize their behavior, they may indicate that this factor would not be an effective stimulant.

Finally, it could very well be that offering Reward to faculty members for instructional improvement may simply not make any difference in whether or not they attempt to better their courses and teaching skills. This explanation might, in turn, be based on two possibilities. First, intrinsic motivation may be a more influential factor than the type of direct, extrinsic rewards suggested in the situation descriptions. A

number of the authors who cite the importance of Reward preface their remarks with mention of the importance of intrinsic interest. For them Reward becomes a factor in addition to this intrinsic motivation.

Korn (1974) provides a good example: "There is, of course, the motivation inherent in the tasks of teaching and research: the discovery of truth, the creation of ideas. This intrinsic motivation is strong for most faculty. However, it is obvious that extrinsic incentives have a significant effect as well" (p. 132). The results of the present study provide little support for the second statement, but the first suggests a reason for the lack of a main effect for Reward as operationalized in this research.

Unsolicited written comments made by subjects give additional credence to this reasoning. A Professor of Forestry remarked:

True creativity and responsibility towards the University and the students cannot be bought. Changes in teaching methods stimulated by token salary increases or teaching awards would in most cases be phony ones. Do you think that the serious photographer or engineer or surgeon would produce superior work just because someone is dangling an award in front of him?

An Associate Professor of English made a similar comment:

The motivation for improvement does not come from my colleagues, or from a system of rewards (salary, promotion), or from any external source; it is simply part of my commitment to the students in my classes, and to the profession as a whole. That commitment is personal. I like to be rewarded for teaching well, but I would try my best regardless.

A second possibility for the lack of a Reward main effect focuses on the place of teaching in American higher education. It was mentioned in Chapter II that teaching and its improvement does not always receive reward commensurate with that for other activities, most notably research. The argument was made, though, that if teaching was

rewarded equally, then efforts at instructional improvement would increase. Korn (1974) proposes that "in general what is needed to improve teaching effectiveness are incentives that are as highly valued as the incentives provided for research" (p. 132).

But, it is possibly that teaching and teaching improvement are at present so low on the list of rewarded activities that subjects found it hard to accept the reward contingencies in the situation descriptions. This reasoning is also lent support by subjects' written comments. A faculty member in the department of Humanities reported: "My experience . . . has led me to conclude that administrators seldom recognize innovations in teaching either through monetary rewards in salary or in released time for experimentation." An unidentified professor added: "I'm struck by how few of these incentives are present at MSU--teaching is not rewarded, especially by the higher administration."

Rewards for teaching and teaching improvement might be a effective stimulants to instructional improvement if these activities commanded a greater proportion of total reward. But even if the university allocated them the greatest weight in determining promotion, salary, and tenure, the fact that research efforts pay off not only within the university but outside as well (unlike teaching) makes it difficult to see how Reward for teaching and teaching improvement can compete effectively. Katz (1964) offers that reliance on instrumental reward can influence behavior only to the extent that one's organization's rewards are competitive with other organizations' rewards. In the case of a university professor, the rewards of external funding agencies and the profession as a whole often outweigh those that the

university itself can bring to bear on goals and priorities. These sources of Reward emphasize research and public service not teaching and teaching improvement.

Four explanations for the lack of a significant main effect for Reward have been presented. They may each have a part to play in accounting for this result; they may be complimentary explanations. Intrinsic motivation may be more important in determining whether a faculty member makes special efforts to improve his instruction. If intrinsic incentives have an additional effect, though, it could depend on the particular way in which the factor is operationalized and/or the presence of other conditions (such as a Perceived Need to Improve. In addition, Reward may work, yet the individual effected may be unwilling to admit to this influence on his behavior. Finally, university faculty members may have a hard time believing that instructional improvement will be rewarded, hence, give little consideration to this factor in carrying out their duties.

Peer Support

Many of the authors who comment on instructional improvement and faculty development mention the importance of Peer Support for efforts to improve teaching. "Colleagueship" in which faculty members assist each other identify and try out new instructional approaches; norms and expectations among department members that special efforts should be made to improve courses and teaching skills; examples of instructional improvement by colleagues, particularly respected peers; and articulated concern for the quality of instruction all make use of the basic sociological factor of Peer Support.

The assumption is that unless group norms and actions sanction teaching and efforts to improve it a faculty member must act independently and possibly "against the grain" in his department. Few individuals will make sustained efforts in the face of a lack of support. Gaff (1975a) suggests that "as much as an individual may want to change and develop, it will be difficult for him to do so unless he has the support and encouragement of his associates" (pp. 26-27).

The results of the present study do support this factor as a stimulant to instructional improvement. It must be noted that the factor did not reach the pre-specified level of confidence set for its statistical test (.05), but it was statistically significant at .058. Thus, the presence of Peer Support will be considered to have an important effect on a faculty member's willingness to make special efforts to improve instruction.

