1983

The effects of classroom observation by principals on conference climate and classroom performance of teachers

Timothy Robert Westerberg
Iowa State University

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THE EFFECTS OF CLASSROOM OBSERVATION BY PRINCIPALS ON
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The effects of classroom observation by principals on conference climate and classroom performance of teachers

by

Timothy Robert Westerberg

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CHAPTER ONE. INTRODUCTION

Staff development through supervision, inservice training and other strategies has taken on increased importance for today's educators. Recent critical commission reports, increased demands for accountability by the public and reduced teacher mobility serve as examples of this importance. Yet, many educators, especially teachers, are skeptical of the ability of staff development, as currently conducted, to assist them in meeting the demands of education. The response of those in positions of leadership to the challenges posed by this lack of faith in current staff development activities will significantly influence the form, function and effectiveness of education in the future.

Teacher supervision as a staff development strategy has been severely criticized for failing to significantly affect instructional practices in classrooms. Yet, educators at all levels continue to profess a faith in properly conceived and implemented teacher supervision strategies as means to improve the quality of instruction in the nation's classrooms. The ability of school administrators to perform this function deftly remains of paramount importance.

The Problem

Principals are usually charged with the responsibility for teacher development. One of the reasons often given for the failure to carry out this task effectively is a lack of time. Classroom visitation, usually considered to be a key component of teacher development, can be very time-consuming, as can conferences. The problem, then, becomes one of how to
use the principal's limited time most effectively. Is the commonly ac­cepted class visitation/post conference method the most productive, or could greater results be obtained by devoting all, or at least most, of that time to teacher-principal conferences designed to help the teacher discover his/her own strengths and weaknesses?

Need for the Study

Teacher development for the purpose of improving instruction continues to be a basic goal of educators. Much of the literature identifies classroom visitation as the key component in the teacher development process. Numerous articles and books have been written espousing the importance of frequent classroom visits by principals to teacher development. However, there are no empirical data available which indicate a relationship between classroom visits by principals and teacher growth; therefore, a question could be raised in regard to the faith many educators presently have in the traditional, observation-centered method of teacher evaluation.

A great deal of research has been done concerning teacher evaluation, including evaluation for the purposes of teacher development. In this vein, Levin (29) has concluded that research provides little support for current practices in teacher evaluation. Redfern (42) found that one of the problems with teacher evaluation is the belief on the part of teachers that evaluation has little or no relevancy to the job. And, Dornbusch et al. (19) reported that principals are not satisfied with the present system.

There is almost unanimous support for the conclusion that an open, trusting, and nonthreatening principal-teacher relationship must be established for any supervisory process to be effective. According to Redfern,
"A climate that is positive and conductive to good interpersonal relationships gives evaluation a better chance of being successful" (42). When addressing the teacher development aspect of evaluation, Mueller maintained, "If staff members are fearful or hostile toward evaluation, little improvement of teaching effectiveness will ensue" (34, p. 230). And, Oldham reported that certain points are made over and over again in statements by teacher organizations regarding the evaluation process. He states,

... above all, evaluation must take place in a constructive and non-threatening atmosphere. No matter how well designed in the abstract an evaluation program may seem, if it is perceived by teachers as negative and punitive, it will not improve teaching but will lower teacher effectiveness because of teachers' fear and lowered morale (38, p. 57).

A recurring theme in much of the literature is the failure of the traditional observation/conference method to establish a helping, collegial relationship between teachers and principals. Teachers apparently feel threatened and view their principals with distrust. It seems that teachers who are told how they performed during an observation session are often defensive and rationalize away the evaluator's suggestions. Therefore, little change occurs in their teaching.

The important question, then, for the purposes of this study, is "what are the effects of classroom observation by principals on conference climate, the overall supervisory relationship which develops between teachers and principals, and, ultimately, the classroom performance of teachers?" In light of the existing lack of data, it is appropriate to examine whether classroom observation does, in fact, make a significant positive contribution to the teacher development process.
Definition of Terms

For the purposes of this study, the terms listed below are defined as follows:

**Cognition**
The things a person knows about himself, about his behavior, and about his surroundings: each person has cognitions based on awareness of the real world as well as those relating to opinions, beliefs, attitudes, and judgments; what a person "thinks" is made up of his/her cognitions about the world and everything in it.

**Cognitive dissonance**
A psychologically uncomfortable state brought about by the existence of nonfitting relations among cognitions.

**Conference climate**
The affective, behavioral, and cognitive reactions a teacher has as a consequence of a just-completed supervisory conference with his/her principal.

**Consonance**
Consistency among related cognitions.

**Evaluation**
A series of interactions between a principal and a teacher conducted for one of two reasons: to improve instruction by enhancing the teacher's effectiveness in the classroom, or to determine the employment status of the teacher in the district.

**Ideal**
The cognitions a teacher possesses regarding the teaching behaviors he/she should be employing in the classroom.

**Real**
The cognitions a teacher possesses regarding the teaching behaviors he/she is employing in the classroom.

**Supervision**
All those activities carried on by a principal for the purpose of improving instruction.
Supervisory climate  The overall affective, behavioral, and cognitive reactions the teachers in a particular school have toward the total supervisory process.

Supervisory process  The combination of classroom observations and supervisory conferences that a principal chooses to use for the purpose of improving instruction.

Sources of Data
The data for this study were obtained primarily from a series of self-report type instruments which were administered to one-hundred and twenty teachers in seven Iowa elementary and secondary public schools. The instruments were designed to assess the teachers' perceptions relative to effective teaching behaviors, the teaching behaviors in use in their classrooms, and the conference climate which existed between them and their principals. Each of these three instruments was administered four times during the 1981-82 school year.

Research Questions
1. Do conferences and classroom visitations by principals affect the Cognitive Dissonance, Perceived Teaching Behavior (Real), and Desired Teaching Behavior (Ideal) of teachers?
2. What approach to conferences and classroom visitation appears to be most effective in producing Cognitive Dissonance and in changing the levels of perceived and desired performance in teachers?
3. Does the approach to conferences and visitation have an effect on the climate established during the supervisory conference?
4. Is there a relationship between the climate established during the supervisory conference and Cognitive Dissonance, Perceived Teaching Behavior, and Desired Teaching Behavior?
5. What are the effects of visitations and conferences at different stages of the teacher development process?

6. Do teacher experience, proficiency, sex, and personality characteristics interact with the approaches to teacher development?

Delimitations of the Study

The sample for this study consisted of teachers and principals in Iowa schools with a total enrollment of less than one thousand students. The schools in the study are not under master contracts.

Only schools which had established evaluation procedures were used. In this way, the visitation/post conference evaluation procedure was already established.

This study did not deal directly with teacher evaluation for the purpose of determining employment status. Additional research will be necessary in an effort to determine the importance of classroom visitation to this process. In this study, teacher growth or development was the target behavior.

Organization of the Study

This study is divided into five chapters. Chapter One consists of a general overview of the study including the need for the study, the research questions posed, and definitions of key terms. The professional literature related to teacher supervision as it applies to this study is reviewed in Chapter Two. Chapter Three contains a description of the setting for the study, the research paradigm used, the hypotheses tested, and the statistical treatment of the data. The results are enumerated in Chapter Four and conclusions and recommendations are made in Chapter Five.
Summary

A belief in the power of classroom observations by supervisors to significantly affect the quality of instruction in classrooms is well-documented in the professional literature. Also well-documented, however, is the fact that many teachers view classroom observations and the resulting supervisory process with distrust and view their principals' efforts in this area as being ineffective in improving or changing classroom instructional techniques. In view of the lack of empirical data demonstrating a clear relationship between classroom visits by principals and teacher growth, it may be unwise to devote scarce staff development time to classroom observation. The heavy demands made of school principals and the importance attached to teacher development make it imperative that principals use their time in the most effective way possible. A sample of teachers and principals in seven small Iowa schools was used in this study with the intent of providing some guidance for this decision.
CHAPTER TWO.
A REVIEW OF THE RELATED LITERATURE

Teacher Development

Probably nothing within a school has more impact on children, in terms of skills development, self-confidence, or classroom behavior, than the personal and professional growth of teachers. When teachers individually and collectively examine, question, reflect on their ideas, and develop new practices that lead toward those ideas, the school and its inhabitants are alive. When teachers stop growing, so do their students (6, p. 76).

It is difficult to identify any writer in education who questions the need for teacher development through supervision and evaluation. Researchers in educational theory support it, practicing administrators swear by it, and at least some research indicates that teachers feel the need for it (12, p. 2). The literature on the subject is extensive. Harris listed supervision as one of the essential functions for the operation of good schools (24, p. 2). Briggs and Justman wrote "The improvement of education is effected through improved instruction, and the promotion of the latter is the principal aim of supervision" (14, p. 314). And, Blumberg identified the improvement of instruction as the superordinate goal of a supervisory relationship (12, p. 114). As one author concluded, "Supervision within educational organizations is taken as a given, an article of faith" (2, p. 1).

The Role of the Principal

As is true concerning the need for supervision, there is strong support both in the literature and among practitioners for the proposition that the principal is the key figure in teacher development through instructional supervision. Neagley and Evans observed, "Writers in the field of
educational leadership have been saying for years that the improvement of the instructional program and the curriculum is the principal's most important job" (37, p. 124). In a limited survey among elementary school principals and teachers in two states, Krajewski et al. found that both teachers and principals rated "instructional supervision" as one of the top three roles that principals should perform (28, p. 70).

The National Elementary Principals' 1974 series on remaking the principalship and its 1977 and 1978 updates on the principalship describe the principal's part in the improvement of instruction as crucial. In fact, the idea that school principals are instructional leaders has been propounded by so many writers that it has become a cliche.

In actual practice, the person designated in most systems to help teachers grow is the school principal. In a study reported by Blumberg, principals saw themselves spending about thirty-five percent of their time in the supervision of teachers and desirous of increasing that time to about fifty percent (12, p. 19).

Weldy summed up the feelings of many when he said:

In theory and fact, in position and function, the principal is indeed the instructional leader of the school. Principals really have no choice. In this period of declining student achievement, wavering public confidence in schools, and demands for financial accountability, principals must furnish instructional leadership whether they want to or not. If they don't know how, they must learn. If they don't have time, they must find time (48, p. 72).

It is logical to conclude from both the professional literature and the actions of practitioners that educators still strongly believe that through supervision principals can improve the quality of instruction children receive.
The Effectiveness of Teacher Supervision

How successful have principals been in improving instruction through supervision? In reference to teacher development, Levin (29) has concluded that research provides little support for current practice in teacher evaluation. In reviewing the literature, he found no studies that examined the effect of supervisors' ratings on subsequent teaching behavior. The research we do have on supervision merely analyzes teachers' reactions to supervision and supervisors. Although not as strong as research dealing directly with teaching behavior, teachers' feelings about supervision do provide insights into its effectiveness, since behavior is influenced directly by attitudes.

The results of such research are not encouraging. For example, Robinson (43) reported that half or less of the Connecticut teachers he studied found their evaluations useful to them. Wiles (49) cited a study of Indiana teachers in which it was found that only four percent felt the quality of supervision they received was good. Blumberg and Amidon (13) reported data from a study of teachers in the Philadelphia area which suggest that a sizable percentage of teachers consider that the time they spent with their supervisors was "utterly wasteful." In yet another study reported by Wiles, only one and a half percent of the teachers surveyed listed their local supervisor as a source of new ideas or changes in teaching practices. And, a pilot study of the nature of adult-adult interaction in schools yielded similar information. When asked, "Who did you talk to about matters relating to instruction or classroom management?", only seven percent of the teachers listed their principal (12). As a rule, principals appear not to
be the people teachers turn to when they need assistance with problems relating to teaching.

Judging by the published research, it seems clear that, in general, principals have not been able to live up to expectations concerning the improvement of instruction through supervision. This feeling is reflected in the following statement by Blumberg:

Though it may well be that people charged with helping teachers teach better have experienced some isolated successes, it seems clear to me that the work of supervisors, by whatever name they go, has had little effect in raising the quality of instruction in systems as a whole. If there is evidence of this having happened, I am unaware of it (12, p. 234).

Once again, volumes have been written attempting to explain the failure on the part of supervisors to be effective instructional improvement agents. The consensus seems to be that the supervisory process itself is responsible for creating a climate which is not conducive to change, a climate characterized by defensiveness, anxiety, distrust, and even hostility. The process, as it has developed, implies a superordinate-subordinate relationship between the principal and the teacher. Conceptually, supervision means oversight. In turn, oversight suggests being watchful, in control, providing direction; in the strictest sense, it means constant personal presence (2, p. 3). Typically, the teacher teaches a lesson while the principal observes it followed by a conference in which this supervisor, in the absence of much basis for judgement, attempts to tell that teacher how to teach. Teachers see principals as not treating them to the degree of collegiality that they would like. As might be expected, an authoritative approach to instructional improvement is met with resistance from teachers.
Research by Blumberg supports the contention that the behavior of principals in conferences with teachers is highly directive. In a Flanders-type analysis of teacher-supervisor interactions (conferences), Blumberg found that:

1) Supervisors gave information slightly more than five times as often as they asked for it;
2) They were more direct than indirect by about one-third;
3) Approximately seven times as much time was spent by the supervisor telling the teacher what to do as was devoted to asking the teacher for his ideas or suggestions for action;
4) Less than one percent of the supervisor's time was spent in asking the teacher for actual suggestions; and
5) Supervisors rarely made statements that would assist in building a healthy climate (11, p. 2).

The result is that teachers are not asked to be full participants by their principals in trying to solve the problems that teachers face in the classroom. Teachers cannot be certain whether the principal is there to assist in improving instruction and learning or to rate their teaching performance. Instead of creating an atmosphere of collegiality, trust, and cooperation, research shows that the supervisory process results in hostility, distrust, and suspicion (12). The principal, the very person who is supposed to help teachers, is often perceived by them as being potentially dangerous (26, p. 210). Anecdotal records reveal systems teachers have developed to warn each other that the supervisor or principal is in the building to make classroom visits (12, pp. 13-14). Thus, in many cases, the principal and the teachers get caught playing a game, "a degenerative charade that has no real winners" (12, p. 29).
The character of relationships between teachers as a group and supervisors as a group has been described by Blumberg as a cold war — "neither side trusts the other and each side is convinced of the correctness of its position" (12). Consequently, the improvement of instruction does not take place.

Support for Classroom Observations

Classroom observation by principals has long been considered a key component of the supervisory process. Bellon (9), Briggs and Justman (14), Harris (24), and Neagley and Evans (37) all regard classroom observation as essential to an effective instructional improvement program. Manatt, in the American Association of School Administrators Report (3), advised school principals who are genuinely interested in helping their teachers to change basic teaching techniques in order to improve student achievement to place greater emphasis on the classroom observation component.

Harrison (25) reported that the most common supervisory technique used by principals is the classroom visit. Simon and Boyer (45) have compiled an anthology of ninety-nine instruments which have been developed for use by principals in observing teaching and learning in the classroom. A Florida study revealed that eighty-six percent of the principals surveyed rated classroom observation as having either medium or high priority as they performed their activities at school. And, a 1982 National Association of Secondary School Principals publication concluded that "Spending as much time as possible in the classroom is basic to good supervision of staff-teaching, observing, helping individual pupils, asking questions, making suggestions, and, in general, supporting the teacher" (35). Without a
doubt, frequent classroom observation by principals is currently viewed by most educators as being an integral part of an effective supervisory program.

The Arguments Against Classroom Observations

There is no empirical data which supports this confidence in classroom observation. In fact, there is mounting evidence which suggests that classroom observation is largely responsible for the unwholesome supervisory climate which exists in many schools today. Further discussion will illuminate this claim.

There is some evidence, both in and outside of education, which indicates that close, on-site supervision creates tension and an attitude of resentment and defensiveness, especially among professional employees. For example, in an investigation of its performance appraisal system, the General Electric Company concluded that "A detailed, annual appraisal by a manager of a worker's performance was of questionable value and did not motivate employees to higher degrees of productivity. Workers reacted defensively to criticism by denying shortcomings, blaming others, and finding other excuses" (23).

