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**TEACHER STRESS: A LONGITUDINAL STUDY
OF MIDDLE SCHOOL TEACHERS' WEEKLY STRESS PATTERNS
DURING AN ACADEMIC YEAR (A HOLISTIC APPROACH)**

by

Virginia Van Pelt Brown

A DISSERTATION

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

DOCTOR OF PHILOSOPHY

Department of Teacher Education

1985

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1985

ABSTRACT

TEACHER STRESS: A LONGITUDINAL STUDY OF MIDDLE SCHOOL TEACHERS' WEEKLY STRESS PATTERNS DURING AN ACADEMIC YEAR (A HOLISTIC APPROACH)

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The purposes of this study were to (a) look at levels of stress as reported by full-time middle school teachers, (b) collect data on a year of teaching, and (c) analyze the results for patterns indicating stressful times of the school year and of stressful areas of teachers' personal and professional lives. While this approach represents only one of many perspectives from which to view teaching, it may provide some insight into the impact of teaching upon the individuals involved.

The intent of the investigation was to follow the lives of a group of teachers for one school year and to assess some admittedly complex phenomena in a rather uncomplicated manner. It was a longitudinal study designed to gather evidence of the nature and extent of personal and professional teacher stress in as unobtrusive manner as possible.

The research questions focused on four types of information. Could change in the life experiences of teachers be documented? If so, in what areas of their lives and during what times of the school year did these changes and/or periods of adaptation occur? Would there be any correlations between Professional Tasks or Personal Life and other subsets of the data?

The primary instrumentation was the Weekly Report consisting of (a) 13 subsets of Professional Tasks and five subsets of Personal Life, (b) two personal/professional conflict questions, (c) a weekly life style inventory, and (d) a health and medication report. For the Professional Tasks and Personal Life subsets, three Likert scales were used to elicit information on Energy Expended, Pressure, and Satisfaction.

A simple analysis was made of the weekly means of the teachers' responses. Each subset of Professional Tasks and Personal Life was plotted for the three Likert scales for each week of the school year and these graphs analyzed. Teachers reported above average commitments to the primary teaching tasks. Few weeks during the year were without unusual stresses. Professional areas of highest stress were grading and record keeping, and situations involving parents.

Through the study, teacher "folk wisdom" was confirmed, unexpected times of high stress were identified, and areas of further research were suggested.

DEDICATION

to my family and friends
with appreciation for their support,
especially
LOIS, BARBARA, KAY, SUSAN, and CHUCK,
who
always encouraged
and
"stayed the course"

ACKNOWLEDGEMENTS

The sharing of themselves by many people has not only enriched my personal life, but in a very dynamic ways made this research possible. People have shared unstintingly of their ideas, time, words of encouragement, deeds of thoughtfulness, and have given unqualified loyalty and support. To each person who has been a part of this study, whether identified by name or not, I give a very special thanks; for without you, it would not have been completed.

To my doctoral committee, without whom I could not have undertaken the study, a special thanks. Each member would disclaim going beyond the duty of advisors, but they deserve more credit than that, for they allowed me to pursue a dream and assisted in giving that dream substance and reality.

Charles Blackman, chairperson, for planting the idea of advanced graduate work and for his incredible patience and sustained support.

Samuel Corl, innovative educator, for nurturing my skills as a teacher by providing unique opportunities for personal and professional growth.

John Schneider, psychologist, for sharing his expertise but even more appreciation for his sharing of self.

Robert Ward, physician and expert in stress, for his personal support and for always finding time in his busy schedule to advise, critique, and assist.

Alan Menlo, University of Michigan education professor, for his nurturance of my skills in group process and for his gift of time and resources.

To my family without whom none of this would have been possible.

Edward and Bessie Van Pelt, my parents, who nurtured my character and insisted on qualities of excellence, integrity, perseverance, and questioning and who encouraged individuality in spite of the personal consequences.

Karen Bailey, daughter, who was often impatient of the research demands on her mother, but whose pride and understanding have been deeply appreciated.

Paula Brown, daughter, who did without but was unfailingly caring, and supportive and who understood the meaning and demands of my endeavor.

To my friends who give meaning to my life and who have taught me the true value of sharing and caring, a very special thanks for being themselves and for their many deeds of thoughtfulness.

Lois Frears whose contributions are infinite, each a special gift of herself and an act of thoughtful caring. She and her island retreat were the inspiration of some of the best of this research. Love, personified!

Susan Howard whose uncanny intuition led her to give so much at so many important and unanticipated times. Her warmth and encouragement were the source of much strength.

Kay Harner who had very mixed feelings about this project and its demands upon my time and energy, but who was always there when I needed her no matter how personally inconvenient.

Barbara Reeves, officially my typist, but without whom this effort would never have reached fruition, goes my undying gratitude for her friendship, her interest over and above the call of duty, and for a thousand and one facilitating acts of which she gives so selflessly. This belongs to you, too!

Susan Carter whose intelligence and gifts of time and talent were responsible for enhancing my efforts and for keeping me going when it was hardest and for all those hours of sharing and brainstorming.

Jerry Smith, colleague and friend, for his almost daily words of conviction that, of course, I would finish! and for his unconditional faith in me. He programmed me for success and supported me when I was discouraged.

Benjamin and Joie Thomas who have done so many things to keep my world in order by their love and caring and who have supported this project with their enthusiastic interest.

Lorna Frears Bridge, Canadian friend and librarian, for her genuine interest and solicitude and for rescuing my literature review by long hours of looking up references not available at MSU.

Maribel Hanson, retired Canadian teacher and friend, who spent hours discussing Canadian and American education and who grew with me in understanding and managing of our personal stress.

Carol Beals, physician, doctor "extra ordinaire" for her encouragement, for her special care, both personally and professionally, and for being willing to monitor my health during the "long haul." Thanks to her, my health is better now than it was when I started this project—in spite of a seige with cancer!

Dennis Pataniczek, one of the "three Musketeers," for his friendship and caring in person and via long-distance, for his constant support and encouragement, and for his creative ideas which enrich my teaching.

Paula Stein Gaylord, another of the "three of us," for the hours she listened and advised as I brainstormed this dream and for her affection both in person and from Pennsylvania.

Gloria Bouterse, nurse and friend, for her teaching during classes on medical self-help and for encouragement in the early phases of the study.

Diane and Jim LeVande for modeling scholarly endeavors and their deeply appreciated acts of support

To my education colleagues who have, in very individual ways, contributed to this study.

All my former students, about 2500 of them over the past 30 years, for teaching me how to be a better teacher, for their continual questioning, and for keeping me young with their exuberance, their 14-year-old attitudes and views of the world.

The teacher participants who, for obvious reasons, cannot be named individually, but who made the whole research project a success by their weekly interest in and commitment to it. My heartfelt thanks.

To non-participating colleagues, especially administrators, for permitting me access to their staffs.

And to the numerous others who have made important contributions to this effort. Each piece you contributed made the whole so much better.

Paul Liu who took time from his medical studies each week to collect the data from the teachers and who also spent hours sharing.

Susan Battenfield who spent a long, hectic weekend as the deadline approached doing not only meticulous proofreading but also a superb job of editing.

Lynn Ezell, former student, for her painstaking work of checking data and drawing demanding charts.

John Bonnen, former student, for his care of me and my home while in high school and for the hours he spent checking and calculating those pesky data numbers.

Ann Schneider for her assistance in preparing all those charts of means.

Jan Vredevoogh, statistician, for her assistance with the multitude of data and for her patience with my lack of statistical sophistication.

Fritz Briscoe for the creativity and effort he spent in convincing me to become a doctoral candidate.