Because of the tenuous nature of the finding, though, some explanation might be given as to why the factor was not more influential. Three possibilities are offered: 1) the operationalizations chosen are not the most effective, 2) faculty members may resist peer group influence even though it does have a directive effect on their behavior, and 3) Peer Support may simply not be important in determining how a faculty member carries out his duties.

First, the operationalizations chosen for the factor may not have been the most effective. Since the degree of respect one has for a colleague or group of colleagues is an important determinant of the influence that individual or group will have (Loree, 1971), the peer group mentioned in each of the operationalization (the department) may not garner enough respect to be an effective stimulant to instructional improvement for many subjects. Departments at a university such as Michigan State

can be large and diverse in their membership. In such a case subgroups of faculty members might become the important peer groups. Also, groups outside the department and even outside the university may be more respected and, hence, more influential than the department or any of its smaller groupings. Borlund's (1974) research indicates that influence rests with the lowest organizational level at which a commonality of goals is perceived. For the faculty members sampled in this present study, this could very possibly be a group different from the "department."

Second, peer group expectations are usually thought to have some directive influence on group members' behavior. The actions required, though, may not be those which an individual member desires to exhibit. Bergquist and Phillips (1975b) comment that "one of the paradoxes inherent in change is that people and institutions are least likely to change when someone tells them they should change" (p. 188). Faculty members, who value autonomy and independent decision making regarding how they spend their time and effort, may openly resist any suggestion that their behavior come under the sanction of any group to which they belong, even though in the long run their actions conform closely to the norms and expectations of these groups.

Finally, Peer Support may not be an important consideration in whether university faculty members participate in the instructional improvement. This possibility may be especially true at a major research university such as Michigan State; independent initiative, not group cooperation, have been most important to the individual's advancement in this academic environment. This fact has most likely been true for the person's development as a teacher as well as his progress in his

research specialization. The faculty member may welcome the support of his colleagues for his efforts to improve his instruction, but he has come not to expect it, and if he is going to attempt to improve, he does it whether or not he receives Peer Support.

Institutional Support

Institutional Support has been considered in this research as an organizational factor in facilitating instructional improvement. The assumption exists that if certain kinds of physical facilities, funding, and time are provided to a faculty member by the institution, the likelihood increases that he will be more interested in improving his instruction. Operationalizations of this factor, such as time released from regular duties, instructional improvement grants, assistance in developing teaching skills, and assistance with technical aspects of instructional improvement, no doubt reflect a certain amount of Peer Support and may be considered by some as Reward. But, for the purposes of studying instructional improvement strategies, they seem distinct from the operationalizations suggested for these other factors. As cited in Chapter II, the previous literature includes frequent mention of various forms of Institutional Support.

The present research supports this hypothesis; a presence of Institutional Support results in greater stated willingness to make special efforts to improve instruction. The effect was not a particularly strong one, and the factor accounted for only one percent of the variance in subjects' responses. But, none the less, it cannot be ruled out as a potentially important factor in stimulating instructional improvement.

A number of subjects made unsolicited written comments about the importance of time to pursue instructional improvement. Even though one

operationalization of this factor involved released time, these subjects wanted to especially make the point of suggesting time as crucial to whether a professor will make special efforts to improve his courses and himself as a teacher. A faculty member from Latin American Studies offered: "The immediate problem, in my own instance, is not lack of university resources but lack of time." Spitzer (1975) found in his research at SUNY at Albany that faculty members thought time constraints to be the biggest hindrance to improvement. Sixty percent of those surveyed agreed with this assessment.

Institutional Support figured in one of the two interactions that have been considered significant. The presence of this factor was more influential than its absence when Perceived Need was absent. This result went counter to the prediction made in advance of the study; it was hypothesized that Institutional Support would be most effective when Perceived Need was present for a faculty member. The finding does, though, make intuitive sense of its own. When an individual possesses a need to improve, then additional factors may not be essential. But, when there is no need to change generated within the person, then the promise of Institutional Support may become more important in stimulating instructional improvement.

Less has been said about this factor in the literature than the other factors, and to this investigator's knowledge no research has been done on its effectiveness in instructional improvement programs. For this reason these results should be considered important.

Interaction Among Factors

Interactions were hypothesized between Perceived Need to Improve and each of the other factors. Only two separate interactions were considered statistically significant: Perceived Need and Reward and Perceived Need and Institutional Support. Each of these hypothesized interactions have been discussed with respect to their main effects, so they will not be considered again. Instead, an explanation for the general lack of interaction is proposed.