Tension is a very real factor in the day-to-day work of many teachers and, as Harrison pointed out, that tension may be increased by the very presence of the principal, an authority figure, in the classroom (25, p. 286). The following observation made by an elementary principal exemplifies the feelings of tension and anxiety experienced by many teachers during classroom observations.
Inevitably, it seems when we enter a classroom the teacher's response is friendly -- a smile, a handshake, and an invitation to come in and sit down. Yet, this outward pleasure is often belied by body language conveying intense anxiety, if not pain; by tense facial muscles, unnatural laughs, quick, fierce glances at the children, and apologies for the noise, the mess, the heat, or the cold (6, p. 74).

Regarding classroom observation, Blumberg (12) noted that few people like to be intruded upon, especially when the system creates an aura of suspicion. A 1982 report from the Center for Educational Policy and Management at the University of Oregon cited the separate works of Armor, Charters, and Cohen et al. to support the contention that direct supervision of teachers is counter-productive and detrimental to teacher morale (47). And, Anderson (35) reasoned that principals, as former teachers, have built-in negative feelings about being in the classroom and bothering teachers. It is easy to see how sentiments such as these contribute to a supervisory climate characterized by fear and distrust.

The validity of classroom observations is further derogated by the biases and artificiality associated with the process. Bellon (9) and Harris (24) have defined perceptional bias as it relates to classroom observation as the distortion of perception resulting from the influence of the observer's past experiences, preferences, and prejudices. In other words, pre-experiences tend to bias the evidence observed and, therefore, the recording, analyzing, and interpreting process as well. Perception isolation is a limitation on sensory intake resulting from increased threat. The individual reacts to a threatening situation by eliminating many of the stimuli and focusing on those which will protect him in the situation. Thus, some observers look for only the positive elements of the lesson, thereby avoiding a particularly difficult session, while others observe
only those actions which can be used to attack the teacher. What we see is what we are prepared to see. Both approaches are ineffective if one's intent is to help the teacher and facilitate instructional improvement (8, pp. 39-40).

Blumberg documented the artificial nature of the supervisory situation with testimony from both teachers and supervisors. For example, one teacher commented:

Part of the artificiality of the supervisory situation is the kids. If you let them know you're going to be observed, they say, in effect, "Don't worry, teach, we'll take care of you" (13, p. 23).

A supervisor remarked:

It seems to me that the basic problem is that new teachers tighten up. They don't trust the situation. They react differently in the classroom when you're there. You don't get a true picture of what's happening. You write up an observation, and you know darn well it's not the way the teacher really operates (12, p. 26).

So, it seems that teachers know that they and their students are putting on a show, and the principal is aware that he/she is nothing more than an audience.

Thus, we are faced with a strange paradox. Many writers in the field continue to press for more classroom observation in the wake of increasing evidence that this biased and artificial process is anxiety-producing for many teachers. The school principal, the one person who should be most responsible for relieving tension and promoting the well-being of teachers may, instead, contribute to their anxieties. When these circumstances are coupled with the inability of most principals to really be of help, it is not hard to see why current methods of instructional improvement which focus on forces outside the teacher for change are seldom productive.
Cognitive Dissonance

"Lippitt believes that, in education, most of the significant changes in practice imply and require changes in attitudes, skills, and values of the practitioner if the proposed change is to be a successful adoption and adaptation" (1, p. 255). Changing the instructional behavior of teachers is certainly no exception. It is generally accepted that attitudes and values change only when the person involved becomes internally committed to the change. This means that the teacher development process which attempts to mandate change without first convincing the teacher of the correctness or appropriateness of the desired change is doomed to failure. Blumberg (12), Harrison (25), Oliva (39), and Simon and Boyer (45) are but a few of the authors who stress the importance of establishing teacher ownership in any proposed change.

Leon Festinger's theory of cognitive dissonance can aid in understanding the internalization process that a teacher must go through in order for a significant change in teacher behavior to occur. The description which follows is taken largely from Festinger's book, *A Theory of Cognitive Dissonance* (20).

According to this theory, individuals strive toward consistency within themselves. Opinions and attitudes tend to exist in clusters that are internally consistent. There is the same kind of consistency between what a person knows or believes and what he/she does. Festinger uses the term "consonance" to describe this state of consistency while "dissonance" is used to represent inconsistency.

The terms "dissonance" and "consonance" refer to relations which exist between pairs of "elements". These elements refer to what has been
called cognition, that is, the things a person knows about himself, about his behavior, and about his surroundings. These elements, then, are "knowledges". Some of these elements represent knowledge about oneself: what one does, what one feels, what one wants or desires, what one is and the like. Other elements of knowledge concern the world in which one lives: what is where, what leads to what, what things are satisfying or painful or inconsequential or important etc. (20, p. 9).

Knowledge, therefore, is used to describe things to which the word does not ordinarily refer, for example, opinions. "A person does not hold an opinion unless he thinks it is correct, and so, psychologically, it is not different from a knowledge" (20, p. 10). The same is true of beliefs, values, and attitudes.

The importance of Festinger's theory for teacher development lies in what it says about motivation. According to Festinger, the existence of dissonance, being psychologically uncomfortable, will motivate a person to try to reduce the dissonance and achieve consonance. In other words, dissonance, the existence of nonfitting relations among cognitions, is a motivating factor in its own right.

Cognitive dissonance can be seen as an antecedent condition which leads to activity oriented toward dissonance reduction just as hunger leads to activity oriented toward hunger reduction .... The reduction of dissonance is a basic human process and its manifestations may be observed in a wide variety of contexts (20, pp. 3-4).

Festinger points out that this human drive to reduce dissonance is also recognized by Myrdal, Heider, and Osgood and Tannenbaum (20).

When some of the cognitive elements involved in a dissonance are cognitions about one's own behavior, the dissonance can be reduced by changing the behavior, thus satisfying the drive to reduce dissonance.

Cognitions that represent knowledge of a person's own actions are, in a sense, the easiest kinds of cognitive elements to change since this can be accomplished by merely changing the behavior involved ....
It seems clear that one would expect appropriate modification of behavior to be a frequent reaction to the existence of dissonance (20, p. 276).

Likewise, dissonance introduced by disagreement expressed by other persons may be reduced by changing one's own opinion. "The consonance or dissonance of messages, of memories and of projected courses of action, is thus decisive for behavior" (2, p. 155). Their theory suggests, then, that principals will be successful in changing teachers' behaviors, and thereby improving the quality of instruction, only if dissonance has been created. Cognitive dissonance is the motivating force which drives teachers towards change, the force which internalizes commitment to the desired changes and gives teachers ownership in them.

Creating dissonance in the context of teacher development requires that a teacher possess knowledge and awareness of three levels. First, the teacher must have an accurate perception of the teaching behaviors he or she exhibits in the classroom. This is the focus of traditional classroom observation reports but can also be accomplished in a variety of other ways including supervisory conferences, self-evaluation, video taping, and evaluations by peers and students. Argyris and Schon (4) have cited this as an awareness of a teacher's "theory in use," that is, the practices and behaviors the teacher actually uses in the classroom. In Festinger's language, a cognition has been formed in the teacher's mind concerning his or her own teaching behaviors. In accordance with terminology used earlier in this paper, the reference here is to the "real" or "what is" of teaching.

In order for cognitive dissonance to occur, a teacher must also develop a cognition consisting of his or her beliefs, attitudes, and values relative
to what constitutes effective teaching. Argyris and Schön (4) have referred to this as the teacher's "espoused theory." This cognition reflects what a teacher considers to be "ideal" (what ought to be) teaching behaviors and, as such, epitomizes his or her own desired performance. Often, this cognition consists of only those elements or knowledges which the teacher accumulated as a student and may or may not coincide with what research has demonstrated to be effective teaching practices. This level of awareness is ignored in the typical approach to teacher improvement with efforts, instead, devoted entirely to listing the teacher's deficiencies without reference to any clearly defined criteria or standard. Such efforts are largely unproductive in that the teacher is left unconvinced of the appropriateness or efficacy of the desired changes. Teacher commitment is not established and motivation is lacking. Thus, developing and modifying cognitions about effective teaching is essential to teacher development.

Finally, cognitive dissonance results when a teacher recognizes the discrepancies between what he/she is doing (real) and what he knows he/she should be doing (ideal). In this case, the cognition of one's actual teaching performance is dissonant with the cognition of what one should be doing to be an effective teacher. The drive to reduce this dissonance motivates the teacher to change his behavior.

When put into operation, the theory of cognitive dissonance in teacher development typically follows a discrepancy model. Alfonso et al. have explained:

*Its [the model's] purpose is to get teachers to identify what they believe ideal conditions should be -- in regard to teaching, organization, curriculum, or other matters -- and then to collect data about reality. The usefulness of a needs assessment is that teachers
themselves can see very clearly what the difference is between where they would like to be and where they actually are. It is also a valuable process, because teachers feel some "ownership" of the data. Needs assessment is a valuable adjunct to any change process, as research has clearly shown that changes are most readily accepted when they close a recognized gap between ideal and actual practice (2, p. 348).

Argyris and Schön (4) wrote of the importance of dilemmas in facilitating change. Dilemmas surface as a result of teachers learning that their theories in use (real) are not consistent with their espoused theories (ideal). Faced with a dilemma (dissonance), a teacher becomes uncomfortable, and search behavior begins. Dilemmas are resolved by teachers modifying their theory in use to match their espoused theory. Tuckman et al. (46) reported that behavior of experienced teachers can be changed by involving a discrepancy between a teacher's observed behavior and his own self-perception of his behavior, and then making him aware of this discrepancy via verbal feedback. And, in an extensive review of the literature, Fuller and Manning (22) concluded that self-confrontation and discrepancy analysis is by and large a powerful supervisory technique.

The literature, then, supports the contention that the creation and use of dissonance, through a discrepancy model, is an important tool in improving instruction. It is reasonable to conclude that the efficacy of various supervisory techniques can be assessed by observing their effects on cognitive dissonance.

Of course, setting the stage for a discrepancy model requires that the principal be knowledgeable, trusted, and skilled in establishing positive interpersonal relations with the staff. Generally, the cognitive elements corresponding to some opinion the teacher holds would be dissonant with
knowing that another person, the principal, holds a contrary position.

However, as Festinger has pointed out:

One important variable is the relevance of the disagreeing person ... to the opinion at issue. The more relevant the person ... to the opinion the more important will be the cognitive elements corresponding to knowledge about the opinions of the others, and the greater will be the dissonance set up by the expression of disagreement .... If the person voicing disagreement is seen as expert or very knowledgeable on such matters, the dissonance between knowledge of his contrary opinion and one's own opinion will be greater (20, p. 180).

Since self-persuasion is greatest when the negative drive state of dissonance is highest, successful implementation of the discrepancy model requires that the relationship established between teachers and their principals during supervisory conferences is one which lends credibility to what the principal has to say.

Supervisory Conference Climate

The extent to which teachers face up to inconsistencies in their own cognitions may well depend upon the quality of climate and setting the supervisor provides. Indeed, nearly every writer in the field extols the virtues of a healthy climate for effective teacher development. As Blumberg writes:

There seems clearly to be a body of knowledge, albeit incomplete, that carries with it the strong suggestion that the character of the interpersonal transactions that occur between supervisor and teacher is related, in large measure, to the extent that the two will be able to work productively together. The issue, of course, is not that the two need "love" each other. Rather, the point is that teaching and supervision are both primarily, intense and complex human interactive functions. Matters of technique, methodology, and curriculum tend to be dealt with effectively in supervision to the degree that the interpersonal ground of the relationship between supervisor and teacher can be described as communicatively open, maximally trusting, and minimally defensive (12, p. 189).
Because the supervisor is in control, represents the larger system, and may have an evaluative role, his or her behavior sets the climate. Matter-of-fact, ritualistic relationships produce little in the way of teacher growth.

Adjectives such as friendly, helping, collegial, trusting and supportive are most often used by teachers to describe the ideal teacher-supervisor relationship. When asked to select the kind of relationship teachers would like to have with their supervisors, sixty-six percent of the respondents in a sample of New York teachers wanted a helping relationship, while thirty-six percent preferred a collegial relationship (26). Campbell (15) reported similar findings. Other such data are abundant. There remains little doubt that an overall supervisory climate characterized by those qualities delineated above is of paramount importance to teacher development.

A key component of the supervisory process which both reflects and contributes to the overall climate is the supervisory conference. Probably no single supervisory performance is more critical to changing the instructional process than the supervisory conference.

Of all the skills that contribute to a supervisor's effectiveness, none are more crucial than those related to conducting conferences. Research indicates that the success of a conference depends on the social-emotional climate created by the supervisor. By its nature, a conference induces some level of anxiety in the teacher. If the supervisor remains indifferent to this condition, the positive results of the conference may be undermined. The supervisor's skillful interpersonal communication with teachers has a direct impact on immediate and long-range instructional improvement (27, p. 525).

It is clear that the descriptors used in discussion of the general supervisory climate must also characterize the supervisory conference.

In general, the conference skills utilized by principals should be those which contribute to the establishment of what has been called a...
"helping" relationship. Kindsvatter and Wilen (27) have identified nine skill areas in which supervisors should be competent to increase the probability of a successful conference. Climate building is number one on the list. Others are: target setting, questioning, commentary, praise, nonverbal communication, balance, sensitivity, and closure. Flanders (21) has suggested several process descriptors of what may be involved in the teacher-supervisor relationship: helping another person change his teaching behavior, assisting a teacher to modify patterns of instruction in ways the teacher has selected, and a partnership in inquiry in which two persons compare intriguing alternatives. The supervisor, instead of trying to make the teacher model his/her style, concentrates on helping the teacher achieve his/her objectives regardless of style, within limits.

Oliva prefers an indirect approach in supervision similar to the nondirective approach followed by guidance personnel and psychologists.

The nondirective counselor refrains from claiming to know the answers. Such a counselor does not sit down, listen to a client, and write a prescription for him; but rather allows the client to express himself, his own concerns, and his own ideas.

An effective supervisor is ready with suggestions for a teacher to consider. He knows, however, that until the teacher has accepted the suggestions in his own mind and has, in effect, incorporated them into his behavior, the suggestions fall on barren land (39, p. 41).

Other conference behaviors drawn from the field of counseling include: accepting, reflecting, clarifying, probing, and silence.

Beale and Bost (7) report that empathy as a conference skill also receives a great deal of attention in the professional literature. They cite Clarkhuff, who has written that there is no basis for helping without empathy, and Rogers, who noted that research evidence continues to support the conclusion that a high degree of empathy in a relationship is the most
potent factor in bringing about positive change and learning. And, Cormier and Cormier (16) reported that some evidence suggests that counselors who provide a high level of empathy are able to enhance client self-exploration.

In an effort to improve the empathetic communication skills of school administrators, Beale and Bost (7) identified five verbal responses used by administrators. Listed from least to most helpful they are:

1. Evaluative - commander in chief, judgemental;
2. Instructive - know it all;
3. Placating - I'll make you feel better;
4. Probing - interrogator;
5. Understanding - allowing other person to express feelings and beliefs freely.

The implication is that administrators need work in moving toward those responses which are more helpful.

Blumberg (12) reported the findings of a study in which the effectiveness of four conference styles was compared. The style labeled "low direct-high indirect" was found to be superior by a number of measures including productivity. The supervisors adopting this style rarely used telling or criticizing behaviors, concentrating instead on asking questions, listening, and reflecting back teachers' ideas and feelings. Kindsvatter and Wilen have referred to the need for a balance between talking and listening in supervisory conferences. "For optimum transfer of conference outcomes to classroom practices, the supervisor should generally do less talking than the teacher, since insight occurs most readily when the teacher identifies his/her own behaviors, analyzes data, and conceives means for improvement" (27, p. 528). Recording and analyzing conferences can be helpful in developing this skill area.
The above discussion casts doubts on the legitimacy of the classroom observation approach to improving instruction. In the typical post observation conference, the teacher plays a passive rather than an active role. The observation report usually becomes the focus of such a conference with the supervisor "telling" the teacher what he or she did well and what needs to be improved. Even eye contact is between each individual and the observation report rather than between the parties involved as it should be. Research has demonstrated that post observation conferences are usually ritualistic with few opportunities for teacher input. Under such conditions, a helping relationship has no opportunity to develop and grow.