Harriett Gillum, school nurse, for volunteering her sustained interest and all those blood pressure readings

May what each of you have given return to you many fold!

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CHAPTER I

INTRODUCTION

In recent years, stress has become a popular topic for the media and the average citizen as well as the researcher. When this study was initiated, however, scientific research into the nature of stress and its consequences was just beginning to receive added attention and was in an early, dynamic state of development. Since then, progress has been made in understanding and researching the many dimensions of stress. Stress has been studied from the perspective of different disciplines, different theories within each discipline, or combinations of disciplines, e.g., medicine, psychology, sociology, environment, or occupations. A great deal of attention has been given to methods of identifying and relieving stress. The goal of this study was to document and identify multiple dimensions and levels of the personal and professional stress of classroom teachers.

Such knowledge would not only provide insight into the experience of teaching, but might be of assistance in seeking solutions to some of today's educational concerns. Certainly, the work experiences of teachers, including levels of stress, should be considered when improvements are sought for American public education. Needed changes in expectations and demands ought to be built with a thorough knowledge of the current situation. Failure to do so might prove counterproductive.

Nature of the Study

The purpose of this nine-month study of teacher stress levels was to monitor selected professional and personal aspects of the participants' lives. The study differs in important aspects from most stress research in that it was designed to follow a group of teachers for a school year and monitor on a weekly basis multiple aspects of their lives. The nine-month length of the research is in contrast to "single point in time" research (Cooper & Marshall, 1977). Self-report was the primary source of data. This investigation is multidisciplinary, covers a complete academic year, contains many variables of both personal and professional life, and includes important aspects of the whole person.

Value of the Study

Little research has been done concerning the experience of teaching on America's teachers or of the consequences on their physical and mental health. While this study does not deal directly with teachers' health, it is hoped that it will provide some data concerning teachers' self perceptions of multiple aspects of their jobs and of their personal lives. Knowledge concerning the most stressful times of the school year should be useful in planning school calendars, should help in the planning for classroom instruction, and should assist teachers in handling the stress of students as well as their own stress. Information concerning the most stressful aspect of the teaching job could be of value in anticipating and planning to meet these demands on the part of teachers, administrators, and consultants. Until the data are collected, their potential usefulness can only be hypothesized.

The study has the potential of being of use and of interest in many fields and as suggestions for arenas for further study. Certainly all members of the educational community ought to find some significance in the data. Colleges of education might gather new concerns to include in undergraduate study and new

issues to raise concerning graduate and professional development activities. Teachers' organizations, especially the National Education Association and related units of the labor organization, ought to be interested in the outcomes and perhaps in further researching aspects of the study. School boards and administrators might find the results useful in planning school calendars and scheduling events as well as assisting in understanding the experiences of their teachers and, perhaps, the experiences of students. The results might be of interest to health and medical researchers, health and life insurance groups, workers' compensation boards, and even social security officials. Also, teachers involved in the study should gain some insight into their personal and professional lives as a result of self-monitoring for nine months. Finally, this study should bring teachers further into the arena of stress research and thus provide more accurate information on the demands of the teaching task. When that has begun to be understood, then the children of this nation and their stresses may be studied.

Types of Stress Studies

Occupational Studies

Many groups have been targets for occupational stress research. In his book The Western Way of Death (1974), Carruthers summarized a number of stress studies relating to occupational groups. He reported on the research on race car drivers by Taggart in 1969 and the studies made in Sweden by Levi at the Laboratory of Clinical Stress Research in Stockholm on stress in clerical and industrial settings. He summarized the result of a five-year study of bus drivers and conductors in London, the stress of public speakers during their speeches, the effects of movies and television on physical stress indicators, and the early study of accountants by Friedman and Rosenman before and during high demand

periods. Monat and Lazarus (1977) included in their book Stress and Coping the result of a study of intensive care nurses by Hay and Oken. Cooper and Marshall (1977) devoted a book to the discussion of executive stress. Other studies have been made on such groups as air traffic controllers (Jenkins, 1979), pilots (Carruthers, 1974), and commuters (Lundberg, 1976).

Duration of Studies

The time periods covered by occupational studies have varied from those using a simple questionnaire, requiring only a few minutes to complete, to others for which data were collected over a number of years. Examples of these differences in time can be found in the studies reported by Carruthers (1974). Brief segments of time were involved in the research measuring the stress of public speakers using heart monitors and in the study of the effects of movies and television on physical stress indicators of the viewers. Examples of research collecting data for several days were Taggart's investigation into the stress levels of race car drivers and Levi's study of clerical and industrial workers. The Friedman and Rosenman (1977) study of accountants covered several months which included the time before and during high demand and time pressure for the completion of tax forms. The English study of London bus drivers and conductors lasted five years. Studies of several months or years' duration are fewer than those involving a few moments, hours, or days.

Educational Setting

Introduction

As one reviews the occupations and tasks that have come under serious research and investigation, it is apparent that comparatively little study has been made of stress as it affects American public school teachers. Teachers work with our nation's most important resource--our children. Whatever impacts

the nation's children influences the nation's future well-being (Bell, 1983). While most of a child's time is spent outside of school, the second largest amount of time is spent in school. Yet little is known about the stress in the classroom for either students or their teachers.

The average classroom contains a variety of innate sources of stress. Class functioning, expectations, types of instruction, and human interactions change continuously as a regular part of schooling. Students are expected to be cooperative at all times, no matter how they feel, and are expected to attend to teachers and classroom instruction in spite of personal needs. Doing the assignments, whether in school or as homework, may often make demands on time, knowledge, or skills of students which have the potential to increase students' stress levels. Everyone acknowledges the stress of grades, tests of all types, and the ritual of receiving report cards. However, there are additional situations that add to the levels of stress in the classroom.

One way to study stress in the classroom is to examine it from two primary sources acting independently and interactively. The first of these is the stresses brought into the classroom by the students, and the second is the teachers' stress stemming from the multiple demands of their job.

Student Stress

Today's children and youth appear to be experiencing more potentially stressful situations and exhibiting greater symptoms of stress:

Violence is rising among the young, both in school and out. School vandalism alone costs hundreds of millions of dollars each year. There has been a rapid rise in runaways and in suicide. Crime rates are spiraling. There have been huge increases in the number of unwed mothers, an epidemic of sexual disease, widespread use of drugs, and the spread of various occultisms. (Debenham & Parsons, 1978, p. 444)

Reports of child abuse increased over 60,000 cases between 1974 and 1976 (Newsnotes, 1978b). A number of writers have reported on aspects of this situation: violence and vandalism in schools (Bayh, 1978; S. Neill, 1978; G. Neill, 1978; Mayer & Butterworth, 1981); pregnant students (Hendrixson, 1970); drugs, including alcohol and smoking (G. Neill, 1977); and youth suicide (Wynne, 1978).

The home environment of many students adds potential stress to their lives. More women continue to enter the work force which means fewer mothers are at home during some of the hours children are not in school (G. Neill, 1980a). The divorce rate continues to rise with increasing numbers of children experiencing adjustment to single parent homes (or joint custody) which negatively impacts the child's school experience (Conyers, 1977). In some instances, home attitudes concerning schools place the child in conflict between the values and expectations of teachers and those of parents (Niensted, 1979). These and similar evidence suggest that more of the nation's youth are exhibiting more symptoms of stress. Thus, many children are coming to school with physical and emotional needs that must be met. If those needs are not met, they interfere with learning and diminish children's successful participation in activities of the school.

Events in every classroom are influenced by the feelings and actions of students and teachers. The composite values, needs, and feelings of students in part determine the quality of the learning experience. The stresses of students contribute to the totality of the experiences and stresses of teachers.