In Chapter IV it was suggested that because of the multi-stimulus nature of the situations faced by a faculty member in a university, interactions among factors might be prevalent. This complexity of the university and the professor's existence within it can be offered, though, as an explanation for a lack of interaction as well. McKeachie (1970), reaction to criticism of the "interaction" position on teaching methods, argues that "teaching and learning is an enormously complex business in which so many variables are involved that interaction effects, like method effects, pop up only a little way above the apparent noise generated by the other variables" (p. 12). In the present study only 19 percent of the total variance in subjects' stated willingness to improve was accounted for by the five factors studied. Thus, significant interactions among these factors may be masked by other important variables not considered in this study.

Relative Effectiveness of Factors

As already mentioned, Perceived Need to Improve was the most potent of the factors tested, as measured by the amount of variance in the dependent variable accounted for by each factor. Fifteen percent of the variation in faculty members' stated willingness

to make special efforts to improve instruction can be accounted for by Perceived Need. Knowledge of Alternatives and Institutional Support were the next most effective factors, but they each accounted for only one percent of subject score variation. Peer Support was responsible for .8 percent and Reward for only .09 percent.

It was hypothesized that there would be no difference in the impact of these factors. This was done principally because little in the previous literature suggested any particular order of effectiveness. But, the fact that Perceived Need was most potent, and by such a large degree, should not be surprising. Of all the factors, it was intended to have the most direct impact on an individual. A dissonance created by a discrepancy between desired and actual behavior is an internal event and cannot be easily escaped. If not rationalized, the course of action for reducing the dissonance is readily apparent: a change or improvement in present behavior. Knowledge of Alternatives and Institutional Support, on the other hand, can more easily be ignored; and adequate Reward and Peer Support can be received for activities other than teaching and teaching improvement.

Of most concern in this analysis, though, may be the fact that only 19 percent of the variation in subjects' responses was accounted for by the five factors tested in the analysis model. This result means that subjects' individual differences, influence factors not formally considered, and/or errors in measurement account for the remaining 81 percent.

The subjects in this study, although all "tenure system" faculty members at Michigan State University, can be assumed to be a

diverse group of individuals on almost any variable considered. Individual characteristics such as age, sex, degree and rank, academic specialization, college and department, the nature of one's responsibilities at Michigan State (faculty surveyed had varying amounts of time devoted to teaching) might have a considerable amount of impact on subjects' responses. These individual differences have not been studied in this present research. The attempt was to determine the effectiveness of the five factors across an entire university faculty. But, in future research these characteristics and others might profitably be taken into consideration.

Other influence factors might include the type of improvement activity in which faculty members are asked to participate (Gaff, 1975b; DeBloois and Alder, 1973). The present research asked the degree to which faculty members would be influenced to make "special efforts" to improve instruction. Special efforts were defined as

any improvement activity which would be considered "over and above the call of duty." Examples might include the development of a new course or redesign of an existing course when teaching assignment does not necessarily require it, change in instructional method (e.g., from group-based to individualized instruction), development of supplementary materials (e.g., student workbook, printed lecture notes, problems and exercises, introduction of new media or technology (e.g., special graphics, television, computer--assisted instruction), work to improve classroom skills (e.g., lecture presentation, discussion leadership).

If other activities had been proposed, the results of the study might very well have been different.

The activities defined for this study require considerable time and effort to accomplish. In addition to the type of activity, the amount of time and effort necessary to accomplish instructional improvement may be a significant factor. It has already been mentioned



that time was foremost in the minds of many of the subjects surveyed in this research.

Also a faculty member's experience with the activity might be an important factor. If previous experiences have been satisfying, then the person will be more likely to pursue the activity or similar activities again in the future, despite the presence or absence of other factors.

In addition the opportunity for input into group or organizational decisions to change or improve may influence whether an individual makes the efforts required or resists them. Many approaches to organizational development emphasize participative decision-making and management (Boyer and Crockett, 1973).

Finally, pressure of formal authority, particularly the use negative sanction or punishment, was dismissed when deriving the Reward factor from Lindquist's (1974a) Legitimate Authority model. This pressure, though, could be an important and effective factor in whether a faculty member approaches instructional improvement. University professors may, in fact, respond more to academic governance and administrative edicts than to persuasion, reinforcement, and support.

Limitations

As suggested in Chapters I and IV this research has important limitations. This section briefly restates them in light of the results of the study.

Limitation 1

Numerous strategies, which invoke numerous psychological, sociological, and organizational factors, logically become possible when

one begins to attack a problem as complex as how to encourage a faculty member to approach instructional improvement. The bounds of one study cannot hope to accomodate all of them. The instructional improvement and faculty development literature itself, let alone the lower school and non-school research, lists many more factors and operational strategies than could possibly be studied in one experimental investigation. Also, the exigencies of research design realistically limit the number of variables which can be dealt with at any one time. In this study an attempt has been made to identify the most salient factors and most promising operationalizations based on prior research and practical experience.