The most likely effects are that the teacher ostensibly complies with the supervisor and then does what he wants when the supervisor is not around, or that there is an agreement to disagree and each leaves the situation convinced that he is right and that, if only the other were brighter or more aware of reality, he would see it (12, p. 139). If this is true, valuable time is being wasted while full teacher potential goes unrealized.

A small but growing body of data is slowly becoming available which indicates that teachers may be capable of accurately identifying their own development needs. Cross (17) reported on a study in which teachers were provided the opportunity to take free university course work of their own choosing. The findings suggest that teachers do recognize their own weaknesses. As an example, forty-seven percent of the teachers rated "poor" or "fair" by their principals in discipline had registered for a course on that topic. By contrast, only twenty-eight percent of those rated "good" and eleven percent of those rated "excellent" had signed up for that course. Johnston (29) compared the effects of traditional and self-evaluation on eighty-four student teachers and found that self-evaluation could produce
changes in subsequent behavior. And, Natriello (36) has cited evidence from U.S. military studies that self-evaluation does result in behavior change. When talking about the teacher evaluation process, one principal observed:

I am always particularly interested in differences in our perceptions and usually find only a few. When I point out difficulties or strengths I have observed, I almost always find the teachers are also well aware of them. In fact, I have often found teachers more exacting and insightful than their evaluators (6, p. 74).

Should future research find that self-evaluation can be used in lieu of classroom observation reports to identify teacher strengths and weaknesses, the negative effects these reports have on the conference climate could be avoided.

Regardless of the stance taken on self-evaluation, one cannot dispute the importance of establishing a helping relationship through supervisory conferences. The history of such relationships suggests clearly that help is best used when it is sought:

Helping is never a unilateral act. While the supervisor does have the power to give help, the teacher always has the power to receive or refuse that assistance. To gain the teacher's cooperation, the supervisor must be willing to negotiate. Helping, in fact, is usually a negotiated settlement between help giver and help receiver, each side applying conditions and agreeing to compromise as they build a contract both can accept. In a helping relationship, supervisors are not the only party with power. The teacher has power -- when the teacher refuses to cooperate, the supervisor is helpless to help (41, p. 531).

Ideally, with the supervisor's help, the teacher will be able to analyze situations, discover areas needing improvement, and suggest strategies to correct problems. It is at this point that the supervisor must become a helper, a facilitator, to be supportive through providing access to any and all sources or resources of use to the teacher in attaining self-improvement goals.
The research available supports the contention that the teacher development strategy which promotes a climate of positive interpersonal relations between supervisors and teachers will be most effective in improving instruction. The data gathered in this study dealing with the effects of classroom observation on conference climate addressed this important point.

Summary

This chapter reviewed the professional literature as related to teacher development, cognitive dissonance, and supervisory conference climate.

The importance of supervision to the improvement of instruction and the principal's key role in that process are well-established in the literature. The preponderance of evidence suggests, however, that principals have not been very successful in this role. The key question raised is "What effects do classroom observations have on the supervisory process, especially the supervisory climate?" Prominent authors were cited who believe frequent classroom observation is essential to effective supervision. Evidence was also cited which indicates that classroom observation creates tension and anxiety, is subject to observer bias, and is actually counterproductive.

Cognitive dissonance is viewed as a theory on motivation. Festinger and others have demonstrated that a person is motivated to change his/her behavior when a conflict exists within that person between what he/she is doing (real) and what he/she should be doing (ideal). Within the context of teacher supervision, it is logical to assume that a supervisory process is successful (will result in a change in teaching behavior) if it creates
dissonance within teachers. Cognitive dissonance, then, can be used as a measure of the effectiveness of a particular method of supervision.

Finally, the importance of the supervisory conference was examined along with the requisite skills that principals must possess to be successful. The relationship which develops between the principal and the teacher and unfolds during the supervisory conference is of paramount importance. Conference climate, as perceived by the teacher, is, then, another measure of the effectiveness of a method of supervision. The possible effects of classroom observation on conference climate were explored, and the small but growing body of research which indicates that teachers may be capable of identifying their own needs was summarized.
CHAPTER THREE.
THE EXPERIMENTAL DESIGN

The Setting

This study was conducted during the 1981-82 school year in seven elementary and secondary public schools located in rural areas throughout the state of Iowa, each with a total enrollment of less than one thousand students. Although there was no attempt to analyze systematically the composition of the students and staffs in individual schools, observations and demographic data indicated that they were similar in makeup. The same was true of the principals. All were male, had several years of experience, and had either a master's or a specialist's degree in school administration.

The Research Paradigm

Initial contact was made with the schools which participated in the study by calling the superintendents of most of the schools in Iowa which did not operate under master contracts. Schools which were not operating under master contracts were selected for participation, because it was felt that these schools could more easily adjust their evaluation procedures to fit the design of the study. Of those schools contacted, fifteen expressed interest and were sent a written proposal. Eventually, ten schools agreed to participate in the study, three of which later dropped out for a variety of reasons.

The research proposal was submitted to the University Committee on the Use of Human Subjects in Research for approval. Following assurances that the confidentiality of the participating teachers would be safeguarded, project approval was granted on July 17, 1981.
Participating principals were invited to attend a one-day training session which was held just prior to the beginning of the experiment in September of 1981. The training session, conducted by three Iowa State University professors from the College of Education, provided the participants with information and practice on data gathering techniques and conference skills. This was done primarily to standardize the techniques used by the principals during the study. In addition, the training proved to be a motivating factor for participation in the study. At the conclusion of the training session, the principals were instructed as to the procedures to be followed during the study and were given their materials. All seven principals who participated in the study received this training and instruction.

By October 1, 1981, the principals had begun to carry out the requirements of the research design in their individual schools. The teachers in each school were randomly assigned to either the control group or one of two experimental groups. This resulted in a total of forty teachers in each of the three groups.

The control group represented a method of supervision which is typical of that found in most schools today. The principals observed classes with each observation followed by a conference. In order to maintain consistency across schools and to provide an opportunity for the different treatments to have an effect on the dependent variables, four complete observation/conference sessions (four classroom observations and four conferences) were held with each teacher in this group. The four sessions were spaced evenly throughout the year, occurring approximately two months apart.
In one experimental group, teachers were observed once by their principals at the beginning of the year with the remainder of the time being devoted entirely to conferences. Consequently, the teachers in this experimental group participated in seven conferences with their principals, or approximately one conference every four weeks.

The teachers in the second experimental group operated without classroom observations from the principals. The amount of time which was to be used for observations and conferences in the other two groups was devoted entirely to conferences. In other words, classroom observations were not conducted as a part of the supervisory process. The teachers in this group participated in eight conferences with their principals, once again, with approximately four weeks between conferences.

It is important to reemphasize the fact that the total amount of time spent working with each teacher was held constant across all three groups. This enabled the researcher to compare the effectiveness of the three treatments without the additional variable of time.

In the control group, the discussion during the conferences was intended to center around the observations the principals had made during their classroom visits. This was not the case, however, in the experimental groups. With teachers in these groups, the principals had to rely on what had been learned in the training session to encourage the teachers to openly discuss the teaching behaviors with which they wanted help. The emphasis was on what the teachers believed was happening in their classrooms. The principals' challenge in working with these teachers, as well as with those in the control group, was to get the teachers to engage in discussions about effective teaching practices, identify discrepancies
between those practices and what was currently being practiced in their classrooms, and set improvement targets designed to address those discrepancies.

Instrumentation

Four instruments were used to collect data during the course of this study.

First, two instruments had to be developed which would measure Festinger's concept of Cognitive Dissonance as it applies to teacher development. Since, in this study, the researcher was interested in Cognitive Dissonance as it related to some predetermined effective teaching behaviors, one of the instruments had to be capable of measuring the teachers' conceptions of the degree to which they were utilizing those behaviors (or the Real component in Festinger's theory), while the other was constructed to measure the teacher's perceptions of the importance of each behavior to effective teaching (the Ideal). Subtracting the Real from the Ideal, then, resulted in a measure of Cognitive Dissonance.

To construct the items or statements for the Cognitive Dissonance instruments, the research of Berliner, Hunter, Kulik and Kulik, Medley, Rosenshine, Soar and Soar, and the Beginning Teacher Evaluation Study was analyzed in an effort to glean from it those teaching behaviors which have been shown to be significantly correlated with student academic achievement. Several statements were then submitted to six experts at Iowa State University for further validation. From their comments, twenty behaviors were selected which became the statements on effective teaching used in the Cognitive Dissonance instruments. Of the twenty statements, sixteen
correlate positively and four correlate negatively with student academic achievement according to both the published research and the panel of experts.

A test of reliability using Cronbach's Alpha yielded Alpha and standardized item Alpha coefficients for the Effective Teaching Questionnaire of 0.64 and 0.72, respectively. Likewise, the test yielded an Alpha coefficient of 0.75 and a standardized item Alpha coefficient of 0.78 for the Instructional Strategies Inventory. Thus, both instruments were considered to be quite reliable.

Although the teaching behaviors on the two instruments were identical, the instructions and the response formats were not. The Instructional Strategies Inventory asked the respondent to use an eleven point scale to indicate the extent to which each of the statements was descriptive of what had occurred in their teaching situation during the last month. The scale ranged from "Not Descriptive" (0) to "Very Descriptive" (10), with the midpoint (5) being identified as "Moderately Descriptive." This instrument measured the Real component of Cognitive Dissonance.

The instructions and response format of the second instrument, the Effective Teaching Questionnaire, were designed to assess the other component of Cognitive Dissonance - the Ideal. With this instrument, teachers were asked to use either an "agree" or a "disagree" scale to record their feelings regarding the importance of each of the teaching behaviors to effective teaching. In addition, teachers were asked to circle a number (1-5) which reflected the strength of their agreement or disagreement with each statement. This format also resulted in an eleven point scale with the addition of an "undecided" response option. Scoring was accomplished by
computing the teachers' mean scores on each of the instruments. Copies of the Instructional Strategies Inventory and the Effective Teaching Questionnaire are included in Appendix A of this study.

In order to determine change over time, both of the Cognitive Dissonance instruments were administered to the teachers four times during the course of the study. The instruments were administered to the teachers in all three groups at the beginning of the school year. After that, they were administered at corresponding intervals across groups. More specifically, the Cognitive Dissonance instruments were readministered to the teachers in the control group within two days after the second, third and fourth post observation conferences, or approximately once every two months. The instruments were readministered within two days after the third, fifth and seventh conferences to the teachers in Experimental Group One and after the fourth, sixth, and eighth supervisory conferences to the teachers in Experimental Group Two, each administration separated by an interval of approximately two months in length.

The second dependent variable of interest in this study was supervisory conference climate. The researcher was interested in the effect the three supervisory methods had on the teachers' perceptions of the climates established during the supervisory conferences. The researcher was also interested in examining any interactions which existed between conference climate and cognitive dissonance.

Perkins et al. (40) developed an instrument called The Impact Message Inventory (IMI). The inventory consists of fifteen independently developed subscales and measures the affective, behavioral and
cognitive reactions one individual experiences as the consequence of a just-completed interaction with another person.

Perkins et al. used the behavioral descriptions of the fifteen interpersonal styles in Lorr et al. (30) and Lorr and McNair's (31, 32, 33) Interpersonal Behavior Inventory (IBI) as the point of departure for the development of the parallel-structured IMI. From there, individual items for Form I of the IMI were generated

... in successive steps by independently reading each of the fifteen IBI paragraph descriptions, each author imagining he was presently interacting with that 'person', focusing internally on the immediate behavioral, affective, and cognitive reactions he experienced, and recording his actions in response to sentence stems in the form, 'He makes me feel ....' (40).

Following a check for interrater reliability and some pruning for redundancies, a final item pool of two-hundred fifty-nine items (Form I-IMI) was administered to four-hundred and fifty-one introductory psychology undergraduate students. The sample was primarily female (68.7 percent), caucasian (76.9 percent), between the ages of seventeen and twenty-six (89.1 percent), and from homes with incomes of $10,000 or more. The students were randomly assigned to fifteen subsamples.

Using an odd-even split, Perkins et al. divided each of the fifteen groups into subscales of equal numbers with proportional representation of males and females. An item was included in IMI-Form II and keyed to one of the fifteen subscales to the extent that the item met one, and preferably both, of the following criteria:

(a) An r/cir index for the item (degree of circular ordering exhibited by a given item in its mean values across the fifteen conditions) was highest for that subscale in contrast with the other fourteen.

(b) The mean score of the item was highest for that same subscale in contrast with the other fourteen (40, p. 365).
The highest two items for each of the three subclasses of impact messages (direct feeling, action tendencies, perceived evoking message) were selected, producing eighty-two items for the IMI Form II.

The authors

... then factor analyzed the eighty-two items on each of two subsamples and correlated each of the first three factors obtained in each half sample with its counterpart in the other half sample. The resulting coefficients of .954, .755 and .722, respectively, represented satisfactory coefficients of determination for these factors and indicated that our item selection and factor structure based on one-half of our sample were quite reliable for the total sample (40, p. 365).

To check the internal consistency reliability of the fifteen subscales, Perkins et al. correlated each of the six item scores with the mean score for the respective subscales. "Resulting coefficients were very high, ranging from .80 to .99. Only ten of the eighty-two values were below .80, and only four below .70 with the lowest being .57" (40, p. 365). Thus, each of the fifteen subscales demonstrated a high level of internal consistency reliability.

It was felt by the researcher that certain subscales of this instrument could be used to assess the interpersonal consequences of "climate" of the conferences associated with each of the three methods of teacher development by recording the teachers' reactions to the principals following the supervisory conferences. In order to select the subscales used, the fifteen subscales were submitted to a panel of five Iowa State University education professors. The panel members identified six subscales which, in their judgment, would adequately reflect a teacher's perception of the climate of a just-completed conference with his/her principal. Of the six subscales selected, three reflected generally positive feelings, whereas
the other three reflected negative feelings. The six subscales were: 
Affiliative, Agreeable, Nurturant, Dominant, Hostile, and Mistrusting. The 
resulting instrument contains six items per subscale for a total of thirty-
six items. A copy of the adapted Impact Message Inventory is included in 
Appendix A of this study.

As was the case with Cognitive Dissonance, the researcher was inter­
ested in how each of three treatments affected the teachers' perceptions of 
conference climate over time. Consequently, this instrument was also ad­
ministered to each teacher in each group at four different points through­
out the study. In the control group, the Impact Message Inventory was ad­
ministered immediately after each post observation conference. The Impact 
Message Inventory was administered to the teachers in Experimental Group 
One immediately following the initial and only post observation conference 
and immediately after the third, fifth, and seventh conferences thereafter. 
And, in Experimental Group Two, the Impact Message Inventory was adminis­
tered immediately after the second, fourth, sixth, and eighth supervisory 
conferences.

Initially, consideration was being given to combining some of the Im­
pact Message Inventory subscales to form "negative effect" and "positive 
effect" climate scores. However, the strength of the correlation coeffi­
cients between the subscales selected to form the "negative effect" and 
"positive effect" constructs did not justify this procedure. Instead, each 
subscale of the Impact Message Inventory was treated as a separate depen­
dent variable. A mean score was computed for each teacher on each sub­
scale. The correlation coefficients between the six subscales are reported 
in Table 1B in Appendix B.
Also of concern in this study was the relationship which existed between the teachers' self-concepts and the effectiveness of each of the three methods of supervision. For example, "how did teachers who had lower self-concepts react to the three treatments?" In order to assess the teachers' self-concepts, an instrument was used which was developed for this purpose by Emanuel M. Berger, entitled the *Self-Acceptance Scale* (10). The instrument consists of thirty-six statements to which the teachers responded using a five-point scale. The scale ranges from "Not At All True" (1) to "Completely True" (5) with "Half True-Half False" (3) identified as the midpoint. A copy of the *Self-Acceptance Scale* is included in Appendix A of this study.