Teacher Stresses

Teachers themselves are confronting increasing demands. The present situation would be difficult enough if teachers only had to deal with the

increasing diversity of their students and these students' needs. Teaching is an innately difficult and complex task which makes heavy demands on the teacher.

Throughout the day a teacher must deal with a huge catalogue of expectations, rules, and duties. She must sign admission slips, issue hall passes, take attendance, make announcements, upbraid tardiness, supply four or five pencils, collect late assignments, disarm spitballers, and frown down screechers. At the same time, she must (and wants to) acknowledge each student, custom tailor her compliments, encourage the timid, guide the bold, individualize instruction, implement behavioral objectives, and foster creative thinking. She wants to experiment, to be innovative, to motivate her students. Meanwhile, she must administer discipline fairly and consistently, using her knowledge of the wayward students' psychological past and remembering the needs of the other students. Sometime during each day she is expected to accept her share of at least two of the following: bus duty, lunch duty, hall monitoring, ditto making and duplicating, paper grading, homeroom duties, and the completion of the state attendance registers.

She must help colleagues devise lesson plans, assemble materials, and clean up her room. Each week she must talk with parents, sponsor extra-curricular activities, and attend department meetings, faculty meetings, and committee meetings. (Edgerton, 1977, p. 120)

In addition, as the last fifth of this century begins, teachers face increasing expectations on the part of the public.

In the scramble to reestablish the authority of the schools, we now have movements of accountability, minimum proficiency standards, the teaching of fundamentals, the return to the basics. (Divoky, 1979, p. 578)

Teachers are also expected to provide meaningful learning experiences for a widening range of student abilities. Public Law 94-142 and Section 504 of the Rehabilitation Act of 1973 required:

. . . that by September, 1978, each handicapped child must be provided all services necessary to meet his/her special education and related needs. (Newsnotes, 1978b, p. 433)

This means placing many of these "special needs" students in regular classrooms all or part of each school day. At the same time, there is increasing concern for the needs of the gifted and talented (Thomas, 1976). If this is not enough, much of the blame for the perceived decline in national assessment test scores falls on the shoulders of the classroom teacher (Yaffe, 1980). Society continues to look

to the schools to solve problems that other institutions cannot or will not resolve (Bell, 1983). Historically, the demands of teaching have been heavy, but the load continues to grow as schools and their teachers wrestle with increasing demands and expectations.

As the public appears to be demanding more of its teachers and schools, these same teachers and schools face other problems outside of their control. The U.S. birth rate declined by 3.5 million between 1970 and 1977 as reported by the U.S. Census Bureau (Newsnotes, 1979). This decline has resulted in the closing of classrooms and even of whole schools. In addition, during the past decade, the Supreme Court and other federal courts have mandated busing to eliminate segregation (Eash & Rasher, 1977). At the time this research was initiated, the nation's tight economic situation, especially inflation and the related taxpayer revolt, was necessarily reflected in the day-to-day functioning of the schools in such items as fewer teaching supplies, fewer course offerings, and slowly increasing class size.

Another problem is that options open to teachers have declined in the past decade. In February, 1977, Phi Delta Kappan (Newsnotes, 1977b) reported that the oversupply of teachers in the United States had already exceeded over 30,000. The article went on to state:

Several factors account for the oversupply, the United States Office of Education says. These include decline in enrollments, rising costs which limit reductions in pupil-teacher ratios, and decreasing turnover due to limited job alternatives in a tight money market. (p. 513)

The declining birth rate and the tight economic situation have effectively limited teachers' job opportunities and job mobility. New teachers, those lucky enough to get teaching jobs, find themselves stuck in the first district willing to hire them. In some districts, tenured teachers have lost their jobs because courses such as art, music, foreign language, and even physical education have

been cut back or eliminated from the curriculum. Others, more fortunate, perhaps, have been reassigned to teach classes for which they do not feel adequately prepared.

In addition to the loss of job mobility, teachers lack high public esteem and are paid comparatively low salaries. Phi Delta Kappan (Newsnotes, 1977b) reported the findings of the U.S. Department of Labor that "... public school teachers led the nation in moonlighting" (p. 788), a statement corroborated by G. Neill (1980a) and Wisniewski and Kleine (1984). While the salaries of teachers have improved during the second half of the century, teachers' pay remains relatively low (Bell, 1983) and has not kept up with the rise in inflation between 1970 and 1980 (Newsfront, 1981). Jarvis (1979) gives a pointed example:

... (the) highest paid faculty member in a New England school after 44 years of teaching makes less money than the average graduate of either Harvard Law School or the Harvard Business School in the first year of work. (p. 504)

He further states that the teacher's day is not hers/his to control. While a businessperson may take a prolonged lunch, have a secretary purchase the family's Christmas presents, leave work early for a golf game, or freshen his/her perspective by a business trip, a teacher has none of these options. He also points out that the way a society spends its money shows what it values, and teachers are used and exploited.

Teachers are beginning to show some evidence of the stress of the additional demands made upon them and by their diminished options. Elliott and Manalov (1977) discussed the "skyrocketing" monetary cost of teacher absenteeism and the cost of the loss of instructional time for students. Another symptom of increasing stress on teachers is the increase in "problem" drinking among teachers (Russell, 1979). There is increasing concern for teachers' mental health (Roy, 1981). "The nature of the teaching profession contributes to certain

mental health pressures. Stress seems to be a common health problem of teachers" (Miller & Wiltse, 1979, p. 31). In a study by Saville (1981), of 1,468 Nevada teachers, a majority reported experiencing stress-related psychological illnesses during the previous four years.

How many human interactions and relationships do teachers experience in a school day? week? month? year? Do these exceed the optimum for effective communication and fulfillment of obligations? Span of control, a concept applied in business management (Dale, 1973; Drucker, 1974) limits the number of individuals that managers can successfully supervise only four to eight. Span of control refers to downward, upward, and side-ways relationships. Drucker points out that " . . . in designing managerial jobs it is as important to think through managerial relationships and to make sure they do not exceed the individual's grasp as it is to think through specific functions" (p. 413). Does this concept have any relationship to the number and quality of interactions teachers experience? In a school setting, upward responsibilities include administrators and parents, and downward accountability applies to students and any aides for whom a teacher is responsible. Examples of side-ways relationships include other teachers, consultants, librarians, custodians, and aides, all of whom are important to the successful functioning of a teacher, but for whom the teacher is not directly responsible. Are the number and quality of the relationships, responsibilities, and interactions expected of teachers reasonable? Or do they exceed desirable limits as to number and quality, and, perhaps, comprise a significant factor in teacher stress overload?

What is happening to teachers as a consequence of the changing educational scene? How well are the nation's teachers handling these increasing expectations, needs, criticisms, and limitations on their professional lives? In the past, teachers have been good health and life insurance risks. But is the

situation changing? In 1979 the National Education Association spent part of its national Representative Assembly in Detroit on the topic of teacher stress. Also in 1979, the national conference of the American Personnel and Guidance Association offered workshops on teacher stress, calling teaching the second most stressful occupation in the United States. Yet little is known from research about the nature and extent of teacher stress and its impact on job satisfaction, personal life, physical health, emotional or mental health, and life expectancy. Such issues will be explored in this study.