This means that some factors and some operationally manifested strategies have not been considered which might be equally, if not more, influential than those selected. The results of the present study give credence to this limitation: the most potent factor (Perceived Need to Improve) was responsible for only 15 percent of the variation in subject responses, and the five factors together accounted for only 19 percent. Other influence factors, such as those suggested in the previous section (type of activity, time and effort required, previous experience, input into decision making, pressure from formal authorities) might individually or collectively prove to have a larger impact. The possibility also exists that no single factor or group of factors will account for a large share of response variation. The fact may be that many factors go into determining whether a faculty member participates in instructional improvement, and that applying one or a few factors will not be a totally effective approach to either research or practice in this area.

Given this situation no attempt can or will be made to conclude from the results of this research that evidence has been gathered on the factors or strategies or that Perceived Need to Improve (as the most potent factor in this study) promises to be the most effective of all possible approaches to instructional improvement. This research builds on previous work and at the same time provides some direction for future inquiry. It offers some tentative answers to the research questions raised, not the total and final answer.

Limitation 2

In this study the responses of all subjects were aggregated in the analysis. Individual personality or developmental characteristics or sub-group membership were not examined. The purpose of the study was to test the general efficacy of certain factors across a broad and diverse group of college faculty members. But, personal characteristics, of either an individual nature or common to an identifiable sub-group of subjects, may very well have mitigated the impact of one or all of the factors tested. The research approach used may mask the fact that certain strategies work with certain individuals or sub-groups of faculty but not with others.

The fact that such a small amount of the total variance was accounted for by the factors tested lends some importance to this limitation. In addition to factors not considered, subjects' individual and sub-group differences (such as age, sex, degree and rank, discipline, college or department) could very well have been responsible for this result. Given this situation the conclusions made from the study must be limited. The statement that "on the average" this or that strategy or combination of strategies works

may be warranted. But, a prediction that approach A will work with person X must wait further investigation.

Limitation 3

The nature of the research method used limits the generalizability of the study's results. Rather than actually submitting faculty members to influence situations containing the factors under study, subjects were asked to respond to written descriptions of the situations. Because the descriptions do not present exactly the same "conditions" as would the combination of factors in vivo, direct statements cannot be made about the behavior of university faculty members when actually confronted with the situations. Generalizations from the findings of the present study must be of an "indirect" nature.

Results of the study, although indirect, do provide one indication of the impact of five particular factors on a faculty member's willingness to participate in instructional improvement activities. The facts that four factors had a significant main effect and that one did not, that one factor interacts significantly with two others, that besides these two there was a general lack of interaction among the factors, that one factor was much more potent than the others, and that all factors tested accounted for a very small amount of the variance in subjects' responses all constitute useful information. They give support to some previous research and writing and present contradictions to some other previously held ideas. This information might provide some guidance to the practice of instructional improvement and direction to future research. But, these claims must remain tentative because of the methodological limitation in this study. Not until these factors are studied in vivo can inferences be made about how

faculty members will actually behave in the situations investigated in this research.

Implications for Research and Practice

The results of this study have implications for both research and practice in the field of instructional improvement and faculty development. Many of these implications were suggested in the previous discussion of results and limitations. In this section they are stated more explicitly.

Implications for Research

Research Implication 1

The overriding implication for future research results from the methodological limitations of this study. Even though the method used has advantages over others that might have been considered, it remains a paper-and-pencil simulation and does not provide direct evidence of faculty members' actual response if confronted with the situations described to them. To overcome this limitation, faculty reactions to the operationalized factors must eventually be investigated in vivo. Thus, it is recommended that the results of the present study be followed up in some kind of "real world" experiment.

Two approaches might be taken to this type of research. First, situations in which particular combinations of factors already exist might be identified at various colleges and universities. In each location the impact of existing factors on the behavior of faculty members with respect to efforts at instructional improvement could be observed. This approach would provide an indication as to whether

a particular combination of factors is effective or not effective in stimulating improvement activities.

This approach is limited, though, in the number of distinct situations that can be studied. It would be difficult, if not impossible, to identify institutions (or units within them) that are characterized by all the unique combinations of factors studied in the present research. Also, results would be difficult to interpret because subjects in this type of study would not be randomly assigned to situations. Finally, similar situations at different schools might not be standard in terms of the specific operationalization used and the degree to which a factor is present or absent. This approach, if attempted, would require a detailed description of each situation being studied. Results from across situations and institutions would have to be pieced together logically in order to reach conclusions about the effects and interactions of the factors studied.

The second approach to studying the factors in vivo would require manipulating existing situations so that they include a particular combination of factors. Schools (or units within them) could be randomly assigned to situations as treatments.