Applying the Spearman Brown formula to the data obtained from a variety of groups, Berger estimated the whole-test reliability of the *Self Acceptance Scale* to be .894 or greater. A test of concurrent validity yielded a Pearson product-moment correlation of .897 (10).

Mean scores were computed for the *Self-Acceptance Scale*, which was administered to each teacher once at the beginning of the study. Teachers with higher self-concepts were defined as those with a mean score falling in the top half of all mean scores. Those whose mean scores fell in the bottom half were defined as having lower self-concepts.

Information regarding the teachers' proficiency in the classroom was obtained by asking each principal to divide his staff into three equal groups with the top group consisting of those whom he considered to be his best teachers and the bottom group consisting of those with lesser skills. This was done during the third quarter of the year to give principals time to assess the capabilities of the teachers new to their staffs.
Demographic information about each teacher, including his/her sex and years of teaching experience, were also provided by the principals.

To insure complete confidentiality, all data and other information collected were identified by teacher code number only. Teachers in each school were asked to place completed instruments in envelopes, seal them, and return them to a designated depository. In this way, the teachers could be assured that no one other than the researcher would see their responses. Once each quarter, a designated person in each school placed all the sealed envelopes in a large envelope and mailed it directly to the researcher. The principals were the only people who had access to the names which matched the code numbers, and the researcher was the only person who had access to the data.

Null Hypotheses Tested

Since the research questions under investigation in this study centered around the concepts of conference climate and Cognitive Dissonance, the null hypotheses were written to separate those two clusters of dependent variables. Consequently, the hypotheses which follow are written in pairs, one hypothesis with the subscales of conference climate as dependent variables and another hypothesis with Cognitive Dissonance and its components as dependent variables. \( H_0_3 \) stands alone since it has to do with correlations between the Cognitive Dissonance and climate variables.

\( H_0_4 \): There are no significant differences between the average scores of teachers supervised using multiple observations, teachers supervised with a single observation and teachers having no observations during supervision for the following dependent variables:
a. Dominant;
b. Hostile;
c. Mistrusting;
d. Agreeable;
e. Nurturant;
f. Affiliative.

Ho2: There are no significant differences between the average scores of teachers supervised using multiple observations, teachers supervised with a single observation and teachers having no observations during supervision for the following dependent variables:
   a. Cognitive Dissonance - Ideal;
b. Cognitive Dissonance - Real;
c. Cognitive Dissonance.

Ho3: There are no significant correlations within the multiple observation, single observation and no observation treatment groups between the following dependent variables:
   a. Dominant and Cognitive Dissonance - Ideal;
b. Dominant and Cognitive Dissonance - Real;
c. Dominant and Cognitive Dissonance;
d. Hostile and Cognitive Dissonance - Ideal;
e. Hostile and Cognitive Dissonance - Real;
f. Hostile and Cognitive Dissonance;
g. Mistrusting and Cognitive Dissonance - Ideal;
h. Mistrusting and Cognitive Dissonance - Real;
i. Mistrusting and Cognitive Dissonance;
j. Agreeable and Cognitive Dissonance - Ideal;
k. Agreeable and Cognitive Dissonance - Real;
l. Agreeable and Cognitive Dissonance;
m. Nurturant and Cognitive Dissonance - Ideal;
n. Nurturant and Cognitive Dissonance - Real;
o. Nurturant and Cognitive Dissonance;
p. Affiliative and Cognitive Dissonance - Ideal;
q. Affiliative and Cognitive Dissonance - Real;
r. Affiliative and Cognitive Dissonance.

Ho4: There are no significant differences between the average scores of teachers with lower self-concepts supervised using multiple observations, teachers with lower self-concepts supervised with a single observation and teachers with lower self-concepts having no observations during supervision for the following dependent variables:
   a. Dominant;
b. Hostile;
c. Mistrusting;
d. Agreeable;
e. Nurturant;
f. Affiliative.

Ho5: There are no significant differences between the average scores of teachers with lower self-concepts supervised using multiple observations, teachers with lower self-concepts supervised with a single observation and teachers with lower self-concepts having no observations during supervision for the following dependent variables:
   a. Cognitive Dissonance - Ideal
   b. Cognitive Dissonance - Real;
c. Cognitive Dissonance.

Ho6: There are no significant differences between the average scores of teachers with higher self-concepts supervised using multiple observations, teachers with higher self-concepts supervised with a single observation and teachers with higher self-concepts having no observations during supervision for the following dependent variables:
a. Dominant;
b. Hostile;
c. Mistrusting;
d. Agreeable;
e. Nurturant;
f. Affiliative.

H₀₇: There are no significant differences between the average scores of teachers with higher self-concepts supervised using multiple observations, teachers with higher self-concepts supervised with a single observation and teachers with higher self-concepts having no observations during supervision for the following dependent variables:
   a. Cognitive Dissonance - Ideal;
   b. Cognitive Dissonance - Real;
   c. Cognitive Dissonance.

H₀₈: There are no significant differences between the average scores of teachers rated in the top third of their faculties supervised using multiple observations, teachers rated in the top third of their faculties supervised with a single observation and teachers rated in the top third of their faculties having no observations during supervision for the following dependent variables:
   a. Dominant;
   b. Hostile;
   c. Mistrusting;
   d. Agreeable;
   e. Nurturant;
   f. Affiliative.
There are no significant differences between the average scores of teachers rated in the top third of their faculties supervised using multiple observations, teachers rated in the top third of their faculties supervised with a single observation and teachers rated in the top third of their faculties having no observations during supervision for the following dependent variables:

a. Cognitive Dissonance - Ideal;
b. Cognitive Dissonance - Real;
c. Cognitive Dissonance.

There are no significant differences between the average scores of teachers rated in the middle third of their faculties supervised using multiple observations, teachers rated in the middle third of their faculties supervised with a single observation and teachers rated in the middle third of their faculties having no observations during supervision for the following dependent variables:

a. Dominant;
b. Hostile;
c. Mistrusting;
d. Agreeable;
e. Nurturant;
f. Affiliative.

There are no significant differences between the average scores of teachers rated in the middle third of their faculties supervised using multiple observations, teachers rated in the middle third of their faculties supervised with a single observation and teachers rated in the middle third of their faculties having no observations during supervision for the following dependent variables:
a. Cognitive Dissonance - Ideal;
b. Cognitive Dissonance - Real;
c. Cognitive Dissonance.

H_{0_{12}}: There are no significant differences between the average scores of teachers rated in the bottom third of their faculties supervised using multiple observations, teachers rated in the bottom third of their faculties supervised with a single observation and teachers rated in the bottom third of their faculties having no observations during supervision for the following dependent variables:
   a. Dominant;
b. Hostile;
c. Mistrusting;
d. Agreeable;
e. Nurturant;
f. Affiliative.

H_{0_{13}}: There are no significant differences between the average scores of teachers rated in the bottom third of their faculties supervised using multiple observations, teachers rated in the bottom third of their faculties supervised with a single observation and teachers rated in the bottom third of their faculties having no observations during supervision for the following dependent variables:
   a. Cognitive Dissonance - Ideal;
b. Cognitive Dissonance - Real;
c. Cognitive Dissonance.

H_{0_{14}}: There are no significant differences between the average scores of teachers with less than four years of teaching experience supervised using multiple observations, teachers with less than four years of teaching experience supervised with a single observation and
teachers with less than four years of teaching experience having no observations during supervision for the following dependent variables:

- a. Dominant;
- b. Hostile;
- c. Mistrusting;
- d. Agreeable;
- e. Nurturant;
- f. Affiliative.

H₀₁₅: There are no significant differences between the average scores of teachers with less than four years of teaching experience supervised using multiple observations, teachers with less than four years of teaching experience supervised with a single observation and teachers with less than four years of teaching experience having no observations during supervision for the following dependent variables:

- a. Cognitive Dissonance - Ideal;
- b. Cognitive Dissonance - Real;

H₀₁₆: There are no significant differences between the average scores of teachers with four or more years of teaching experience supervised using multiple observations, teachers with four or more years of teaching experience supervised with a single observation and teachers with four or more years of teaching experience having no observations during supervision for the following dependent variables:

- a. Dominant;
- b. Hostile;
- c. Mistrusting;
d. Agreeable;
e. Nurturant;
f. Affiliative.

$H_{017}$: There are no significant differences between the average scores of teachers with four or more years of teaching experience supervised using multiple observations, teachers with four or more years of teaching experience supervised with a single observation and teachers with four or more years of teaching experience having no observations during supervision for the following dependent variables:

a. Cognitive Dissonance - Ideal;
b. Cognitive Dissonance - Real;
c. Cognitive Dissonance.

$H_{018}$: There are no significant differences between the average scores of female teachers supervised using multiple observations, female teachers supervised with a single observation and female teachers having no observations during supervision for the following dependent variables:

a. Dominant;
b. Hostile;
c. Mistrusting;
d. Agreeable;
e. Nurturant;
f. Affiliative.

$H_{019}$: There are no significant differences between the average scores of female teachers supervised using multiple observations, female teachers supervised with a single observation and female teachers having no observations during supervision for the following dependent variables:
a. Cognitive Dissonance - Ideal;
b. Cognitive Dissonance - Real;
c. Cognitive Dissonance.

$H_{020}$: There are no significant differences between the average scores of male teachers supervised using multiple observations, male teachers supervised with a single observation and male teachers having no observations during supervision for the following dependent variables:

a. Dominant;
b. Hostile;
c. Mistrusting;
d. Agreeable;
e. Nurturant;
f. Affiliative.

$H_{021}$: There are no significant differences between the average scores of male teachers supervised using multiple observations, male teachers supervised with a single observation and male teachers having no observations during supervision for the following dependent variables:

a. Cognitive Dissonance - Ideal;
b. Cognitive Dissonance - Real;
c. Cognitive Dissonance.

The decision was made by the researcher to reject a null hypothesis dealing with climate ($H_{01}, H_{04}, H_{06}, H_{08}, H_{10}, H_{12}, H_{14}, H_{16}, H_{18} \text{ and } H_{20}$) if the data revealed statistically significant differences on at least four of the six dependent variables. Likewise, null hypotheses related to the concept of Cognitive Dissonance ($H_{02}, H_{05}, H_{07}, H_{09}, H_{11}, H_{13}, H_{15}, H_{17}, H_{19} \text{ and } H_{21}$) were to be rejected if statistically significant differences were found on at least two of the three dependent
variables. Finally, it was determined that $H_{03}$, having to do with correlations between the climate and the Cognitive Dissonance variables, was to be rejected only for those pairs of variables where statistically significant correlations were found.

Statistical Analyses of the Data

A series of statistical tests were used to analyze the data from this study and address the research hypotheses. Analysis of variance was used to test for significant differences among treatment groups on each of the six subscales of the Impact Message Inventory, Cognitive Dissonance and the Real and Ideal components of Cognitive Dissonance. Because of the difficulty of dealing with missing data, analysis of variance tests were also run on the data with individual cases combined to form school mean scores. Since the researcher was interested in the change in each of nine dependent variables over time, analysis of variance tests were also used to check for differences between the four assessment periods with the data grouped by time and by treatment group and time. Where the analysis of variance test turned up statistically significant differences, the Waller-Duncan K-Ratio T test and Duncan's Multiple Range test were used to further isolate the differences.

Finally, to further determine the effects of the three treatments over time, a trend analysis procedure was adapted for use in this study. This procedure allowed the researcher to study the trends of the mean scores over the successive trials. It was assumed that any differences found among the four trial mean scores were the result of the supervisory techniques employed. Trend analysis identified the direction of the trends of
the mean scores; that is, whether the mean scores increased or decreased in successive trials, as well as the bend or curvature of the trends. Tests of statistical significance determined if the direction and curvature of the trends occurred as a result of random variation.

A trend analysis was conducted for each dependent variable on the combined mean scores within each of the experimental groups, as well as the combined mean scores of all eighty-four cases to identify significant trends from Assessment One through Assessment Four.

This study also examined the relative effectiveness of the three approaches to teacher supervision with various subgroups of the research sample. More specifically, analysis of variance tests were used to identify significant differences between treatment groups with teachers grouped by proficiency, level of self-concept, years of teaching experience, and sex. Where significant differences were found, the Tukey-B Multiple Range Test was used to identify the treatment groups which differed at the .05 level of significance.

Several of the hypotheses tested in this study dealt with the relationships between the Impact Message Inventory conference climate indicators and Cognitive Dissonance. The Pearson product-moment correlation coefficient was used to test for correlations between these variables.
Assumptions Applicable to the Major Statistical Tests Used in this Study

The various tests associated with analysis of variance are based on the following set of assumptions:

1. The observations are random and independent samples from the populations;
2. Measurement of the dependent variables are on at least an interval scale;
3. The populations from which the samples are selected are normally distributed and the variances of the populations are equal.

Two assumptions underlie the use of the Pearson r. They are:

1. That both variables are measured on at least an interval scale;
2. The underlying distributions of both variables are normal.

The data used in this study meet these assumptions. The teachers were randomly assigned to each of three experimental groups and all instruments used in the study to collect data employed an interval measurement scale. The homogeneity of variance assumption was evaluated through the direct examination of residuals.

Summary

A pretest-posttest control group experimental design was used in this study to test the relative effectiveness of three different approaches to teacher supervision. The three approaches varied in their use of classroom observation and conferences with the total amount of time spent per teacher remaining constant. The various measures used to determine effectiveness centered around the concepts Cognitive Dissonance as developed by Leon
Festinger and conference climate, adapted from the work of Perkins, Kiesler and others. Each of the three supervisory techniques was employed and tested in seven small Iowa public schools during the 1981-82 school year. The variables were assessed at four different points during the year to enable the researcher to chart changes in them over time.

One-way analysis of variance and various posttests were employed to test twenty-one research hypotheses dealing with differences between the three treatment groups on nine variables - the six subscales of the Impact Message Inventory, Cognitive Dissonance, and its two components. The data were analysed using individual and school mean scores for the entire sample and subgroups within the sample grouped by teacher proficiency, level of self-concept, experience and sex. A trend analysis procedure was utilized to more accurately depict the changes in the dependent variables over the course of the experiment. The Pearson product-moment correlation coefficient was used to determine the magnitude and direction of relationships between variables.
CHAPTER FOUR.

RESULTS

Introduction

A series of statistical tests were used to analyze the data from this study as dictated by the research hypotheses stated in Chapter Three. More specifically, a one-way analysis of variance test was used to test for significance between groups using individual scores and again when individual cases were combined to form school mean scores. In addition, analysis of variance tests were also run on the data grouped by time and by group and time. Where statistically significant differences were found, the Waller-Duncan K-Ratio T test and Duncan's Multiple Range test were used as post-tests to further isolate the differences. To analyze the effects of the treatments over time, trend analysis and an orthogonal test of linearity were employed.

The Pearson product-moment correlation coefficient was also used to test the relationships between variables. And, finally, one-way analysis of variance tests and the Tukey-B Multiple Range test were used to check for differences between treatments with the data organized by teacher proficiency, level of self-concept, years of teaching experience, and sex.

Following a description of the sample, these procedures are described in detail in this chapter along with a statement regarding the disposition of each of the research hypotheses. As a general rule, tables displaying data lacking statistical significance have been placed in Appendix B.
A Description of the Sample

The one hundred and twenty teachers comprising the sample for this study came from seven elementary and secondary public schools, all in the state of Iowa. There were more females than males in the sample (55%) and their teaching experience ranged from zero to thirty-six years with an average of 11.31 years.