Design Focus

Introduction

At a time when many are blaming the teachers of America for the decline in the quality of education, the decline in test scores, and the failure to deliver the schooling desired, it seems imperative that all facets of the educational experience be fully understood before remediation can be successful. These facets include gathering concrete, relevant data concerning the experience of teachers and teaching. To add to or alter the expectations of teachers without fully understanding their job description as it exists would be short-sighted. Everyone seems to have some opinion concerning the role of the teacher, but little research evidence exists which encompasses the many facets of the whole job. Parts and pieces of the teaching role and the teaching experience have been researched. However, few have attempted to look at the totality of what is expected and what is experienced by American teachers.

In the absence of previous research and research models pertaining to the total teaching experience, it seemed wise to follow, in part, the advice of Dr. Nikolaas Tinbergen, 1974 Nobel Prize winner in Physiology and Medicine. He advised his colleagues to use the old method of "watching and wondering" first

developed by primitive humans. Tinbergen and his wife used this approach in their research on autistic children for which they won the Nobel Prize. "To watch and wonder," he said, "must come before theoretical interpretation" (in Monat & Lazarus, 1977, p. 141).

The purpose of this study, then, was to (a) take a beginning look at teachers' reports of levels of stress as perceived by full-time middle school teachers, (b) collect data on a year of teaching experiences, and (c) analyze the results for patterns indicating stressful times of the school year and stressful areas of teachers' personal and professional lives. While this approach represents only one of many perspectives from which to view teaching, it may provide some insight into the impact of teaching upon the individuals involved.

The intent of the research was to follow the lives of a group of teachers for a school year and to assess some admittedly complex phenomena in a rather uncomplicated manner. It is a longitudinal study designed to gather evidence of the nature and extent of personal and professional teacher stress in as unobtrusive manner as possible.

Profile of a School Year

A necessary first step toward understanding the experience of teaching is to collect data from teachers concerning their perceptions of their jobs. Others have presented teachers with questionnaires to solicit information, but these have been limited to a one-time recall. Given the nature of the many forces affecting students and teachers, more in-depth information could add insight into the real world of the classroom. The most desirable time period over which to collect information would be an entire school year which would give a total picture of a discrete portion of the teaching experience. During such an interval, it ought to be possible to secure some indication of the changes

occurring between September and June. Collecting data for the academic year would add another dimension to the understanding of the experience and role of the teacher.

Indices of Teacher Stress Levels

The goal of this investigation was to gather information regarding perceived teacher stress. For one academic year, teachers were asked to give regular feedback on their professional and personal lives which would provide not only a profile of their experiences during the school year but also some information concerning their feelings about these events. The instrumentation would be designed to reveal changes in levels of energy committed to personal and professional facets of their lives and to elicit some indication of their feelings about those aspects of their lives.

Instrumentation and Analysis

As no model for this type of research was found, questionnaires and inventories were created and/or adapted to fit the needs of the study. The Weekly Report was the primary data collecting instrument used (see Appendix H). In September, at the onset of the study, teachers were asked to complete a number of inventories, only two of which were basic to this report: a demographic data questionnaire (see Appendix C) and a life style inventory (see Appendix D).

The primary analysis was the computation of weekly means for the various subsets of the Weekly Reports. The demographic data were summarized and a few sample sets of Weekly Reports submitted to Pearson Product Moment Correlation coefficients.

Weekly Reports

The Weekly Reports were designed to take about 10 minutes of each teacher's time each week. The first part of the Weekly Report contained 17 personal and professional items to be quickly checked on three scales. According to Pelletier (1977), Americans have been conditioned to ignore stress signals, and this cultural pattern may present a problem in the research. For the purposes of this study, it is assumed that individuals are aware of their involvement and feelings concerning the items on the checklists. Awareness was indicated for each item on a scale as either involving or not involving energy. If energy were involved, scales were used to assess the level of intensity. The psychosocial meaning of each term was then indicated by two five-point scales, one entitled "satisfaction" and the other "pressure," as well as two questions on the conflict between personal and professional lives. The second part of the Weekly Report monitored health and life style events which are important clues to stress levels. Teachers reported on sleep patterns, exercise patterns, alcoholic beverage intake, and recreational and social activities. Changes in diet, smoking, alone time, and the nature and use of one's personal support system were noted. Daily notes concerning health were requested along with a list of medications taken each week. Sick days were also recorded.

Research Questions

Seven research questions provided the framework for the study.

1. Do middle school teachers' reports of energy expended, levels of satisfaction, and pressure on selected subsets of the **professional** teaching task (Professional Tasks) change over an academic year? If so, how?
2. Do the teacher participants suggest times/periods of potential stress overload vulnerability by the patterns of their responses to the **professional** subsets (Professional Tasks) of the Weekly Reports? If so, how and in what way(s)?

3. Do the teacher participants suggest areas of potential stress overload vulnerability by the patterns of their responses to the **professional** subsets (Professional Tasks) of the Weekly Reports? If so, how and in what way(s)?
4. Do middle school teachers' reports of energy involved, levels of satisfaction, and pressure on selected subsets of their **personal** life (Personal Life) change over an academic year? If so, how?
5. Do the teacher participants suggest times/periods of potential stress overload vulnerability by the patterns of their responses to the **personal** life subsets (Personal Life) of the Weekly Reports? If so, how and in what way(s)?
6. Do the teacher participants suggest areas of potential stress overload vulnerability by the patterns of their responses to the **personal** life subsets (Personal Life) of the Weekly Reports? If so, how and in what way(s)?
7. How do changes in the reports of exercise, alone time, alcoholic beverage intake, medication and drug use, and significant life events compare with changes in the reports of Energy Expended, Pressure, and Satisfaction for Professional Tasks and Personal Life?

Recruitment

In anticipation of this study, about 30 teachers, counselors, and resource teachers from two local middle schools were recruited at the end of the 1978-79 school year. Another group of teachers indicated interest, but preferred to wait until more details of the project were available before they would make a commitment to the study. During the summer, it was decided to limit the study to full-time classroom teachers in the two schools. This meant that part-time teachers, counselors, reading teachers, and resource teachers would be dropped from the study. This limited the number of potential participants to 47, of which 33 originally volunteered. For various reasons, the number dropped to 28 by the first of October, and 24 contributed Weekly Reports to the end of the year.

Further Support from the Literature

Introduction

The scientific study of stress is in a period of evolution, with no clear consensus among experts concerning definitions. Lazarus (1966, as quoted in 1977) explained the situation as follows:

It is wise to use "stress" as a generic term for the whole area of problems that includes the stimuli producing stress reactions, the reactions themselves, and the various intervening processes. Thus we can speak of the field of stress and mean the physiological, sociological, and psychological phenomena and their restrictive concepts. It could then include research and theory on group and individual disaster, physiological assault on tissues and the effects of this assault, disturbances or facilitation of adaptive functioning produced by conditions of deprivation, thwarting or the prospects of this, and the field of negatively toned emotions such as fear, anger, depression, despair, hopelessness, and guilt. Stress is not any one of these things, nor is it stimulus-response or intervening variable, but rather a collective term for an area of study. (pp. 2-3)

Pelletier's Comments

Dr. Kenneth R. Pelletier, author of Mind as Healer, Mind as Slayer (1977), and Director of the Psychosomatic Medicine Center of Gladman Memorial Hospital, Berkeley, views stress from a slightly different perspective. His work has a direct relationship with the pioneer work of Dr. Hans Selye, Director of the Institute of Experimental Medicine and Surgery at the University of Montreal. Pelletier wrote:

Stress is simply not the result of factors that cause you worry, anxiety, or strain. Actually, you are under stress each time you are required to adapt or adjust to personal, social, and environmental influences, positive or negative. Adaptation is necessary all the time, in varying degrees. It is essential to personal development, progress, and simply adjusting to the business of daily life. However, when the amount of adaptation required of you by circumstances in your life becomes excessive, then the resulting stress can become potentially damaging to your health. (p. 83)

He went on to emphasize that "both positive and negative changes elicit an adaptive response. It is not just the setbacks in life that require adaptation" (p.