This approach also has limitations. To study all five factors and all possible combinations, the cooperation of a large number of institutions or units would have to be enlisted. A certain amount of deception may be necessary; the experiment may have more validity if subjects do not know they are part of a study. Both of these conditions may be difficult to achieve. An alternative is to study only certain factors or certain combination of factors. Since Knowledge of Alternatives and Peer Support did not interact significantly

with other factors, each could be studied by themselves. The significant interactions (Perceived Need and Reward and Perceived Need and Institutional Support) might be the first groupings to be investigated. Studying fewer factors reduces the number of experimental units needed.

Research implication 2

Short of an in vivo study of the factors, additional experimentation might be undertaken using the simulated approach designed for the present research. Faculty members at other universities similar to Michigan State could be studied as a means of cross-validating the results. If institutions and faculties have demonstrably similar characteristics and if the results were the same at each school, then more confidence could be placed in the findings of this line of research. This type of generalization across institutions would lend support to factors and strategies which may be useful to instructional improvement programs at similar institutions.

In addition, faculty members at schools not similar to Michigan State University could be studied. If instructors at four-year colleges or two-year colleges respond in a similar fashion to those studied at Michigan State, then the results would enjoy an even wider generalizability. If results were not similar, then the differences could be noted for the purposes of further investigation of these differences and for the practice of instructional improvement at different types of institutions.

Research Implication 3

There is some justification for further study of each of the factors identified and tested in this research. At the very least

additional operationalizations of each factor could be tested. Although those chosen for this study were the most frequently used by instructional improvement programs and the most promising based on previous research and writing, there may be other operationalizations which make use of a factor equally well. Knowledge of the effect of additional operationalizations would increase the storehouse of validated strategies available to instructional improvement programs.

Also, each factor may have mitigating conditions which affect its influence on faculty members' willingness to participate in instructional improvement. It was suggested in Chapter II, for example, that Knowledge of Alternative instructional methods would be more effectively communicated in an interpersonal context rather than in some impersonal way. In the present study Knowledge was operationalized in both ways; interpersonally as group presentations, ideas from colleagues, and ideas from consultants, and impersonally as written information. The research design employed did not allow information on the separate effect of each operationalization, but future investigations could be designed to make this determination. In this way the effects of mitigating conditions could be determined. Each factor may have similar conditions which affect its usefulness in stimulating instructional improvement.

Further empirical investigation of the factors could take either an in vivo or simulation approach. In addition to further experimentation, attempts could be made to provide each factor with a more detailed theoretical explanation. A description of how change takes place with respect to each factor was presented in Chapter II. Further consideration of these assumptions might lead to a better

understanding of how a factor "works" and provide additional insight into how a factor might be used in programs of instructional improvement.

Research Implication 4

Since the factors studied in this research accounted for only 19 percent of the variation in the subjects' responses, an attempt could be made to identify and test additional influence factors. As mentioned in a previous section, variables such as type of activity, time and effort required, experience with the activity, input into decision making, and pressure of formal authority might provide a starting point for such a search. The literature of instructional development could be reviewed for additional factors; there are new developments daily in this field. Literature on secondary and elementary school teacher improvement and the more general psychological, sociological, and organizational research and writing could also be examined in greater detail than it was in this investigation.

Research Implication 5

Finally, individual and sub-group characteristics of faculty members might be studied with respect to their influence on an individual's willingness to make special efforts to improve his instruction. As an alternative to influence factors not studied, individual subject differences may have accounted for all or part of the unexplained variation in subjects' responses. Considering the effect of each factor with respect to age, sex, degree and rank, academic specialization, college or department, and amount of time devoted to teaching would provide an idea of the importance of

1

individual difference variables. In the present study this type of personal data was not collected; the interest was to determine the effect of the five factors across an entire university faculty. This information could be gathered in future research and used as part of the analysis.

Implications for Practice

This thesis began with a description of the lack of empirical research in the field of instructional improvement and faculty development. It was suggested that this failure to systematically investigate approaches to the improvement of college teaching not only limits understanding of faculty behavior generally but also provides a weak basis for practical programs of instructional improvement. These programs have proliferated and considerable funds have been allocated to them by foundations, state and federal governments, and institutions themselves. Yet, little "hard" evidence exists as to the effectiveness of the strategies commonly employed. The results of the present study, despite their limitations, hopefully play some part in alleviating this situation.

Practice Implication 1

Although the evidence is indirect, Perceived Need to Improve, Knowledge of Alternatives, Peer Support, and Institutional Support would seem to be general factors that instructional improvement programs can profitably consider in their work with faculty members. Some factors may work better than others (the data indicates this to be the case) and a factor may be effective with some faculty members but not with others (the study provided no evidence on this point),

but for approaching a university faculty as a whole these four factors and the strategies that operationalize them have promise of success in stimulating the improvement of teaching.