An examination of the data from the first administration of the Effective Teaching Questionnaire and the Instructional Strategies Inventory revealed that, at the beginning of the study, the teachers in the sample had mean Cognitive Dissonance - Ideal and Cognitive Dissonance - Real scores of 6.79 and 6.74, respectively, on an eleven point scale. As a group, then, the teachers were reasonably well-satisfied with their teaching performances (as measured by Cognitive Dissonance) and possessed a level of understanding and appreciation for the identified effective teaching behaviors which allowed growth to occur during the study.

An indication of the teachers' feelings regarding the climate of supervisory conferences near the beginning of the study is contained in the data derived from the first administration of the adapted Impact Message Inventory. Generally, those feelings can be characterized as being more positive than negative. The mean scores on the Dominant, Hostile and Mis-trusting subscales were below the midpoint on the scale (2), while the mean scores for the sample on the Agreeable, Nurturant and Affiliative subscales were above the midpoint.

The first assessment mean scores and standard deviations for the sample on the subscales of the adapted Impact Message Inventory and the two
components of Cognitive Dissonance are included in Table 1. For purposes of comparison, the data from the fourth and final assessment are contained in Table 2.

Table 1. First assessment mean scores and standard deviations for all teachers

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominant</td>
<td>119</td>
<td>1.65</td>
<td>0.46</td>
</tr>
<tr>
<td>Hostile</td>
<td>119</td>
<td>1.29</td>
<td>0.45</td>
</tr>
<tr>
<td>Mistrusting</td>
<td>120</td>
<td>1.48</td>
<td>0.51</td>
</tr>
<tr>
<td>Agreeable</td>
<td>120</td>
<td>3.01</td>
<td>0.65</td>
</tr>
<tr>
<td>Nurturant</td>
<td>116</td>
<td>2.92</td>
<td>0.58</td>
</tr>
<tr>
<td>Affiliative</td>
<td>119</td>
<td>2.73</td>
<td>0.57</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>120</td>
<td>6.79</td>
<td>0.77</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>84</td>
<td>6.74</td>
<td>0.86</td>
</tr>
</tbody>
</table>

Table 2. Final assessment mean scores and standard deviations for all teachers

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominant</td>
<td>104</td>
<td>1.63</td>
<td>0.46</td>
</tr>
<tr>
<td>Hostile</td>
<td>105</td>
<td>1.38</td>
<td>0.55</td>
</tr>
<tr>
<td>Mistrusting</td>
<td>105</td>
<td>1.52</td>
<td>0.63</td>
</tr>
<tr>
<td>Agreeable</td>
<td>105</td>
<td>3.04</td>
<td>0.73</td>
</tr>
<tr>
<td>Nurturant</td>
<td>102</td>
<td>2.92</td>
<td>0.69</td>
</tr>
<tr>
<td>Affiliative</td>
<td>103</td>
<td>2.66</td>
<td>0.57</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>103</td>
<td>7.24</td>
<td>0.75</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>101</td>
<td>6.85</td>
<td>1.01</td>
</tr>
</tbody>
</table>
The final descriptive data on the overall sample have to do with the teachers' self-concepts. Table 3 displays the means and standard deviations of the two halves of the total sample; those whose scores fell above the mean for the total group (145 out of a possible score of 180) and those whose scores fell below that point. Standardized norms were not available for comparison purposes, but the scores seem to suggest a moderately strong self-concept level for the total sample.

Table 3. **Self-Acceptance Scale** means and standard deviations for teachers classified in the "higher" and "lower" self-concept groups

<table>
<thead>
<tr>
<th>Scores</th>
<th>N</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 145</td>
<td>54</td>
<td>132.67</td>
<td>9.99</td>
</tr>
<tr>
<td>&gt; 145</td>
<td>53</td>
<td>157.42</td>
<td>7.92</td>
</tr>
</tbody>
</table>

**Analysis of Variance Between Groups**

**Using Individual Cases**

A separate one-way analysis of variance test was run on the data from each of the four assessment periods of the study for the six subscales of the Impact Message Inventory, Cognitive Dissonance, and for the two components of Cognitive Dissonance - the Ideal, measured by the Effective Teaching Questionnaire, and the Real, measured by the Instructional Strategies Inventory. Because of missing data, the number of cases in each group varied somewhat but usually included around thirty-five cases.
As Tables 2B through 5B in Appendix B indicate, the analyses revealed no significant differences among groups on any of the variables.

Grouping the Data by Schools

Because of the variance in the number of cases across groups and at each assessment, the data on each variable were organized to get overall school mean scores for each treatment group. In other words, the Impact Message Inventory - Dominant scores of all individuals in Group Zero, school one were combined to get a school and group mean score for that variable. With data organized in this manner, an analysis of variance was performed on all eighty-four cases (seven schools times three treatment groups times four assessments) by using group, time, and time and group.

The results of the analysis of variance by group are depicted in Table 6B, also in Appendix B. As was true of the analyses using individual cases, there were no significant differences found between the groups on the six subscales of the Impact Message Inventory, Cognitive Dissonance, or the Real and Ideal components of Cognitive Dissonance.

Thus, the analysis of the data grouped by individual cases and by schools failed to reject the following hypotheses:

H01: There are no significant differences between the average scores of teachers supervised using multiple observations, teachers supervised with a single observation and teachers having no observations during supervision for the following dependent variables:

a. Dominant;
b. Hostile;
c. Mistrusting;
d. Agreeable;
e. Nurturant;
f. Affiliative.

H_{02}: There are no significant differences between the average scores of teachers supervised using multiple observations, teachers supervised with a single observation and teachers having no observations during supervision for the following dependent variables:

a. Cognitive Dissonance - Ideal;
b. Cognitive Dissonance - Real;
c. Cognitive Dissonance.

Likewise, the analysis by group and time also failed to produce any statistically significant differences. Appendix Table 7B displays the degrees of freedom, F ratios and F probabilities for each of the nine dependent variables.

However, when the school mean scores for all three groups were combined to form a total mean score, the analysis of variance revealed a statistically significant difference between the assessments on two variables. As Table 4 depicts, a F value of 13.27, statistically significant at the .01 level, existed on the Cognitive Dissonance - Ideal variable as measured by the Effective Teaching Questionnaire, and an F value of 12.27, also significant at the .01 level, existed on the variable Cognitive Dissonance.

Two posttests were then employed to determine where, within the four assessments, the statistical differences occurred.
Table 4. ANOVA of combined school mean scores for all groups by time

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>3</td>
<td>0.25</td>
<td>0.86</td>
</tr>
<tr>
<td>IMI-Hostile</td>
<td>3</td>
<td>0.65</td>
<td>0.59</td>
</tr>
<tr>
<td>IMI-Mistrusting</td>
<td>3</td>
<td>0.34</td>
<td>0.80</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>3</td>
<td>0.90</td>
<td>0.45</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>3</td>
<td>0.58</td>
<td>0.64</td>
</tr>
<tr>
<td>IMI-Affiliative</td>
<td>3</td>
<td>0.59</td>
<td>0.62</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>3</td>
<td>13.27**</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>3</td>
<td>0.72</td>
<td>0.55</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>3</td>
<td>12.27**</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

**Significant at the .01 level; N = 21.

Posttest Analysis of Cognitive Dissonance and Cognitive Dissonance - Ideal

The Waller-Duncan K-Ratio T test was used to determine which assessments had mean scores on variables Cognitive Dissonance and Cognitive Dissonance - Ideal which were significantly different from the others.

With regards to Cognitive Dissonance, both the Waller-Duncan K-Ratio T test and the Duncan Multiple Range test identified the Assessment Four mean score of 0.73 as significantly different at the .05 level from the mean scores of assessments One, Two and Three of 0.02, 0.21, and 0.29, respectively.

On the other hand, with variable Cognitive Dissonance - Ideal, the Waller Duncan K-Ratio T test identified the Assessment One mean score of 6.78 as significantly different from the mean scores of assessments Two,
Three and Four of 7.09, 7.21 and 7.41, respectfully. However, a more powerful posttest, the Duncan Multiple Range test, failed to show a statistically significant difference at the .05 level between any of the four mean scores on this variable.

The data analyzed across time produced information of practical significance. It is important to note that there was a steady increase through all four assessments in the perceptions teachers held regarding certain effective teaching behaviors and in the amount of Cognitive Dissonance they reported. This suggests that supervisors can be effective in changing teachers' perceptions regarding the teaching techniques that should be used in classrooms and their motivation for change. It would be reasonable to hypothesize that the gains made over a period of several years might be of greater statistical significance.

A Final Look at the Change in Cognitive Dissonance and Cognitive Dissonance - Ideal

Final analysis of variance tests were conducted on the four assessment mean scores for each variable within treatment groups. An N of twenty-eight resulted from the four assessments in each of the seven schools. As Tables 5 and 6 show, statistically significant increases from Assessment 1 to Assessment 4 were found in Groups Zero (four observations) and One (one observation) on variables Cognitive Dissonance and Cognitive Dissonance - Ideal. Table 8B, included in Appendix B, shows no significant differences between assessments for the teachers who were not observed with the data organized in this manner.
Table 5. One-way ANOVA on the four assessment mean scores - multiple observation group

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>3</td>
<td>0.14</td>
<td>0.94</td>
</tr>
<tr>
<td>IMI-Hostile</td>
<td>3</td>
<td>0.23</td>
<td>0.87</td>
</tr>
<tr>
<td>IMI-Mistrusting</td>
<td>3</td>
<td>0.33</td>
<td>0.81</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>3</td>
<td>0.47</td>
<td>0.70</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>3</td>
<td>0.36</td>
<td>0.78</td>
</tr>
<tr>
<td>IMI-Affiliative</td>
<td>3</td>
<td>0.49</td>
<td>0.69</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>3</td>
<td>4.24*</td>
<td>0.02</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>3</td>
<td>0.23</td>
<td>0.88</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>3</td>
<td>3.72*</td>
<td>0.02</td>
</tr>
</tbody>
</table>

*Significant at the .05 level; N = 28.

Table 6. One-way ANOVA on the four assessment mean scores - single observation group

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>3</td>
<td>0.29</td>
<td>0.83</td>
</tr>
<tr>
<td>IMI-Hostile</td>
<td>3</td>
<td>0.16</td>
<td>0.92</td>
</tr>
<tr>
<td>IMI-Mistrusting</td>
<td>3</td>
<td>0.14</td>
<td>0.94</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>3</td>
<td>0.01</td>
<td>1.00</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>3</td>
<td>0.13</td>
<td>0.94</td>
</tr>
<tr>
<td>IMI-Affiliative</td>
<td>3</td>
<td>0.04</td>
<td>0.99</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>3</td>
<td>4.50*</td>
<td>0.01</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>3</td>
<td>0.04</td>
<td>0.99</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>3</td>
<td>7.55**</td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

*Significant at the .05 level; N = 28.

**Significant at the .01 level.
Finally, a trend analysis was conducted using the combined mean scores within each of the experimental groups, as well as the combined mean scores of all eighty-four cases, to determine if significant trends occurred on any of the variables as the scores changed from Assessment One through Assessment Four. As Table 7 depicts, a trend significant at the .01 level emerged, once again, on variables Cognitive Dissonance and Cognitive Dissonance - Ideal using the data for all cases. Orthogonal tests of linearity were significant, indicating that the upward trends did fit a straight line. Similar significant trends existed for those same two variables in Groups Zero and One, while no significant trends were found in the data for the no-observation experimental group.

Table 7. Trend analysis of all cases

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>3</td>
<td>0.08</td>
<td>0.96</td>
</tr>
<tr>
<td>IMI-Hostile</td>
<td>3</td>
<td>0.23</td>
<td>0.87</td>
</tr>
<tr>
<td>IMI-Mistrusting</td>
<td>3</td>
<td>0.19</td>
<td>0.90</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>3</td>
<td>0.20</td>
<td>0.90</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>3</td>
<td>0.17</td>
<td>0.91</td>
</tr>
<tr>
<td>IMI-Affiliative</td>
<td>3</td>
<td>0.11</td>
<td>0.95</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>3</td>
<td>9.53**</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>3</td>
<td>0.51</td>
<td>0.68</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>3</td>
<td>10.58**</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

**Significant at the .01 level; N = 84.
Figures 1, 2, and 3 display the changes over the course of the study in the three dependent variables which were of primary concern to the researcher -- Cognitive Dissonance and its two components Real and Ideal. Consistent with the results of the many statistical tests and posttest which have been described previously in this chapter, the Real component of Cognitive Dissonance showed little change over the course of the study, whereas the Ideal component did show some significant change between the first assessment and the other three assessments and in the overall trend which was established as the data unfolded over time. Likewise, Cognitive Dissonance changed over time, although more significantly near the end of the study. Since Cognitive Dissonance is simply the difference between the Ideal and Real mean scores, and since the Real component exhibited very little change, the Cognitive Dissonance graph reflects the changes made in the Ideal component. Actual mean scores can be found in Tables 9B, 10B, and 11B in Appendix B.

Correlations Between Variables

The Pearson product-moment correlation coefficient was calculated to determine the direction and significance of any correlations which existed between each of the subscales of the IMI, Cognitive Dissonance, and its two components. As Tables 8 and 9 show, significant correlations surfaced in Group Zero (four observations) and Group Two (no observations).

No significant correlations existed between the six subscales of the IMI and Cognitive Dissonance, Cognitive Dissonance - Ideal, or Cognitive Dissonance - Real in the data from the teachers in Group One (Table 12B).
The assessments were evenly spaced over an eight-month period of time.

Figure 1. Ideal mean scores over time by group
The assessments were evenly spaced over an eight-month time period.

Figure 2. Real mean scores over time by group
The assessments were evenly spaced over an eight-month time period.

Figure 3. Cognitive dissonance mean scores over time by group.
In the multiple observation group, a negative correlation significant at the .05 level existed between the variables IMI-Agreeable and Cognitive Dissonance - Real. Correspondingly, a positive correlation, also significant at the .05 level, existed between the variable IMI-Agreeable and the variable Cognitive Dissonance. There were no other statistically significant correlations found in the data from the teachers in that group.

The figures in Table 9 reveal significant positive correlations between two of the IMI subscales, IMI-Agreeable and IMI-Nurturant, and the variable Cognitive Dissonance - Ideal.
Table 9. Correlations between variables - no observation group

<table>
<thead>
<tr>
<th>IMI</th>
<th>Cognitive Dissonance - Ideal</th>
<th>Cognitive Dissonance - Real</th>
<th>Cognitive Dissonance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominant</td>
<td>0.07</td>
<td>0.04</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>P=0.37</td>
<td>P=0.42</td>
<td>P=0.46</td>
</tr>
<tr>
<td>Hostile</td>
<td>-0.09</td>
<td>-0.05</td>
<td>-0.03</td>
</tr>
<tr>
<td></td>
<td>P=0.32</td>
<td>P=0.40</td>
<td>P=0.44</td>
</tr>
<tr>
<td>Mistrusting</td>
<td>0.17</td>
<td>0.11</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>P=0.20</td>
<td>P=0.30</td>
<td>P=0.43</td>
</tr>
<tr>
<td>Agreeable</td>
<td>0.35*</td>
<td>0.24</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td>P=0.03*</td>
<td>P=0.11</td>
<td>P=0.39</td>
</tr>
<tr>
<td>Nurturant</td>
<td>0.34*</td>
<td>0.24</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>P=0.04*</td>
<td>P=0.11</td>
<td>P=0.41</td>
</tr>
<tr>
<td>Affiliative</td>
<td>0.24</td>
<td>0.15</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td>P=0.11</td>
<td>P=0.22</td>
<td>P=0.38</td>
</tr>
</tbody>
</table>

*Significant at the .05 level; N = 28.

One could conclude that, when classroom observations are utilized as a part of the supervisory process, teachers who perceive their principal as being more agreeable in nature tend to have a lower and perhaps more realistic perception of their own mastery of effective teaching techniques. Since these teachers tend to give themselves lower scores on their performance of various effective teaching practices than teachers who view their principals as being less agreeable, the dissonance experienced is greater.