84). In his book, he established and explained in succinct detail the mind-body or psychosomatic connection which is the basis of stress research. In addition, he warned of the difficulty in establishing a cause and effect relationship between stressors and manifestations of stress:

To establish with certainty that a psychological predisposition or any other single facet is the basis of a disorder, a researcher would have to account for all possible factors in the disease process. The difficulty of establishing an unequivocal cause-and-effect relationship between psychological events and disease makes this a particularly thorny issue in psychosomatic research. (p. 41)

He prefers to consider the relationship in terms of a concept taken from cybernetics:

This is the concept of the "feedback loop," in which one event triggers another event which, in turn, triggers another, and in which any of these can be seen as either cause or effect depending on an arbitrary break in the loop. A feedback loop system tends to be stable and self-regulatory, but a disruption in the system can be amplified through its effects on other components of the system. (p. 42)

Whatever affects either sub-system, whether psychological or physical, affects the whole system and has the potential to defuse the interactions or to intensify the responses or interactions.

Given that stress is the response of the organism to the need for adaptation or change, physical and/or mental, Pelletier explained its role:

First of all, every individual operates at a level of tolerable, non-pathological stress, which actually contributes to a heightened functioning and performance. This healthy equilibrium can be upset by a wide variety of psychological, physical, and environmental factors. (p. 39)

Many of the major environmental triggers of stress are readily apparent. Some of the more general stressors include air and noise pollution, overcrowding in urban living situations, deadline pressures on the job, the constant sense of competition in both work and domestic life Negative events such as financial difficulties, a death in the family, a violation of the law, and a foreclosure on a loan are also immediately recognizable as severe stressors. Stress may also derive from a particular individual's relationship with a difficult boss, a problem child, a friend, a lover or mate However, there is a host of other stressors which affect people

equally strongly, but which may not be evident at the conscious level. Many of these are reactions to stress which may become stressors in their own right. Among these are a sense of free-floating anxiety, inexplicable variation in eating and sleeping patterns, muscle tension or spasm (pp. 4-5)

Stress and Health

As indicated earlier, excessive stress may lead to health problems, physical or psychological. Monat and Lazarus (1977) pointed out three possible links between stress and illness.

The first is by the disruption of tissue function through neurohumoral influences under stress. In other words, under stress there are major outpourings of powerful hormones creating dramatic alterations in bodily processes, many of which we sense as in the case of a pounding heart, sweating, trembling, fatigue, etc.

A second way is by engaging in coping activities that are damaging to the health; for example, by trying to advance occupationally or socially by means of a pressured life style, by taking minimum rest, by poor diet, heavy use of tobacco or alcohol, etc. Intrinsically noxious styles of living can increase the likelihood of disease by damaging the tissues of the body.

A third way stress might lead to disease is by psychological and/or sociological factors which consistently lead the person to minimize the significance of various symptoms. That is, a person may infrequently interpret pain or illness symptoms in such a way as to neglect to seek medical aid when it is crucial. Avoidance of doctors or of medical regimens can come about as a defense mechanism; for example, denial or merely because the individual is of a culture or subculture that values stoicism. Such avoidance can be fatal in certain circumstances, as in the case of heart attack victims who delay seeking medical attention, thereby decreasing their chances of survival. (p. 5)

Some Definitions

Stress

In view of the state of disagreement among the experts in the field of stress (Monat & Lazarus, 1977), definitions have been assumed for this study which fit the setting and purpose of the study, but which are in keeping with the work of Selye and Pelletier. Except in the occasional instances when stress will be used to refer to the whole field of stress study, **stress will be used to refer to**

an individual's adaptive response to internal or external stimuli, either physical, psychological, social, or environmental, or any combination of these. Inherent in this definition is the belief that adaptation requires adjustment or some type of change. (This definition extends the stress continuum to include strain.)

Instead of using the term stress to represent the condition wherein an individual is experiencing stress overload, the term stress will be used with qualifiers such as low or high stress. Since stress, by definition, is a necessary condition of life and lack of stress means death, as does too much stress, it is, therefore, the level of stress which is the difference between physical and mental health and physical and mental illness or diminished function.

Energy

For the purposes of this study, the term **energy** or **energy expended** is used to denote the awareness of or the actual involvement with a task or "event." If the teacher were not aware of participating, either in thought or actuality, in a subset of the data, then it was assumed that there was no involvement.

Pressure

Pressure, while not defined for the teacher participants, may be a synonym for stress (Cooper & Marshall, 1977) and/or an indication of the individual's feelings concerning levels of demand.

Satisfaction

Satisfaction, again not defined for the teacher participants, was felt to be one measure of the positive or negative affective feelings concerning an event, experience, situation, or demand.

Life Style

Life style is the totality of the regular, habitual aspects of an individual's life, especially such things as patterns of social life, recreation, physical activity, eating habits, sleeping habits, and living arrangements. The relationship of life style to stress is one aspect of stress now being researched. Heart patients are asked, as part of their rehabilitation, to change their life styles in such things as eating patterns, exercise, and compulsive work habits.

Research Constraints

Research such as this study which does not pursue the traditional pattern of investigation of a single topic, issue, or focal point, but which endeavors to encompass a much larger field of investigation, naturally raises more questions than it provides answers. Likewise, it makes more assumptions and its results have strictly limited generalizability.

Assumptions

1. Teachers, like all humans, experience stress.
2. Teachers' stress can be measured by self-report (psychologically) and physiologically.
3. Doing field research in the actual teaching environment will involve all types of intervening variables for which there can be made no allowances.
4. The teacher functions in the classroom as a whole person (including health, values, beliefs, life style, personality, previous life experiences, age, sex, education, etc.); therefore, evaluation must be in terms of the whole person.
5. Teacher stress will vary during the school year.
6. Teachers will vary greatly in health, life style, values, previous life experiences, etc.
7. Teachers, to some degree, separate school stress from personal life stress.

8. Teachers who volunteer for the study will be serious and thoughtful in response to the elements of the study.

Limitations

The study and the results of the study will be limited significantly by the following.

1. The inherent difficulties with "whole person" research--the complexity of the data, etc.--are limiting.
2. No model for this type of research exists in education, so pieces have had to be drawn from a variety of sources.
3. All teachers have volunteered to participate in the study and are known to the researcher and vice versa.
4. The study, especially the Weekly Reports, may create awareness within the participants which may lead individuals to begin to change habits.
5. The research sample is small-- $N = \pm 25$.

Delimitations

The scope of the study has been limited in the following ways.

1. In the interest of time and expense, only one group (one school system and one educational level) of teachers has been included.
2. All of the teachers are full-time middle school teachers (grades 6, 7, 8) in a single, suburban school district.
3. The type and extent of data secured had to be limited so that the time commitment of the participants would be minimal.

Potential Significance of the Study

It is anticipated that the study will have the following outcomes.

1. Because of the longitudinal nature of the study, a pattern for the academic year may emerge in terms of professional tasks as well as in indices of teacher levels of stress.
2. Significant data may be derived from
 - a. comparisons between profiles ("peaks and valleys") of profiles;

- b. relationships, either positive or negative, between sets and subsets of self-report data, especially the Likert scale; and
 - c. patterns revealed in the data.
- 4. The study will give further indication of the value of field studies, "whole person" research, and/or "watch and wonder" approaches.
- 5. The study may provide other perspectives on the total teaching task.
- 6. Results may suggest areas for further educational concern, including
 - a. status of teacher health--physical, mental, and/or emotional,
 - b. role of teacher load and job expectations,
 - c. need for teacher support systems,
 - d. need for additional assistance in handling job stress,
 - e. impact of teacher stress on students and schools,
 - f. relationship of stress to teachers' leaving the field,
 - g. relationship of teachers' life styles and personalities to stress, and
 - h. importance of personal conflict information as it relates to pressure, work setting, and family.