Practice Implication 2

The ways in which each factor was operationalized in this study would appear to be effective strategies for influencing instructors' efforts to better their courses and teaching skills. Since the research design did not allow a comparative testing of the individual operationalizations, the safest conclusion from the present results is that these operationalizations used together will be more effective than if used separately. One particularly operationalization may, in fact, not be effective, and if it is used alone it may not result in greater instructional improvement activity. This is a matter for future research, but from the results of the present study the operationalizations chosen seem to consistently reflect the factor intended and were effective in getting a university faculty member to indicate an increased willingness to make special efforts to improve his teaching.

Practice Implication 3

Reward for instructional improvement by itself, as operationalized in this research, does not appear to have much promise for practical efforts of encouraging better teaching. Only when there also existed a Perceived Need to Improve did the presence of Reward make a significant difference in faculty members' stated willingness to improve their instruction. These results, because of the methodological limitations of the study, should not cause colleges and universities to cease

rewarding faculty members for their efforts to improve their teaching. Rather, the findings should indicate that Reward not be the only factor or the primary factor manipulated in attempts to stimulate instructional improvement. As the interaction with Perceived Need indicates, other factors may serve as important prerequisites to Reward.

Practice Implication 4

The general lack of interaction among factors suggests that those factors found effective can be used independently in improvement efforts. Perceived Need, though, appears to be more influential when Reward is present and when Institutional Support is absent, and Institutional Support seems to have more impact when Perceived Need is absent. These interactions indicate that certain factors be considered jointly when planning for instructional improvement. Also, despite the lack of interaction, factors might more profitably be used together because of the additional amount of influence (although not great) they add to each other.

Practice Implication 5

Since Perceived Need to Improve was found to be the most potent factor tested, and by such a large amount, strategies such as formal evaluation of instruction, institutional and departmental self-study, curriculum revision which gives faculty members new responsibilities, and analysis of values and beliefs about teaching and learning might serve as the basis for an instructional improvement program. These strategies, based on the results of this study, have the most promise for stimulating a faculty member to make special efforts to improve his teaching.

Practice Implication 6

Finally, results indicate that there may be other important variables which determine a faculty member's commitment to instructional improvement. The five factors tested accounted for only 19 percent of the variation in subjects' responses. Although Perceived Need to Improve, Knowledge of Alternatives, Peer Support, and Institutional Support seem to be effective in stimulating efforts to improve teaching, instructional improvement programs must consider the possibility that other factors not tested in this research may either further facilitate or possibly hinder improvement activities.

In addition to other influence factors, personal and subgroup characteristics of faculty members may be as, if not more, important as the five factors studied in determining whether an individual will make special efforts to improve his courses and teaching skill. Some factors and operational strategies may work with some faculty members but not with others; some factors may be more effective with individuals of a certain age, sex, academic unit, discipline, or rank but not with those at another level of each of these variables. Instructional improvement programs must consider this possibility also.

As a last consideration, it must be noted that this study has been undertaken at a major research university. The factors found significantly related to the improvement of teaching at this institution may not be so related at a college or university of a different character. The results reported in this thesis can provide some guidance to instructional improvement efforts at schools similar to Michigan State University. Wider applicability awaits further investigation.

APPENDICES

APPENDIX A

Pilot Study

- 1. Instructions to Participants**
- 2. List of Participants**

1. Instructions to Participants
of Pilot Study

May 10, 1976

To: Participants in pilot study

From: Robert E. Young

Thank you for agreeing to participate in the pilot of my doctoral research.

If you will please read the rest of this memo and then respond to the inventory items attached, you will have helped me immensely. Return the items and your responses and comments to me at 17 Morrill Hall in the addressed envelop enclosed.

Will you please do the following things?

1. Read and respond to each item on the scale provided.

2. Make any comments you have about each item (right on the item itself). I am particularly concerned about whether the item is comprehensible and believable.

Did you understand the item as a whole and each of its parts? Please indicate where you did not understand what was been described.

Was the situation believable? Could it exist in a university such as MSU (even though it might not exist in your department or others at this time)? I want to eliminate those entire situations and particular parts of situations that completely out of the realm of possibility in a university such as Michigan State.

3. Make comments about the stimulus question ("Given this situation . . . ") and the scale.

Was the question comprehensible and sufficiently directive for you to make a response?

Was the scale satisfactory? In the number of points making up the scale? In its labels ("not willing,"etc.)?

4. Make comments about the cover letter and directions.

5. Not discuss this research project with other faculty at MSU until after the 1st of June. I will be surveying nearly one-fourth of the total faculty with the final version of these items. I would like their responses to be as independent and "uncontaminated" as possible (in order to fulfill an important statistical assumption).

Thanks again. If you would like a summary report of my research when it is finished, make a note of that on one of the item pages. I will be happy to seen you a copy.