On the other hand, teachers who were not observed (Group Two) reflected a tendency to set higher ideals for their performance of specified instructional techniques when they perceived their principal to be agreeable and nurturant.
The significant data from both the multiple observation and no observation groups support the widely-held contention that a less threatening, more collegial relationship between supervisors and the teachers is advantageous to improving instruction. When using observations as part of the supervisory process, the significant difference will most likely occur in the perception teachers have of their classroom performance. On the other hand, when conferences are used as the sole method of teacher supervision, the difference in principals' styles will most likely be reflected in the attitudes teachers express about the desirability of certain prescribed teaching techniques.

It is also important to keep in mind that, although statistically significant, the amount of variance in any one variable which can be attributed to a change in another variables ($r^2$) is relatively small, ranging from eleven to sixteen percent.

Based on the procedure described in Chapter Three, the null hypothesis was rejected for the following pairs of variables:

$H_{o3}$: There are no significant correlations within the multiple observation, single observation and no observation treatment groups among the following dependent variables:

- j. Agreeable and Cognitive Dissonance - Ideal;
- k. Agreeable and Cognitive Dissonance - Real;
- l. Agreeable and Cognitive Dissonance;
- m. Nurturant and Cognitive Dissonance - Ideal.

The data failed to reject $H_{o3}$ for the following pairs of variables:
Ho$_3$: There are no significant correlations within the multiple observation, single observation and no observation treatment groups among the following dependent variables:

a. Dominant and Cognitive Dissonance - Ideal;
b. Dominant and Cognitive Dissonance - Real;
c. Dominant and Cognitive Dissonance;
d. Hostile and Cognitive Dissonance - Ideal;
e. Hostile and Cognitive Dissonance - Real;
f. Hostile and Cognitive Dissonance;
g. Mistrusting and Cognitive Dissonance - Ideal;
h. Mistrusting and Cognitive Dissonance - Real;
i. Mistrusting and Cognitive Dissonance;
j. Nurturant and Cognitive Dissonance - Real;
k. Nurturant and Cognitive Dissonance;
l. Affiliative and Cognitive Dissonance - Ideal;
m. Affiliative and Cognitive Dissonance - Real;
n. Affiliative and Cognitive Dissonance.

The Relationship between Self-Concept and Teacher Supervision

This researcher was interested in examining any relationships which might have existed among and between the various dependent and independent variables, one of which was the relationship between teachers' self-concepts and the three experimental supervisory techniques.

To do this, the teachers in the study were divided into two equal groups according to their mean scores on the Berger Self-Acceptance Scale. Those with mean scores less than or equal to one hundred forty-five were identified as having lower self-concepts, whereas those with mean scores of one hundred forty-six and above were identified as having higher
self-concepts. A one-way analysis of variance test was used to identify significant differences between treatment groups.

The data in Table 10 show the degrees of freedom, F ratios and F probabilities for each of nine dependent variables tested with a one-way analysis of variance test for teachers with lower self-concepts. A statistically significant difference between treatment groups existed on one variable, Cognitive Dissonance - Ideal. Group One (one observation) with a mean score on the Effective Teaching Questionnaire of 6.36 differed significantly at the .01 level from Group Zero (four observations) which had a mean score of 7.00. In other words, among teachers who were identified as having lower self-concepts, those whose classrooms were visited by their principals at least four times during the year rated the importance of the identified effective teaching behaviors higher than did those teachers whose classrooms were visited only once.

Table 10. One-way ANOVA by dependent variable for teachers with lower self-concepts

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>N</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>57</td>
<td>2/54</td>
<td>0.64</td>
<td>0.53</td>
</tr>
<tr>
<td>IMI-Hostile</td>
<td>58</td>
<td>2/55</td>
<td>0.94</td>
<td>0.40</td>
</tr>
<tr>
<td>IMI-Mistrusting</td>
<td>58</td>
<td>2/55</td>
<td>0.66</td>
<td>0.52</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>58</td>
<td>2/55</td>
<td>0.36</td>
<td>0.70</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>55</td>
<td>2/52</td>
<td>1.73</td>
<td>0.19</td>
</tr>
<tr>
<td>IMI-Affiliative</td>
<td>58</td>
<td>2/55</td>
<td>0.54</td>
<td>0.59</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>57</td>
<td>2/54</td>
<td>5.18**</td>
<td>0.01</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>38</td>
<td>2/35</td>
<td>1.24</td>
<td>0.30</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>36</td>
<td>2/33</td>
<td>0.72</td>
<td>0.49</td>
</tr>
</tbody>
</table>

**Significant at the .01 level.
However, based on the criteria established in Chapter Three, these data did not allow the researcher to reject the following hypotheses:

H₀₄: There are no significant differences between the average scores of teachers with lower self-concepts supervised using multiple observations, teachers with lower self-concepts supervised with a single observation and teachers with lower self-concepts having no observations during supervision for the following dependent variables:
   a. Dominant;
   b. Hostile;
   c. Mistrusting;
   d. Agreeable;
   e. Nurturant;
   f. Affiliative.

H₀₅: There are no significant differences between the average scores of teachers with lower self-concepts supervised using multiple observations, teachers with lower self-concepts supervised with a single observation and teachers with lower self-concepts having no observations during supervision for the following dependent variables:
   a. Cognitive Dissonance - Ideal
   b. Cognitive Dissonance - Real;
   c. Cognitive Dissonance.

The data for teachers with higher self-concepts failed to reveal significant differences between the treatment groups on any of the nine dependent variables. Those data, which are contained in Table 13B, did not allow the researcher to reject the following hypotheses:

H₀₆: There are no significant differences between the average scores of teachers with higher self-concepts supervised using multiple
observations, teachers with higher self-concepts supervised with a single observation and teachers with higher self-concepts having no observations during supervision for the following dependent variables:

a. Dominant;
b. Hostile;
c. Mistrusting;
d. Agreeable;
e. Nurturant;
f. Affiliative.

H₀₇: There are no significant differences between the average scores of teachers with higher self-concepts supervised using multiple observations, teachers with higher self-concepts supervised with a single observation and teachers with higher self-concepts having no observations during supervision for the following dependent variables:

a. Cognitive Dissonance - Ideal;
b. Cognitive Dissonance - Real;
c. Cognitive Dissonance.

The Effect of the Three Treatments on Teachers with Varying Degrees of Proficiency

The researcher was also interested in studying the effects each of the three approaches to teacher supervision had on teachers with varying degrees of overall proficiency or skill. Teacher proficiency in each school was determined by the principal, who divided his staff into three equal groups according to his perception of their overall effectiveness in the classroom. The teachers placed in the top third of each faculty were given a "one" rating, whereas the teachers who were perceived by their
principals to be the least skilled in instructional techniques were given a "three" rating.

The data in Table 11 reveal significant differences between treatment groups for teachers rated in the top third of their faculties on the Mistrusting, Agreeable, Nurturant, and Affiliative subscales of the Impact Message Inventory. Table 12 includes the mean scores for each of the treatment groups on these variables.

The Tukey-B Multiple Range test was then used to determine which treatment groups were significantly different on each of these variables. In each case, it was Group Two, the group that received no classroom observations, that was significantly different from Group One, the group whose teachers were observed only once. These data indicate that, among teachers who possess a relatively high degree of proficiency, those who had eight conferences and no classroom observations perceived their principals to be more agreeable, nurturant and affiliative and less mistrusting than teachers who had seven conferences and one classroom observation. Teachers who were observed four times and had four conferences had mean scores on these variables which were between the other two groups, but not significantly different from either of them.

In view of the fact that the mean scores of teachers who were observed four times did not differ significantly from teachers whose classrooms were not observed, it would seem premature to conclude that supervisors should not observe the classrooms of their top teachers. However, these data do suggest that the optimal approach to teacher supervision may vary depending on teacher proficiency.
Table 11. One-way ANOVA by dependent variable - teachers rated in the top third of their faculties

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>N</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>36</td>
<td>2/33</td>
<td>1.32</td>
<td>0.28</td>
</tr>
<tr>
<td>IMI-Hostile</td>
<td>36</td>
<td>2/33</td>
<td>2.10</td>
<td>0.14</td>
</tr>
<tr>
<td>IMI-Mistrusting</td>
<td>36</td>
<td>2/33</td>
<td>3.73*</td>
<td>0.03</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>36</td>
<td>2/33</td>
<td>5.62**</td>
<td>0.01</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>35</td>
<td>2/32</td>
<td>4.13*</td>
<td>0.03</td>
</tr>
<tr>
<td>IMI-Affiliative</td>
<td>35</td>
<td>2/32</td>
<td>3.21*</td>
<td>0.05</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>35</td>
<td>2/32</td>
<td>0.25</td>
<td>0.78</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>37</td>
<td>2/34</td>
<td>0.42</td>
<td>0.66</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>34</td>
<td>2/31</td>
<td>0.95</td>
<td>0.40</td>
</tr>
</tbody>
</table>

*Significant at the .05 level.
**Significant at the .01 level.

Table 12. Mean scores of variables where significant differences existed between treatment groups for teachers rated in the top third of their faculties

<table>
<thead>
<tr>
<th>Group a</th>
<th>N</th>
<th>Agreeable</th>
<th>Nurturant</th>
<th>Affiliative</th>
<th>Mistrusting</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>13</td>
<td>3.54</td>
<td>3.28</td>
<td>2.97</td>
<td>1.11</td>
</tr>
<tr>
<td>0</td>
<td>15</td>
<td>3.18</td>
<td>3.03</td>
<td>2.69</td>
<td>1.39</td>
</tr>
<tr>
<td>1</td>
<td>7</td>
<td>2.55</td>
<td>2.55</td>
<td>2.36</td>
<td>1.62</td>
</tr>
</tbody>
</table>

aGroups: 2 = 0 observations; 0 = 4 observations; 1 = 1 observation.
Tables 14B and 15B show no significant differences between treatment groups on any variable for teachers who are rated in the middle and bottom thirds of their faculties by their principals.

These data on teacher proficiency as it relates to supervision did allow the researcher to reject the following hypothesis.

$H_{0g}$: There are no significant differences between the average scores of teachers rated in the top third of their faculties supervised using multiple observations, teachers rated in the top third of their faculties supervised with a single observation and teachers rated in the top third of their faculties having no observations during supervision for the following dependent variables:

a. Dominant;
b. Hostile;
c. Mistrusting;
d. Agreeable;
e. Nurturant;
f. Affiliative.

The data on teacher proficiency for teachers rated in the top, middle and bottom thirds of their faculties did not allow the researcher to reject the following null hypotheses.

$H_{0g}$: There are no significant differences between the average scores of teachers rated in the top third of their faculties supervised using multiple observations, teachers rated in the top third of their faculties supervised with a single observation and teachers rated in the top third of their faculties having no observations during supervision for the following dependent variables:
a. Cognitive Dissonance - Ideal;
b. Cognitive Dissonance - Real;
c. Cognitive Dissonance.

\[ H_{10} \]: There are no significant differences between the average scores of teachers rated in the middle third of their faculties supervised using multiple observations, teachers rated in the middle third of their faculties supervised with a single observation and teachers rated in the middle third of their faculties having no observations during supervision for the following dependent variables:

a. Dominant;
b. Hostile;
c. Mistrusting;
d. Agreeable;
e. Nurturant;
f. Affiliative.

\[ H_{11} \]: There are no significant differences between the average scores of teachers rated in the middle third of their faculties supervised using multiple observations, teachers rated in the middle third of their faculties supervised with a single observation and teachers rated in the middle third of their faculties having no observations during supervision for the following dependent variables:

a. Cognitive Dissonance - Ideal;
b. Cognitive Dissonance - Real;
c. Cognitive Dissonance.

\[ H_{12} \]: There are no significant differences between the average scores of teachers rated in the bottom third of their faculties supervised using multiple observations, teachers rated in the bottom third of their faculties supervised with a single observation and teachers
rated in the bottom third of their faculties having no observations during supervision for the following dependent variables:

a. Dominant;
b. Hostile;
c. Mistrusting;
d. Agreeable;
e. Nurturant;
f. Affiliative.

$H_{013}$: There are no significant differences between the average scores of teachers rated in the bottom third of their faculties supervised using multiple observations, teachers rated in the bottom third of their faculties supervised with a single observation and teachers rated in the bottom third of their faculties having no observations during supervision for the following dependent variables:

a. Cognitive Dissonance - Ideal;
b. Cognitive Dissonance - Real;
c. Cognitive Dissonance.

Teacher Experience

The data in Tables 16B and 17B reveal no significant differences between treatment groups for teachers with less than four years of teaching experience and teachers with four or more years of teaching experience. Apparently, the method of teacher supervision which is most effective is not dependent upon teaching experience.

The data on teacher supervision and years of experience did not allow the researcher to reject the following hypotheses.
Ho_{14}: There are no significant differences between the average scores of teachers with less than four years of teaching experience supervised using multiple observations, teachers with less than four years of teaching experience supervised with a single observation and teachers with less than four years of teaching experience having no observations during supervision for the following dependent variables:
   a. Dominant;
   b. Hostile;
   c. Mistrusting;
   d. Agreeable;
   e. Nurturant;
   f. Affiliative.

Ho_{15}: There are no significant differences between the average scores of teachers with less than four years of teaching experience supervised using multiple observations, teachers with less than four years of teaching experience supervised with a single observation and teachers with less than four years of teaching experience having no observations during supervision for the following dependent variables:
   a. Cognitive Dissonance - Ideal;
   b. Cognitive Dissonance - Real;
   c. Cognitive Dissonance.

Ho_{16}: There are no significant differences between the average scores of teachers with four or more years of teaching experience supervised using multiple observations, teachers with four or more years of teaching experience supervised with a single observation and teachers with four or more years of teaching experience having no observations during supervision for the following dependent variables:
Ho^7: There are no significant differences between the average scores of teachers with four or more years of teaching experience supervised using multiple observations, teachers with four or more years of teaching experience supervised with a single observation and teachers with four or more years of teaching experience having no observations during supervision for the following dependent variables:

a. Cognitive Dissonance - Ideal;
b. Cognitive Dissonance - Real;
c. Cognitive Dissonance.

The Effects of Different Supervisory Techniques by Sex

The final set of hypotheses under investigation in this study analyzed the effects of the three supervisory techniques on male and female teachers. This was of particular interest to the researcher, since all of the principals or supervisors in the study were men. The data analyzed by sex and displayed in Table 13 reveal a difference between the three treatment groups on variable Cognitive Dissonance - Ideal, which is significant at the .01 level for female teachers.

The mean scores on variable Cognitive Dissonance - Ideal for female teachers in Groups One, Two, and Zero were 7.28, 7.31 and 7.91, respectively. The Tukey-B Multiple Range test identified the mean scores of
Group Zero and Group One as being significantly different at the .05 level. In other words, female teachers whose classes were observed by their principals four times valued certain effective teaching behaviors more than their counterparts who were not observed and significantly more than those teachers who were observed only once.

Table 13. One-way ANOVA by dependent variable for female teachers

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>N</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>57</td>
<td>2/54</td>
<td>0.65</td>
<td>0.53</td>
</tr>
<tr>
<td>IMI-Hostile</td>
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<td>2/55</td>
<td>0.44</td>
<td>0.64</td>
</tr>
<tr>
<td>IMI-Mistrusting</td>
<td>58</td>
<td>2/55</td>
<td>1.04</td>
<td>0.36</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>58</td>
<td>2/55</td>
<td>0.74</td>
<td>0.48</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>55</td>
<td>2/52</td>
<td>2.91</td>
<td>0.06</td>
</tr>
<tr>
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<td>57</td>
<td>2/54</td>
<td>1.17</td>
<td>0.32</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>58</td>
<td>2/55</td>
<td>3.59*</td>
<td>0.03</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>58</td>
<td>2/55</td>
<td>0.94</td>
<td>0.40</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>53</td>
<td>2/50</td>
<td>0.69</td>
<td>0.51</td>
</tr>
</tbody>
</table>

*Significant at the .05 level.

The data for male teachers did not produce significant differences between the treatment groups on any variable. These data are illustrated by Table 18B in Appendix B.