Summary

The purpose of this study was to monitor the experiences of middle school teachers for a full academic year and to assess the teachers' self reports for changes that might indicate times of the year or areas of their lives where they might experience high levels of stress. In addition to completing several baseline questionnaires at the beginning of the school year, the teachers completed Weekly Reports for each week school was in session. The Weekly Report, which was the primary research instrument, consisted of the following major sections: (a) three Likert scales to measure 13 facets of the teaching task, (b) three Likert

scales to collect data on five aspects of the teachers' personal lives, (c) a series of questions soliciting information about life style, and (d) questions indicating health status and physical symptoms. The data would be evaluated for changes and for clues indicating relationships or lack of relationships among the many subsets of the Weekly Reports. It was anticipated that such information might provide knowledge concerning teachers' perceptions of their jobs and clues as to levels of personal and professional stress, especially stress overload.

After presenting a review of the literature in Chapter II, the methodology used and results of the research will be presented in Chapters III and IV, respectively. The study will close with Chapter V which presents a summary of the results, suggested topics for further study, and questions raised about teaching and teachers.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

This chapter contains a review of the literature and related research upon which this study of teachers' weekly self-report of levels of stress is based. After an explanation of the genesis of this investigation, the literature review, which was the basis of this study, is divided into three major sections: (a) stress theories and concepts relevant to this study, (b) studies influencing the design of the research and studies of American and British teacher stress, plus (c) a brief miscellaneous section.

Dilemma in Stress Studies

The lack of consensus among the experts in the study of stress results in confusion, conflicting concepts, disagreement about definitions and issues, and even the recommendation that the stress concept should be dropped as a scientific concept (Mikhail, 1981; Mason, 1975a). Others find "stress a useful concept which should be retained despite its present ambiguity The expectation of those (who hold this) position is that future theoretical growth in the stress field will sharpen the meaning of the concept" (Mikhail, 1981, p. 9). After also reporting that due to the problems with terms, some researchers suggest abandoning the term stress, Monat and Lazarus (1977) report that others argue "for using 'stress' as a general label for a large, complex, interdisciplinary area of interest and study" (p. 2). Whether one considers the topic to be primitive (Crisis in Stress Conference, 1977), ill-advised and overused (Blaine,

1975), ambiguous (Mikhail, 1981), confusing (Mason, 1977), research and interest in human stress continues, and the term's definition and careful research present formidable obstacles to the human stress investigator. Cooper and Marshall (1977) point out that "one main problem currently facing research workers in the field of stress is that there is no integrated framework or conceptual map of the area" (p.16). Researchers working in the traditional mode confront a difficult task. To the researcher seeking to investigate data across disciplines, using the whole-person concept and/or to collect data over time, the dilemma is exceedingly challenging.

In the absence of agreement among researchers in one discipline (not to mention the obstacles among those of differing disciplines), the creator of each study of necessity chooses those theories, concepts, definitions, and methods that best suit the research at hand, knowing as he/she makes these choices, many aspects of each study will be open to legitimate questions.

Modern research designed to integrate aspects of several disciplines counters the direction of 1000 years of Western thought. Pelletier in Mind as Healer: Mind as Slayer (1977) explains:

Since the Middle Ages, man has been divided into the separate aspects of body, mind, and spirit. Medicine was administered by "bleeders" and "bile examiners" and concerned itself with man's physical welfare. Mind was tended by occult sciences such as magic and alchemy, and the spirit was the province of orthodox religions. Western civilization has historically tended to emphasize the individual parts of man rather than seeing him as an integrated whole. This split is still very evident in the present structure of healing professions. Physicians are dedicated to the treatment of the body; psychiatrists and psychologists are concerned with healing the mind; and yet a third group, the clergy, is attendant on the soul or spiritual healing. While other societies have created healing rituals which involve the whole person, as well as the whole family and social group, Western healing processes and rituals are characterized by their specialization. (p. 10)

In large part that specialization has been reflected in stress research in each discipline's separate theories and types of research. However, in the past decade

medicine and psychology have begun to work together to better understand mind-body relationships, especially as they pertain to human health and disease (e.g., B. Brown, 1980; Pelletier, 1977; Crisis in Stress Conference, 1977). The integration of several disciplines has led to newer labels: psychophysiological, psychosocial, neuro-physiological, and psychodynamics (Mikhail, 1981; B. Brown, 1980). Research based on integration of disciplines is of relatively recent origin and in early stages of development. However, little research on stress and, especially, studies involving multiple disciplines existed at the time this study was initiated.

Genesis of Nine-Month Study of Teacher Stress

The focus of this investigation of the changes in teachers' lives during a school year was designed using concepts taken primarily from three books and the contributions of committee members with expertise in education, psychology, and medicine. Pelletier (1977) summarizes the psychosomatic field from the medical, holistic health point of view. Cooper and Marshall (1977) discuss the person:environment paradigm and the occupational stress of executives as well as making recommendations for further research which provided the basis for important aspects of this study in their book Understanding Executive Stress. Key elements to be included in designing this stress research came from Carruthers' book The Western Way of Death (1974), where he reports on his research on race car drivers and summarizes research on other occupations. To a lesser degree, the research, theories, and concepts of others in the stress fields whose ideas are reflected in this study will be mentioned. From these ideas and those of the committee, this study was created.

Relevant Theories and Concepts

Pelletier

The work of Pelletier provided two of the major concepts upon which this study was based. His concept of a feedback loop as contrasted with cause and effect reasoning provided a strong rationale for the study of the whole person in attempting to understand and assess levels of stress. Equally important is a basic understanding of the psychosomatic, mind-body interaction as it relates to levels of stress. In support of these concepts, Pelletier's medical explanations are reviewed, for they provide the bedrock for this study.

Feedback Loop

Pelletier (1977) presents a clear explanation of the mind-body relationship, the relationship of health and illness to stress, and explains that the "feedback loop" concept taken from cybernetics is much more useful in explaining stress than the cause/effect pattern of analysis. He uses the concept to explain the multiple aspects of the psychological-physiological components of the human stress reaction. He explains the feedback loop as a concept:

. . . in which one event triggers another event, which in turn triggers another, and which any of these can be seen as either cause or effect depending on an arbitrary break in the loop. A feedback loop system tends to be stable and self-regulatory, but a disruption in the system can be amplified through its effects on other components of the system. Such a system has considerable explanatory power in psychosomatic health or illness. According to Stanford University psychologist Phillip G. Zimbardo, this feedback loop is self-perpetuating and self-amplifying: "Non-cognitive feedback becomes an auxiliary input to a closed-loop system which results in spiralling intensity whose terminal state can not be predicted from knowledge of the initial boundary conditions" (Zimbardo, Cognitive Control, 1969). In psychosomatic disorders a subtle change in an individual's mental or physical function can be amplified by other physical or mental factors. Causation is not relevant to such a system In approaching psychosomatic illness or health, it is assumed that a subtle mental or physical factor may have been the precipitating event, and after that event has occurred the entire system is affected and must be treated as a whole to restore equilibrium and health (p. 42).