2. List of Participants in Pilot Study

- 1. Daniel H. Saks, Assistant Professor, Economics**
- 2. Bishop N. Pipes Jr., Professor, Humanities**
- 3. Harold S. Johnson, Professor, Justin Morrill College**
- 4. Fred J. Finley, Graduate Student, Science Education**
- 5. John Burroughs, Assistant Professor, Urban Planning**
- 6. George Gore, Associate Professor, Special Education**
- 7. Glenn D. Berkheimer, Professor, Science Education**
- 8. Byron Brown, Associate Professor, Economics**
- 9. John P. Fry, Assistant Professor, Learning and Evaluation Service**
- 10. Fred H. Stehr, Associate Professor, Entomology**
- 11. Julia S. Falk, Associate Professor, Linguistics**
- 12. Eugene Pernel, Associate Professor, Special Education**
- 13. Lawrence T. Alexander, Professor, Learning and Evaluation Service**
- 14. Marjorie S. Gesner, Professor, History**
- 15. Douglas Dunham, Professor, Social Science**
- 16. Stephen L. Yelon, Professor, Learning and Evaluation Service**
- 17. John Bratzel, Assistant Professor, American Thought and Language**
- 18. Sherry Anderson, Graduate Student, Human Ecology**
- 19. Jerry K. Stonewater, Instructor, Engineering**
- 20. Janet Favero, Graduate Student, Continuing Education**
- 21. Leroy A. Olson, Professor, Learning and Evaluation Service**
- 22. Floyd Lecureux, Assistant Professor, Computer Science**
- 23. Allan J. Abedor, Assistant Director, Educational Development Program**
- 24. Jerry Abramson, Graduate Student, Educational Psychology**
- 25. William Anderson, Graduate Student, Instructional Development**

26. Kivash Azima, Graduate Student, Chemistry
27. David West, Graduate Student, Educational Psychology
28. Michael J. Vavrus, Graduate Student, Instructional Development
29. Steven G. Sachs, Graduate Student, Instructional Development
30. Arvo Juola, Professor, Learning and Evaluation Service
31. William Frey, Instructor, Special Education
32. Charles E. Henley, Professor, Special Education

APPENDIX B

Research Instrument

- 1. Cover Letter**
- 2. Directions**
- 3. Set of Situation Descriptions (Example)**
- 4. Follow-up Reminder**
- 5. Situation Descriptions (128)**

1. Cover Letter

May 17, 1976

To: Michigan State University Faculty Member

From: Robert E. Young; Doctoral Candidate, Counseling,
Personnel Services, and Educational Psychology *Rj*

I would like to ask your cooperation with my doctoral research.

The attached short inventory (only four items) will take you 15 minutes at the most to complete. The success of my study depends on each inventory being returned, so may I ask you to take the next few minutes to respond and return the questionnaire to me via the enclosed addressed envelope.

Also, may I ask you please not to discuss your responses with other MSU faculty members until after the first of June. It is important that each participant respond independently to the inventory.

If you have questions about the inventory or the study, please call me at either 3-4645 or 349-2799.

Thank you.

To: Faculty Colleague

From: *WGH* Walter G. Hapkiewicz; Associate Professor, Counseling,
Personnel Services, and Educational Psychology

May I ask you to please assist Robert E. Young with his doctoral research. As dissertation director, I fully support his study, and I encourage you to respond to his short questionnaire.

I can assure you that your responses will be dealt with confidentially. The code number you will find on each item page serves only to allow a follow-up of those participants who have not returned the questionnaire after a reasonable amount of time. Once your responses have been recorded, Mr. Young will destroy the forms and the data will become completely anonymous for analysis and reporting purposes.

A number of other MSU faculty members have been asked to participate in this study; a completed inventory from each participant will be crucial to its success. Please take the next few minutes to consider the attached directions and complete the four items that follow. Thank you.

2. Directions

Directions for completing the inventory items

This research seeks to explore factors that may influence whether a university faculty member makes special efforts to improve his or her instruction.

Each of the four items that follow describes a hypothetical "influence situation" which a faculty member might face concerning his or her instructional responsibilities. You will be asked to indicate on the scale provided the degree to which you would be willing to make special efforts to improve your course materials and/or teaching skills, given the described situation. (Other faculty participants in this study will respond to similar situations, consisting of different combinations of factors).

To guide your response, "special efforts" refer to any improvement activity which would be considered "over and above the call of duty". Examples might include the development of a new course or redesign of an existing course when teaching assignment does not necessarily require it, change in instructional method (e.g., from group-based to individualized instruction), development of supplementary materials (e.g., student workbook, printed lecture notes, problems and exercises), introduction of new media or technology (e.g., special graphics, television, computed-assisted instruction), work to improve classroom skills (e.g., lecture presentation, discussion leadership).