These data did not allow the researcher to reject the following hypotheses:

Ho: There are no significant differences between the average scores of female teachers supervised using multiple observations, female teachers supervised with a single observation and female teachers...
having no observations during supervision for the following dependent variables:

- a. Dominant;
- b. Hostile;
- c. Mistrusting;
- d. Agreeable;
- e. Nurturant;
- f. Affiliative.

**H₀₁₉:** There are no significant differences between the average scores of female teachers supervised using multiple observations, female teachers supervised with a single observation and female teachers having no observations during supervision for the following dependent variables:

- a. Cognitive Dissonance - Ideal;
- b. Cognitive Dissonance - Real;

**H₀₂₀:** There are no significant differences between the average scores of male teachers supervised using multiple observations, male teachers supervised with a single observation and male teachers having no observations during supervision for the following dependent variables:

- a. Dominant;
- b. Hostile;
- c. Mistrusting;
- d. Agreeable;
- e. Nurturant;
- f. Affiliative.

**H₀₂₁:** There are no significant differences between the average scores of male teachers supervised using multiple observations, male teachers
supervised with a single observation and male teachers having no observations during supervision for the following dependent variables:

a. Cognitive Dissonance - Ideal;

b. Cognitive Dissonance - Real;

c. Cognitive Dissonance.

Summary

The results of this study are summarized by the following points:

1. There were no significant differences between the three approaches to teacher supervision on any of the nine dependent variables using individual scores and school mean scores.

2. There were significant differences on two of the dependent variables, Cognitive Dissonance - Ideal and Cognitive Dissonance, between the four assessment periods when the school mean scores for all three groups were combined to form a total mean score. With regards to Cognitive Dissonance, the Waller-Duncan K-Ratio T test and the Duncan Multiple Range test identified the Assessment Four mean score as significantly different from the other three. The Waller-Duncan K-Ratio T test identified the Assessment One mean score for Cognitive Dissonance - Ideal as significantly different from the other three assessment periods. However, the more powerful post-test, the Duncan Multiple Range test, failed to show a statistically significant difference between any of the four assessment mean scores on this variable.

3. When looking at individual treatment groups, significant differences were found on the same two variables (Cognitive Dissonance - Ideal
and Cognitive Dissonance) between assessments in Groups Zero and One. Group Two (no observations) did not show as much growth as these two variables between assessment periods as was true with Groups Zero and One.

4. Concerning the three dependent variables of primary importance, Cognitive Dissonance and its two components Real and Ideal, there was a steady growth throughout the course of the study of a practical significance in the Cognitive Dissonance - Ideal and Cognitive Dissonance scores in all three of the treatment groups. The Cognitive Dissonance - Real scores remained relatively constant throughout this same period of time. The growth in Groups Zero (four observations) and One (one observation) was greater, however, than the growth experienced by treatment Group Two (no observations).

5. Consistent with these findings, a trend analysis showed that a significant growth trend existed on variables Cognitive Dissonance and Cognitive Dissonance - Ideal from Assessment One to Assessment Four.

6. Within treatment Group Zero, variable IMI-Agreeable correlated negatively with the variable Cognitive Dissonance - Real and positively with the variable Cognitive Dissonance. In other words, teachers who saw their principals as being more agreeable tended to have lower and perhaps more realistic views of their actual teaching performances. This relationship then caused their Cognitive Dissonance scores to be higher.

7. The data from the teachers in the treatment group that had no formal classroom observations showed significant positive correlations between the variables IMI-Agreeable and IMI-Nurturant and Cognitive
Dissonance - Ideal. Both this finding and the finding noted in point six above support the belief that a supportive, "collegial" atmosphere between teachers and supervisors creates the greatest likelihood of change in classroom instructional strategies.

8. Teachers with lower self-concepts had higher Cognitive Dissonance - Ideal scores when they were observed. No significant differences were found between the three supervisory techniques for teachers with higher self-concepts.

9. Teachers rated by their principals as being in the top third of their faculties perceived their principals to be more Agreeable, Nurturant, and Affiliative and less Mistrusting when their classrooms were not observed. No differences were found between treatment groups for those teachers rated in the middle and lower thirds of their faculties.

10. Years of teaching experience was not a factor in the effectiveness of the three approaches to teacher supervision.

11. The Cognitive Dissonance - Ideal scores for female teachers were highest for the treatment group with four observations and lowest for the treatment group with one observation. No significant differences between treatment groups were found for male teachers.
CHAPTER FIVE.  
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this study was to determine the effects of classroom observations by principals on conference climate and the classroom performance of teachers. Three treatment groups were formed in each of seven Iowa schools to investigate the research questions of interest in this study: Group Zero with four classroom visitations and four conferences, Group One with one classroom visitation and seven conferences, and Group Two with no classroom visitations and eight conferences. The total amount of time spent by principals with teachers in each group remained constant.

Six subscales of Donald Kiesler's Impact Message Inventory were selected for use in measuring the teachers' perceptions of the conference climate which existed between them and their principals. Leon Festinger's concept of Cognitive Dissonance together with its two components the Real (what is) and the Ideal (what ought to be) was used to assess the likelihood of change in teachers' classroom teaching behaviors as a result of each of the three approaches to teacher supervision. The use of Cognitive Dissonance for this purpose is based on the premise that Cognitive Dissonance, or feelings of dissatisfaction with the present state of affairs, is a necessary precondition to changes in behavior. Cognitive Dissonance and its two components, together with the six subscales of the Impact Message Inventory, form the nine dependent variables under investigation in this study. This researcher was also interested in any correlations which existed among the nine dependent variables, as well as the effects of a
teacher's self-concept, years of teaching experience, proficiency level, and sex on the productivity of each of the three approaches to teacher supervision.

To plot the changes in the dependent variables over time, the variables were measured at each of four assessment periods throughout the nine-month duration of this study. One-way analysis of variance tests were used to identify differences between treatment groups on each of the dependent variables with the data for each individual assessment period and with the data grouped across all four assessments. A trend analysis procedure was developed to test for significant trends in the data across time.

Pearson's product-moment correlation coefficient was used to identify relations among the dependent variables.

Results

The findings of this study are listed specifically in the hypotheses in Chapter Four. Stated in a more general sense, however, the significant results of this study were:

1. There were no significant differences between the three approaches to teacher supervision on any of the nine variables measuring conference climate and teachers' motivation for change using individual scores and school mean scores.

2. Teachers in Group Zero (four observations) and Group One (one observation) did experience significant growth in Cognitive Dissonance and its Ideal component between the four assessment periods. The teachers in Group Two (no observations) did experience growth on
the same two variables, but not as much as was true with Groups Zero and One.

3. There was a steady growth throughout the course of this study of a practical significance by the teachers in all three treatment groups in the value they placed on the desired effective teaching practices and their overall readiness for change. This optimistic note suggests that supervisors can be effective in changing instructional practices and beliefs.

4. Several significant correlations between variables measuring conference climate and variables measuring Cognitive Dissonance support the belief that a supportive, "collegial" atmosphere between teachers and supervisors creates the greatest likelihood of change in classroom instructional strategies. This was especially true for teachers who had no formal classroom observations.

5. Female teachers and teachers with lower self-concepts appeared to benefit more in terms of their appreciation for the specified effective teaching techniques when observed by their principals.

6. Teachers rated by their principals as being in the top third of their faculties held more positive views regarding the conference climates which were established between them and their principals when their classrooms were not observed.
Conclusion and Discussion

No statistically significant differences existed in the data for the entire sample between the three approaches to teacher supervision on any of the variables measuring conference climate or the teachers' propensity for change in classroom instructional strategies as measured by Cognitive Dissonance. Thus, the question "What are the effects of classroom observation by principals on conference climate and the classroom performance of teachers?" remains largely unanswered from the research point of view. Other intervening variables which may have affected the outcomes of this study, such as long-standing feelings and conceptions about teaching and supervision held by both teachers and principals, the significant increases in Cognitive Dissonance over time by teachers in the multiple and single observation groups, preclude the conclusion that classroom observations add nothing to teacher effectiveness. Of a practical importance is the fact that teachers whose classrooms were visited by their principals tended to value specific effective teaching practices more than did those teachers whose classrooms were either visited infrequently or not at all.

Further analyses suggest that this may not be true for all teachers, however. For example, teachers who were rated in the top third of their faculties by their principals characterized the conference climate which existed between them and their principal as being more agreeable, nurturing, affiliative, and less mistrusting when they were not observed. On the other hand, teachers with lower self-concepts and female teachers developed a greater appreciation for the desired effective teaching behaviors when observed by their principals four times a year than did their counterparts in the other two groups. Although inconclusive, these findings
suggest that a differentiated approach to teacher supervision may be most effective. Perhaps classroom visitations are not an effective use of principals' time for top-notch teachers with relatively high self-concepts.

Other data indicated that, when teachers were observed, a more agreeable supervisory style on the part of the principal resulted in lower and perhaps more realistic perceptions of present teaching performances. This, once again, supports the viewpoint that teachers are less defensive and gain more from the supervisory process when a collegial relationship exists between the supervisor and teacher.

Of significance to both practitioners and researchers were the findings that all three supervisory methods did have positive effects on the value teachers placed on identified effective teaching practices and their Cognitive Dissonance or readiness for change. Both the trend analysis procedure and the analysis of variance tests done on the data between the four assessment periods showed a statistically significant growth on the part of the research subjects on these two variables. Therefore, although the findings in this study do not clearly establish the superiority of one supervisory method over the others, or define the role classroom visitations play in motivating teachers toward change, they do show that, by working with teachers in some capacity, supervisors can change the way teachers feel about the teaching techniques which ought to be employed in their classrooms and, consequently, their Cognitive Dissonance or motivation. This conclusion, together with the implications for a differentiated approach to teacher supervision, formed the most significant findings of this study.
Recommendations for Additional Research

The following recommendations for further research are based on the findings of this study and the researcher's experiences.

1. Future research aimed at investigating the relative importance of classroom observations and conferences should engage the participating principals in a more extensive training session on both conference techniques and data gathering techniques. As it was, the principals in this study did participate in a one-day training session designed to standardize the techniques used in the study. However, it is reasonable to conclude that this training session only scratched the surface of the knowledge and skill now known by educational researchers to be effective in these two areas. An approach similar to the assessment center concept wherein participants are engaged in several days of instruction, analysis and evaluation would do a great deal to ensure that the principals or supervisors were equally proficient in classroom observation and conference skills.

2. It is also recommended that future studies designed to assess the efficacy of spending scarce supervisory time on classroom observations in order to improve the quality of instruction and the conference climate which exists between teachers and principals be more longitudinal in nature than was the case in this study. One year is simply too short a time period to expect statistically significant changes to occur in feelings and practices which have developed in some cases over a twenty-five-year period. A study designed to
assess changes over a three- to five-year period replete with check-point sessions for supervisors may identify the more superior supervisory technique.

3. Future research in this area should explore the findings of this study which suggest that different approaches to teacher supervision may be more or less effective depending on key teacher characteristics, such as proficiency and self-concept. It is the feeling of this researcher that therein lies a most valuable source of information for practitioners.
LITERATURE CITED


ACKNOWLEDGEMENTS

I wish to express my sincere appreciation to my major professor, Dr. Ross A. Engel, for his continued guidance, support and encouragement, not only during this project, but throughout my entire advanced graduate program. My appreciation is also extended to the following people for their contribution to my educational career:

Dr. James E. Sweeney and Dr. Anton J. Netusil for their invaluable assistance in perfecting the research design and analysis of data and their personal interest and support.

The other members of my doctoral committee, Dr. Walter E. Hart and Dr. Richard L. Herrnstadt, for their insightful comments and direction during the development of this study.

Mrs. Linda R. Westerberg and Mrs. Wilma J. DeHay for their assistance in the preparation of research instruments and the typing of rough draft manuscripts, along with general encouragement to me.
APPENDIX A.

DATA GATHERING INSTRUMENTS
Below are several statements that relate either positively or negatively to effective teaching. Please indicate the extent to which each statement is descriptive of what has occurred in your teaching situation during the last month. Use the following scale for determining your responses.

<table>
<thead>
<tr>
<th>Not Descriptive</th>
<th>Moderately Descriptive</th>
<th>Very Descriptive</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<td>2</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
<td>5</td>
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</tr>
<tr>
<td></td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

A response of 0 means that particular statement is not descriptive of what occurs in your present teaching situation. A response of 10 means the statement is very descriptive of what occurs in your present teaching situation. The intermediate responses indicate varying degrees of descriptive-ness. If you feel unsure about a particular statement, you may record a DK (don't know) for that statement. Please respond to each statement.

1. Each student spends over half of his/her time working on learning tasks that are quite easy for that student.  
2. The academic progress of each student is continuously assessed.  
3. Academic content is covered extensively.  
4. Students are frequently given immediate feedback concerning their academic progress.  
5. There is often a wide variety of activities occurring simultaneously in the classroom.  
6. The questions asked students allow for many (70% or more) correct responses.  
7. There is little disruptive student behavior in the classroom.  
8. The teacher frequently engages in interaction with the students concerning nonacademic matters (rap sessions).  
9. The students have little unstructured class time.
10. The learning environment is characterized by high student involvement.

11. The objectives of each lesson are communicated explicitly to the students.

12. Games and simulations are frequently used for learning experiences.

13. A high percentage of the students' time is spent in large group instruction.

14. Students are severely criticized when their work or behavior does not meet standards.

15. The learning environment can be described as task-oriented and academically focused.

16. The students' freedom to move about, to form subgroups, and to socialize is kept to a minimum.

17. Each lesson has specific objectives.

18. Students frequently interact with the teacher concerning academic content.

19. While there is some degree of student freedom, the learning tasks are teacher-selected and directed.

20. Techniques are used which establish student interest in the academic content. For example, use of intrinsically interesting situations as contexts for problems; use of familiar names, places and events; and changes in voice, position or sequence.
EFFECTIVE TEACHING QUESTIONNAIRE

Below are several statements that relate either positively or negatively to effective teaching. We are interested in your feelings or opinions about each statement. You will probably agree with some of these statements. That is, some statements will express your own opinions or feelings about effective teaching. Other statements will express feelings opposite to yours.

After you have read each statement, please circle the "A" (agree) if you agree the statement reflects a concept which is important to effective teaching. If you feel the concept is not important to effective teaching, please circle the "D" (disagree). Once you have made this decision, please indicate how strongly you agree or disagree with the statement by circling one of the numbers which appear to the right of each statement. If you have no strong feelings about the statement, circle 1. If you very strongly agree or disagree with the statement, circle 5. For some statements, the numbers 2, 3 or 4 may better describe how strongly you agree or disagree with the statement. When this is the case, circle the appropriate number.

For example, consider the statement:

Audio-visual materials are used extensively
in the classroom.

Do you agree or disagree that this is important to effective teaching? Circle "A" ("D"). How strongly do you agree (disagree) with this statement? Circle the appropriate number.

Please be sure to circle both a letter and a number after each statement, unless you are completely undecided whether you agree or disagree with the statement. In that case, circle both "A" and "D" but do not circle any of the numbers. This response indicates that you neither agree nor disagree with the statement.

These statements are in no way designed to be a test. The answers which will be most helpful to this research project are the ones which best reflect your own feelings about each of the statements.

1. Each student spends over half or his/her time working on learning tasks that are quite easy for that student.

2. The academic progress of each student is continuously assessed.
3. Academic content is covered extensively.

4. Students are frequently given immediate feedback concerning their academic progress.

5. There is often a wide variety of activities occurring simultaneously in the classroom.

6. The questions asked students allow for many (70% or more) correct responses.

7. There is little disruptive student behavior in the classroom.

8. The teacher frequently engages in interaction with the students concerning nonacademic matters (rap sessions).

9. The students have little unstructured class time.

10. The learning environment is characterized by high student involvement.

11. The objectives of each lesson are communicated explicitly to the students.

12. Games and simulations are frequently used for learning experiences.

13. A high percentage of the students' time is spent in large group instruction.

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15. The learning environment can be described as task-oriented and academically focused.