Acceptance of this concept would make imperative gathering data on as many aspects of the total person and his/her experiences as possible. Innumerable "events," both internal and external to the individual, have the potential to enter/impact the loop and hence challenge the stability of the person/organism. Assessing changes in people's lives in the least obtrusive manner possible without, at the same time, changing these lives or becoming a source of interruption is a delicate task. While acknowledging the impossibility of "perfect monitoring" of change, a careful attempt would be made to assess multiple changes in the lives of the research participants.

The Psychosomatic Connection

The Simontons, in their forward to Pelletier's book Mind as Healer, Mind as Slayer (1977), point out that Pelletier

. . . integrates vast stress literature into a cohesive and comprehensible psychophysiological model that crosses academic disciplines to explain the body's response to stress Neuroanatomical, neurophysiological and immunological research pertinent to this mind/body relationship is reviewed. (p. xiv)

The concepts that Pelletier presents are especially useful to the investigator who is not an expert in psychology or medicine but still seeks to monitor phenomena across disciplines while attempting "whole person" investigation. The mechanisms used by the brain and the endocrine system to perceive psychological stress and to translate this perceived psychological stress into physiological response are explained by Pelletier (see Appendix I for relevant excerpts from Mind as Healer; Mind as Slayer.)

Pelletier, a medical expert, provided data important as background to this teacher stress study. In terms understandable to the lay person, his explanation of brain functioning, the autonomic nervous system, the endocrine system, and the immune system establishes the basis for the interrelationship of psychosocial

phenomena and human physiology and biochemistry. By advocating the concept of the feedback loop to replace cause and effect analysis, he opens new dimensions for research. Relating life style, personality, and stress to disease and levels of health, he makes the case for monitoring clues to health (medications and physical symptoms in this study) as possible indices to levels of stress.

Cooper and Marshall

The book Understanding Executive Stress (1977) was a primary source of concepts and suggestions used in developing this research plan. Cooper, an American professor at the University of Manchester, England, and Marshall, University of Bath, England, have researched and written extensively on various aspects of occupational behavior especially on business management and occupational stress. In this book they presented ideas and a conceptual framework that meshed, in part, with the whole person thrust of this teacher stress study.

Cooper and Marshall label Selye's work as "somewhat restricted to the stimulus-response laboratory setting" (p. 51); they consider the position of Selye's contemporary, Wolff (1968) as more relevant to their position. They quote Wolff:

. . . stress as an inherent characteristic of life: "Since stress is a dynamic state within an organism in response to a demand for adaptation, living creatures are continually in a state of more or less stress" (Wolff, 1968). Having generalized the concept, Wolff is, however, alert to its individualist nature; he placed considerable importance on the idea that different stressors will have different meanings for individuals in line with the latter's past experience. (p. 5)

The authors credit Lazarus as being the modern theorist who emphasizes the crucial point as being the relationship between the individual and the environmental stimulus and how the individual interprets that relationship.

Individual differences, including each person's unique past experiences, determine the significance and reactions to events, pressures, and feelings. "Changes in any one element--e.g., the background situation against which the stimulus is perceived--can radically alter the perceiver's interpretation" (p.6).

The P:E Model of Stress

As a result of their extensive studies of managerial stress, Cooper and Marshall (1977) have developed the Person:Environment (P:E) paradigm. The P:E model encompasses the significant facets of the work place, the unique personal aspects of the individual including his/her personality, and the interface between his/her work and home life. In a very practical way, the authors point out the need to assess the individual as well as his/her interactions at home and at work and the interplay among these three elements. Cooper and Marshall use the P:E model to explain the relationship between the stimuli received from the environment and the individual's unique responses/interpretations. "... stress is essentially individually defined and must be understood with reference to characteristics of both the focal individual and his environment, as it is the outcome of a particular combination of the two" (p. 6). They maintain that the P:E paradigm differs radically from earlier positions in two ways:

Firstly, by emphasizing the balance between P and E factors rather than absolute levels of either, it accommodates the finding that having too little to do can be as stressful for the organism as being overloaded. This is particularly important in the work context where career frustration and work overload have been identified as pressures. Secondly, it does not assume, as do alternate descriptions, that return to the preceding steady state is the only beneficial outcome possible. Stress can, therefore, be viewed as a stimulus to growth and the achievement of a new balance. Such a view has considerable common sense appeal and receives support from researchers in other areas of the social sciences

This shift of attention from the environment as a cause to a particular Person:Environment combination as a trigger to stress does, however, present problems to one concerned with the latter's identification. Measurement of a particular external pressure

(number of degrees below freezing in a study concerned with reactions to cold, for example) does not tell the subjective load on the individual concerned. It has, therefore, become necessary to assess by looking at its manifestations in the individual's psychological, physical, or behavioral operations (reports of being cold, shivering, or lighting a fire). (p. 7)

In attempting to assess individual stress in the work place, one must attempt to assess the whole of the P:E paradigm. Each individual has his own distinctive repertoire of stress symptoms that may be manifest psychologically, physically, or behaviorally. Therefore, it becomes necessary to assess individual manifestations in these areas.

In reviewing the literature undergirding their model and its application to managers, Cooper and Marshall have organized the sources of managerial stress into seven groupings, six external to the individual and one internal. The individual manager is the connection (arbitrator) between the extra-organizational sources and the five groupings of organizational sources. In their literature review they identified "over forty interacting factors which might be sources of stress" (p. 17) drawn from theory and research in medicine, psychology, management sciences, and other fields.

The five organizational groupings are factors related to (a) role in organization, (b) career development, (c) organizational structure and climate, (d) relationships within the organization, and (e) elements intrinsic to the job. Under role in organization are included role conflict, role ambiguity, level of responsibility for people and things, and too little management support. Career development includes concerns about job security, over or under promotion, and status incongruity. The potential stressors classified under organizational structure and climate are lack of effective consultation, restrictions on behavior, office politics, poor communication, and no sense of belonging. The subcategories of factors dealing with relationships within the organization

involves primarily the interpersonal relationships with superiors, subordinates, and colleagues, and lack of social support. The last grouping of potential sources of stress at work are those elements intrinsic to the job which includes working conditions, changes at work, qualitative and quantitative work overload and/or underload, time pressures and deadlines, keeping up with rapid technological changes, and decision-making concerns. The link between the extra-organizational aspects of managers' lives and the organization (employee) is the individual him/herself.

The sixth and final source of external job stress is more of a catchall for all those interfaces between life outside and life inside the organization that might put pressure on the manager; family problems (Pahl & Pahl, 1971), life crises (Dohrenwend & Dohrenwend, 1974), financial difficulties; conflict of personal beliefs with those of the company and the conflict of company with family demands. Despite repeated calls to researchers to acknowledge that the individual "functions as a totality" (Wright, 1975a), the practical problems encompassing the whole person in one research plan usually leave those who try with either incomprehensibly complex results or platitudinous generalizations. Most studies, then, have only one life area as the focus of the study. (p. 40)

And that life area centers around the relationship between the manager and his/her spouse and family. Research, as reported by Cooper and Marshall, usually deals with the marriage role pattern established by the couple and the spouse's tolerance for and support of company moves and company travel.

Despite the importance of the work:home interface and the real problem that it poses to most managers and their wives at some time or another, there is a distinct lack of controlled research work to suggest how conflict affects both work performance and marriage or how crises or triumphs in one system feed back to influence the other. (p. 45)

They further predict:

If we can understand the interaction and relative contributions of good and bad environmental factors to the causation of stress, we not only achieve a more comprehensive picture of the real world but also have more power when we come to apply our results in it. (p. 60)

Work intrudes into the home life of managers in four ways: work taken home on evenings and weekends, business travel, social aspects of the work role (official dinners and entertaining), and company decisions. Conversely, home life may intrude on the work environment either actively or passively. Depending upon the life stage of the individual (single) or family unit (newlyweds, new parents, or empty nest) and the personality of the spouse, these intrusions will vary.