Typical improvement practices such as changes in lecture materials, selection of more current or better texts and assigned readings, minor adjustments of course content and instructional method, or minor modifications of test items and procedures should not be considered as special improvement efforts. These represent an expected minimum commitment to instruction for any university faculty member. Special efforts to improve ones' instructional offerings go beyond these expected practices.

As you read each item, please place yourself into the situation and respond as if it actually existed. I am interested in knowing what your response would be if the situation were true and having an influence on you. Please keep this in mind as you think about each item.

Note: I will be glad to send you a short description of my research project and a summary of the results when it is finished. Please write your name and campus address below if interested.

Name _____

Address _____

3. Set of Situation Descriptions (Example)

Cell 7: Perceived Need to Improve - Present
Knowledge of Alternatives - Present
Reward - Absent
Peer Support - Absent
Institutional Support - Present

7-1.

From your attendance at faculty seminars on various instructional topics, you have some knowledge of teaching approaches different from those you are now using.

Because of a recent curriculum revision by your department, a number of your courses will need to include new content and the use of new instructional methods. The university provides, though, a service on campus to assist faculty members develop skills in instructional planning, classroom presentation, and student testing.

But, you know from past experience that you will not be given any special public recognition by colleagues, administrators, or students (e.g., mention in university publications, invitation to make presentations) for special efforts to improve your teaching. And, since you have been a member of the faculty, very few of your colleagues have made special attempts to improve their instruction.

If this situation actually existed, to what degree would you be willing to make special efforts to improve your instruction?

0	1	2	3	4	5	6
Not willing		Slightly willing		Moderately willing		Very willing

7-2.

A knowledgeable instructional improvement consultant has given you some ideas for teaching approaches different from those you are now using.

But, you know that your department and the university do not reward efforts at instructional improvement as highly as they do other activities (i.e., research and publication, public and university service). And, your colleagues are not particularly concerned about the quality of instruction in the department and do not encourage special efforts to improve it.

The university, though, has an instructional resources center to assist faculty members with technical aspects of improving instruction (e.g., media, special materials production, etc.)

A recent survey by your department shows that majors (present and graduated) did not particularly like the courses offered by the department (including your own). Reports from these students' graduate and professional schools and employers indicate they were not taught as much as they might have been about their discipline.

If this situation actually existed, to what degree would you be willing to make special efforts to improve your instruction?

0	1	2	3	4	5	6
Not willing		Slightly willing		Moderately willing		Very willing

7-3.

After some thinking about your own educational philosophy and goals for teaching, you have decided that the classroom approach (lecture, discussion, etc.) you are now using is not consistent with either your goals or philosophy.

In the past, your department and the university have not rewarded individuals' special efforts to improve courses and teaching skills. These activities have not been counted when it comes to determining salary increases, promotion, and tenure.

You regularly read, though, written information on new curriculum trends, instructional materials, and teaching techniques, thus you have some knowledge of teaching approaches different from those you are now using. And, the university will give faculty members released time from regular duties to pursue special efforts of instructional improvement.

In your department, however, there exists little "colleagueship" built around teaching. Members do not assist each other in identifying and trying out new content materials and methods of instruction.

If this situation actually existed, to what degree would you be willing to make special efforts to improve your instruction?

0	1	2	3	4	5	6
Not willing		Slightly willing		Moderately willing		Very willing

7-4.

There exists no expectation among members of your department that you should make special efforts to improve your teaching skills.

However, a fellow department member has recently told you about some instructional procedures different from those you are now using.

But, as has been the practice at some other institutions, the university gives no special awards for outstanding teaching in each department.

The university, though, will provide special financial support (e.g., small instructional improvement grants) to assist faculty members with special attempts to develop or improve course materials and teaching abilities.

A recent evaluation of your instruction (a combination of colleagues, student, and self evaluations) indicates to you that you are not succeeding with your teaching responsibilities as well as you would like.

If this situation actually existed, to what degree would you be willing to make special efforts to improve your instruction?

0	1	2	3	4	5	6
Not willing		Slightly willing		Moderately willing		Very willing

4. Follow-up Reminder

June 1, 1976

MSU Faculty Member:

A little over a week ago I asked you to participate in my doctoral research by completing a short, four-item inventory.

If you have not yet done so, may I ask you to take the next few minutes to locate the form (goldenrod cover letter), respond to the situations described, and return it to me via campus mail. If you cannot locate the form, I will send you another copy. Please phone me (3-4645) or drop me a note. The success of my study depends on each form being completed and returned.

I greatly appreciate your cooperation in my research.

Robert E. Young
Doctoral Candidate
Counseling, Personnel Services,
and Educational Psychology

5. Situation Descriptions (128)

Note: All 128 situation descriptions have not been included in this volume. They are available on request from the author.

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