16. The students' freedom to move about, to form subgroups, and to socialize is kept to a minimum.

17. Each lesson has specific objectives.

18. Students frequently interact with the teacher concerning academic content.

19. While there is some degree of student freedom, the learning tasks are teacher-selected and directed.
20. Techniques are used which establish student interest in the academic content. For example, use of intrinsically interesting situations as contexts for problems; use of familiar names, places and events; and changes in voice, position or sequence.
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These consist of pages:

IMPACT MESSAGE INVENTORY (IMI - FORM II-1976)  
BY DONALD J. KIESLER - Pages 104-109

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APPENDIX B.

ADDITIONAL TABLES FROM CHAPTER FOUR
Table 1B. Pearson product moment correlation coefficients between selected subscales of the Impact Message Inventory\(^a\)

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<thead>
<tr>
<th></th>
<th>Dominant</th>
<th>Hostile</th>
<th>Mistrusting</th>
<th>Agreeable</th>
<th>Nurturant</th>
<th>Affiliative</th>
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\(^a\)N = 84.
### Table 2B. One-way ANOVA by dependent variable using individual cases - Assessment 1

<table>
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<th>Dependent variable</th>
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<td>2/117</td>
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</tr>
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<td>1.71</td>
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<td>Cognitive Dissonance</td>
<td>66</td>
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### Table 3B. One-way ANOVA by dependent variable using individual cases - Assessment 2

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<th>Dependent variable</th>
<th>N</th>
<th>df</th>
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<td>2/101</td>
<td>0.19</td>
<td>0.83</td>
</tr>
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<td>IMI-Agreeable</td>
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<td>2/101</td>
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<td>0.66</td>
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<td>IMI-Nurturant</td>
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<td>0.49</td>
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<td>IMI-Affiliative</td>
<td>104</td>
<td>2/101</td>
<td>0.31</td>
<td>0.73</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
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<td>2/104</td>
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<td>Cognitive Dissonance - Real</td>
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<td>0.50</td>
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Table 4B. One-way ANOVA by dependent variable using individual cases - Assessment 3

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<th>F ratio</th>
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<td>0.48</td>
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<td>2/96</td>
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<td>2/90</td>
<td>1.04</td>
<td>0.36</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>100</td>
<td>2/97</td>
<td>0.96</td>
<td>0.39</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>88</td>
<td>2/85</td>
<td>0.83</td>
<td>0.44</td>
</tr>
</tbody>
</table>

Table 5B. One-way ANOVA by dependent variable using individual cases - Assessment 4

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>N</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>104</td>
<td>2/101</td>
<td>1.17</td>
<td>0.31</td>
</tr>
<tr>
<td>IMI-Hostile</td>
<td>105</td>
<td>2/102</td>
<td>0.02</td>
<td>0.98</td>
</tr>
<tr>
<td>IMI-Mistrusting</td>
<td>105</td>
<td>2/102</td>
<td>0.34</td>
<td>0.71</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>105</td>
<td>2/102</td>
<td>0.87</td>
<td>0.42</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>102</td>
<td>2/99</td>
<td>1.07</td>
<td>0.35</td>
</tr>
<tr>
<td>IMI-Affiliative</td>
<td>103</td>
<td>2/100</td>
<td>0.56</td>
<td>0.58</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>103</td>
<td>2/100</td>
<td>0.52</td>
<td>0.60</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>101</td>
<td>2/98</td>
<td>0.14</td>
<td>0.87</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>95</td>
<td>2/92</td>
<td>1.60</td>
<td>0.21</td>
</tr>
</tbody>
</table>
Table 6B. ANOVA of school mean scores by group

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>2</td>
<td>1.06</td>
<td>0.37</td>
</tr>
<tr>
<td>IMI-Hostile</td>
<td>2</td>
<td>0.64</td>
<td>0.54</td>
</tr>
<tr>
<td>IMI-Mistrusting</td>
<td>2</td>
<td>0.85</td>
<td>0.44</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>2</td>
<td>0.31</td>
<td>0.74</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>2</td>
<td>0.88</td>
<td>0.43</td>
</tr>
<tr>
<td>IMI-Affiliative</td>
<td>2</td>
<td>0.02</td>
<td>0.98</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>2</td>
<td>2.06</td>
<td>0.16</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>2</td>
<td>0.05</td>
<td>0.95</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>2</td>
<td>0.64</td>
<td>0.54</td>
</tr>
</tbody>
</table>

aN = 28.

Table 7B. ANOVA of school mean scores by group and time

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>6</td>
<td>1.00</td>
<td>0.44</td>
</tr>
<tr>
<td>IMI-Hostile</td>
<td>6</td>
<td>0.58</td>
<td>0.74</td>
</tr>
<tr>
<td>IMI-Mistrusting</td>
<td>6</td>
<td>0.80</td>
<td>0.58</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>6</td>
<td>0.97</td>
<td>0.45</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>6</td>
<td>0.99</td>
<td>0.44</td>
</tr>
<tr>
<td>IMI-Affiliative</td>
<td>6</td>
<td>1.15</td>
<td>0.35</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>6</td>
<td>0.95</td>
<td>0.47</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>6</td>
<td>0.09</td>
<td>1.0</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>6</td>
<td>1.23</td>
<td>0.31</td>
</tr>
</tbody>
</table>

aN = 7.
Table 8B. One-way ANOVA on the four assessment mean scores - no observation group

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>3</td>
<td>0.29</td>
<td>0.83</td>
</tr>
<tr>
<td>IMI-Hostile</td>
<td>3</td>
<td>0.22</td>
<td>0.88</td>
</tr>
<tr>
<td>IMI-Mistrusting</td>
<td>3</td>
<td>0.61</td>
<td>0.62</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>3</td>
<td>0.27</td>
<td>0.84</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>3</td>
<td>0.43</td>
<td>0.73</td>
</tr>
<tr>
<td>IMI-Affiliative</td>
<td>3</td>
<td>0.11</td>
<td>0.95</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>3</td>
<td>2.32</td>
<td>0.10</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>3</td>
<td>0.30</td>
<td>0.83</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>3</td>
<td>2.39</td>
<td>0.09</td>
</tr>
</tbody>
</table>

\(^aN = 28.\)
Table 9B. Ideal mean scores over time by group

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Group Zero</th>
<th>Group One</th>
<th>Group Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.97</td>
<td>6.52</td>
<td>6.84</td>
</tr>
<tr>
<td>2</td>
<td>7.26</td>
<td>7.11</td>
<td>6.90</td>
</tr>
<tr>
<td>3</td>
<td>7.29</td>
<td>7.20</td>
<td>7.13</td>
</tr>
<tr>
<td>4</td>
<td>7.59</td>
<td>7.34</td>
<td>7.29</td>
</tr>
</tbody>
</table>

aN = 7.

Table 10B. Real mean scores over time by group

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Group Zero</th>
<th>Group One</th>
<th>Group Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.80</td>
<td>6.77</td>
<td>6.71</td>
</tr>
<tr>
<td>2</td>
<td>6.80</td>
<td>6.74</td>
<td>6.77</td>
</tr>
<tr>
<td>3</td>
<td>6.90</td>
<td>6.76</td>
<td>6.89</td>
</tr>
<tr>
<td>4</td>
<td>6.69</td>
<td>6.69</td>
<td>6.66</td>
</tr>
</tbody>
</table>

aN = 7.

Table 11B. Cognitive Dissonance mean scores over time by group

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Group Zero</th>
<th>Group One</th>
<th>Group Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.17</td>
<td>.25</td>
<td>.13</td>
</tr>
<tr>
<td>2</td>
<td>.46</td>
<td>.37</td>
<td>.12</td>
</tr>
<tr>
<td>3</td>
<td>.39</td>
<td>.44</td>
<td>.24</td>
</tr>
<tr>
<td>4</td>
<td>.90</td>
<td>.65</td>
<td>.63</td>
</tr>
</tbody>
</table>

aN = 7.
Table 12B. Correlations between variables - single observation group\textsuperscript{a}

<table>
<thead>
<tr>
<th>IMI</th>
<th>Cognitive Dissonance</th>
<th>Cognitive Dissonance</th>
<th>Cognitive Dissonance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ideal</td>
<td>Real</td>
<td></td>
</tr>
<tr>
<td>Dominant</td>
<td>0.16 (p=0.20)</td>
<td>0.13 (p=0.25)</td>
<td>0.13 (p=0.25)</td>
</tr>
<tr>
<td>Hostile</td>
<td>-0.04 (p=0.42)</td>
<td>-0.17 (p=0.20)</td>
<td>0.06 (p=0.39)</td>
</tr>
<tr>
<td>Mistrusting</td>
<td>-0.012 (p=0.48)</td>
<td>-0.04 (p=0.43)</td>
<td>-0.04 (p=0.41)</td>
</tr>
<tr>
<td>Agreeable</td>
<td>0.05 (p=0.41)</td>
<td>-0.05 (p=0.40)</td>
<td>0.07 (p=0.37)</td>
</tr>
<tr>
<td>Nurturant</td>
<td>-0.05 (p=0.41)</td>
<td>0.03 (p=0.44)</td>
<td>-0.09 (p=0.33)</td>
</tr>
<tr>
<td>Affiliative</td>
<td>0.08 (p=0.35)</td>
<td>0.01 (p=0.48)</td>
<td>0.01 (p=0.49)</td>
</tr>
</tbody>
</table>

\textsuperscript{a}N = 28.
Table 13B. One-way ANOVA by dependent variable for teachers with high self-concepts

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>N</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>50</td>
<td>2/47</td>
<td>1.12</td>
<td>0.34</td>
</tr>
<tr>
<td>IMI-Hostile</td>
<td>49</td>
<td>2/46</td>
<td>0.91</td>
<td>0.41</td>
</tr>
<tr>
<td>IMI-Mistrusting</td>
<td>50</td>
<td>2/47</td>
<td>1.66</td>
<td>0.20</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>50</td>
<td>2/47</td>
<td>0.80</td>
<td>0.46</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>49</td>
<td>2/46</td>
<td>0.59</td>
<td>0.56</td>
</tr>
<tr>
<td>IMI-Affiliative</td>
<td>49</td>
<td>2/46</td>
<td>0.10</td>
<td>0.91</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>51</td>
<td>2/48</td>
<td>0.80</td>
<td>0.45</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>36</td>
<td>2/33</td>
<td>0.78</td>
<td>0.47</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>35</td>
<td>2/32</td>
<td>0.39</td>
<td>0.68</td>
</tr>
</tbody>
</table>

Table 14B. One-way ANOVA by dependent variable - teachers rated in the middle third of their faculties

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>N</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>34</td>
<td>2/31</td>
<td>1.72</td>
<td>0.20</td>
</tr>
<tr>
<td>IMI-Hostile</td>
<td>34</td>
<td>2/31</td>
<td>1.01</td>
<td>0.38</td>
</tr>
<tr>
<td>IMI-Mistrusting</td>
<td>34</td>
<td>2/31</td>
<td>1.84</td>
<td>0.18</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>34</td>
<td>2/31</td>
<td>0.45</td>
<td>0.64</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>32</td>
<td>2/29</td>
<td>0.68</td>
<td>0.51</td>
</tr>
<tr>
<td>IMI-Affiliative</td>
<td>33</td>
<td>2/30</td>
<td>0.49</td>
<td>0.62</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>36</td>
<td>2/33</td>
<td>1.79</td>
<td>0.18</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>34</td>
<td>2/31</td>
<td>0.03</td>
<td>0.97</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>34</td>
<td>2/31</td>
<td>1.41</td>
<td>0.26</td>
</tr>
</tbody>
</table>
Table 15B. One-way ANOVA by dependent variable - teachers rated in the bottom third of their faculties

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>N</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>32</td>
<td>2/29</td>
<td>0.25</td>
<td>0.78</td>
</tr>
<tr>
<td>IMI-Hostile</td>
<td>33</td>
<td>/230</td>
<td>1.00</td>
<td>0.38</td>
</tr>
<tr>
<td>IMI-Mistrusting</td>
<td>33</td>
<td>2/30</td>
<td>1.15</td>
<td>0.33</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>33</td>
<td>2/30</td>
<td>1.92</td>
<td>0.16</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>33</td>
<td>/230</td>
<td>1.07</td>
<td>0.36</td>
</tr>
<tr>
<td>IMI-Affiliative</td>
<td>33</td>
<td>2/30</td>
<td>2.77</td>
<td>0.08</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>30</td>
<td>2/27</td>
<td>1.74</td>
<td>0.19</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>30</td>
<td>2/27</td>
<td>0.42</td>
<td>0.66</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>27</td>
<td>2/24</td>
<td>3.11</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Table 16B. One-way ANOVA by dependent variable - teachers with three years or less teaching experience

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>N</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>26</td>
<td>2/23</td>
<td>1.37</td>
<td>0.27</td>
</tr>
<tr>
<td>IMI-Hostile</td>
<td>27</td>
<td>2/24</td>
<td>0.12</td>
<td>0.89</td>
</tr>
<tr>
<td>IMI-Mistrusting</td>
<td>27</td>
<td>2/24</td>
<td>1.20</td>
<td>0.32</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>27</td>
<td>2/24</td>
<td>0.68</td>
<td>0.52</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>26</td>
<td>2/23</td>
<td>1.07</td>
<td>0.36</td>
</tr>
<tr>
<td>IMI-Affiliative</td>
<td>27</td>
<td>2/24</td>
<td>0.10</td>
<td>0.90</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>26</td>
<td>2/23</td>
<td>0.43</td>
<td>0.65</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>24</td>
<td>2/21</td>
<td>0.55</td>
<td>0.59</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>23</td>
<td>2/20</td>
<td>1.52</td>
<td>0.24</td>
</tr>
</tbody>
</table>
Table 17B. One-way ANOVA by dependent variable - teachers with four or more years of teaching experience

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>N</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>74</td>
<td>2/71</td>
<td>0.23</td>
<td>0.79</td>
</tr>
<tr>
<td>IMI-Hostile</td>
<td>74</td>
<td>2/71</td>
<td>0.17</td>
<td>0.84</td>
</tr>
<tr>
<td>IMI-Mistrusting</td>
<td>74</td>
<td>2/71</td>
<td>1.03</td>
<td>0.36</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>74</td>
<td>2/71</td>
<td>1.92</td>
<td>0.15</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>72</td>
<td>2/69</td>
<td>2.71</td>
<td>0.07</td>
</tr>
<tr>
<td>IMI-Affiliative</td>
<td>72</td>
<td>2/69</td>
<td>1.05</td>
<td>0.35</td>
</tr>
<tr>
<td>Cognitive Dissonance - Ideal</td>
<td>73</td>
<td>2/70</td>
<td>0.89</td>
<td>0.41</td>
</tr>
<tr>
<td>Cognitive Dissonance - Real</td>
<td>74</td>
<td>2/71</td>
<td>0.24</td>
<td>0.78</td>
</tr>
<tr>
<td>Cognitive Dissonance</td>
<td>69</td>
<td>2/66</td>
<td>0.65</td>
<td>0.52</td>
</tr>
</tbody>
</table>

Table 18B. One-way ANOVA by dependent variable - for male teachers

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>N</th>
<th>df</th>
<th>F ratio</th>
<th>F probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMI-Dominant</td>
<td>47</td>
<td>2/44</td>
<td>0.47</td>
<td>0.63</td>
</tr>
<tr>
<td>IMI-Hostile</td>
<td>47</td>
<td>2/44</td>
<td>1.04</td>
<td>0.36</td>
</tr>
<tr>
<td>IMI-Mistrustting</td>
<td>47</td>
<td>2/44</td>
<td>1.58</td>
<td>0.22</td>
</tr>
<tr>
<td>IMI-Agreeable</td>
<td>47</td>
<td>2/44</td>
<td>0.63</td>
<td>0.54</td>
</tr>
<tr>
<td>IMI-Nurturant</td>
<td>47</td>
<td>2/44</td>
<td>0.90</td>
<td>0.41</td>
</tr>
<tr>
<td>IMI-Affiliative</td>
<td>46</td>
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