The authors group the research on the individual into two main types, psychometric measures and behavior patterns, each using incidence of disease as an indicator of stress. Acknowledging individual uniqueness, they point out:

Some people are better able to cope with these stressors than others; they adapt their behavior in a way that meets the environmental challenge. On the other hand, some people are more characterologically predisposed to stress, that is, they are unable to cope or adapt to the stress-provoking situation. Many factors may contribute to these differences--personality, motivation, being unable or too ill equipped to deal with problems in a particular area of expertise, fluctuations in abilities (particularly with age), insight into one's own motivations and weaknesses, etc. (p. 45)

Based on their literature review, Cooper and Marshall indicate a preference for behavioral patterns over psychometric measures. They seem to believe that a technique which incorporates "personal characteristics into job stress measures" (p. 53) as best fitting their P:E model.

A research technique which stands somewhat alone by explicitly incorporating personal characteristics into job stress measures (and, at the same time, reducing the number of variables in, and therefore the complexity of, multivariate analysis) is discussed by Van Harrison (1975) and French (1973). They assess person-environment fit by asking subjects to indicate desired and actual levels of work load, work complexity, responsibility, ambiguity, etc., in their jobs and then taking the differences between scores on the various dimensions as their measures (some other questionnaires do contain this evaluative element implicitly). This approach has been relatively successful and P:E fit has proved to be an equally good or more powerful predictor of stress (job dissatisfaction, anxiety, depression, etc.) than either element separately (although there are still some unresolved problems of analysis). (p. 53)

Cooper and Marshall emphasize the importance of timing as a component in understanding stress: that which is upsetting one day may be benign another time. One's vulnerability varies as does one's psychological and social states depending on the totality of the individual's experiences at a given point in time. Events/demands/expectations that are easily taken in stride one day may be the "straw that broke the camel's back" on another. "Life is a continuing dynamic interaction of the organism with environment rather than a sequence of disconnected stable states. So far we have largely failed to reflect this by taking a snapshot approach to the understanding of stress" (p. 120).

Timing influences stress responses in four ways. It determines (a) into which of the organism's ongoing activities the stressor intrudes; (b) whether pressure is acute, recurrent, or chronic; (c) whether elements in a potentially stressful pattern of pressures act sequentially or simultaneously; and (d) the timing of the coping process. The authors make a case for viewing "facets of time as interacting variables" (p. 120). Acute stress, a one-time event, is usually easier to handle than recurrent or chronic stress. Recurrent stress (such as report cards) is easier to manage than unanticipated recurring stress because one is able to anticipate and plan for it. In contrast,

. . . a pressure which is present all the time can be termed chronic; if it is judged stressful by the individual, it will, by definition, lead to chronic stress. The physical danger in mining is of this type; if the pressure is unavoidable, as this largely is, the most adaptive strategy for the employee is to accommodate to it, reappraising it psychologically as nonstressful it is sometimes difficult, without outside help, to differentiate the inevitable from the unnecessary chronic pressures. (pp. 122-3)

Pressures may act sequentially or simultaneously and "the individual is more likely to be overwhelmed if several pressures act at once" (p. 123)

The fourth way in which timing influences stress is the pattern of the coping response.

Coping does not just happen after the event; it can also take place before and during the stress experience, can be anticipatory or preventative, can be directed either at the environment or at the consequences, one or several coping techniques can be adopted and multiple techniques can be simultaneous or successive. (p. 124)

Methodological Problems

In their chapter "Methodological Problems Associated with Stress Research," Cooper and Marshall (1977) discuss several of the major problems with occupational stress research and make suggestions for future research. They begin with reiterating the problems of definition and warn that "by using the term stress too widely--to denote pressures on the individual (e.g., work load), its effects (e.g., poor work performance), and also his/her reactions (e.g., depression, escapist drinking, etc.)--researchers have contributed to conceptual and definitional confusion in this area" (pp. 196-7). In addition, "there is a need for researchers to be more honest about their implicit hypotheses, assumptions, and predilections" (p. 201).

The authors discuss the problems of confusing independent and dependent variables and warn against using a simple cause and effect model. They quote McGrath's (1977) advice which emphasizes the use of multiple stress conditions and multiple measures of stress effects and advise against simple statistical analysis preferring multivariate forms of analysis. They express concern for the problems with choosing and using control groups and for selecting samples for study.

Contrasting social science based research projects which use nonobjective measures (interviews) with objective measures (blood pressure and urine tests) used by the medical researcher, they claim that

What is really needed is the cooperation of social scientists and doctors to work together in this field, to share and refine their methodologies, research instruments and perspective. Without this cooperation work in the area will develop very slowly and may never

get to the point of creating meaningful coping and preventative strategies. (p. 199)

A special need is to "attempt to develop measures and procedures which are as unobtrusive (but not deceptive) as possible, so that the methodology and research tools don't alter the phenomena to be measured." (p. 199-200)

While underscoring the need for prospective, longitudinal research, Cooper and Marshall point out the formidable challenges and serious ethical questions of interfering in people's lives in attempting such studies. When the book Understanding Executive Stress was written in 1977, most stress research was retrospective and/or involved in a single point in time. Given its many disadvantages, latitudinal (one point in time) research also has some real advantages.

One of the less obvious advantages of latitudinal over longitudinal studies is that the former can be achieved with the minimum of interference in the individual's (being researched) life. This has both methodological and ethical implications. A major concern of social scientist in any area is that their intervention will have some effect on the mental process, behavior, etc., which they want to study, and that they will not, therefore, obtain a true reading. (p. 202)

The problems of contamination and data distortion are increased in longitudinal research. As more time and more contacts are involved so are more hazards.

The problem begins with the start of the research.

. . . the initial contact, whether by questionnaire or interview, is likely to sensitize the individual to the topic and affect his future perception of, coping with, and perhaps even tolerance for, stress. The ultimate outcome for the individual may be either harmful or beneficial, it will, however, almost certainly go beyond the knowledge and the control of the researcher. This is not merely a methodological problem of obtaining distorted results; it is one of the ethics of interfering in individuals' lives. The data distortion consequences of the alternative one-point-in-time study can be kept to a minimum, but even here the researcher cannot absolve himself from all responsibility of the future consequences of his intervention . . . (pp. 202-3)

Suggestions for Future Research

The methodological problems of stress research contain within them implicit areas for further research. In addition, Cooper and Marshall point out that stress identification studies are only the first step in a chain of needed studies beginning with "examining the status quo" (p. 204) and ought to lead ultimately to remedies both within the organization and to support for the individual. One major hurdle might well be the type of company norms and values that determine "individual employees' attitudes to experiencing, revealing and managing stress and currently appear to be acting (not only inside companies but in society as a whole) to deter adaptive coping in certain contexts" (p. 205).

There is need for extensive research into the relationship between work stress and home life. To date two significant factors seem to be time management and social support. Topics such as the spouse's career and his/her satisfaction with that career need to be studied in the context of society's changing values and practices.

The individual's self-awareness, motivations and aspirations (and how these change) are important determinants of his approach to and expectations of work. These not only change with age but also in response to changing conditions in the world outside Researchers must, therefore, look more closely at work attitudes, especially in the areas of stress where they play such an important mediating role. (p. 204)

Contributions to Teacher Stress Study

Recommendations and concerns expressed by Cooper and Marshall influenced the conceptual framework of this study. One need would be to monitor multiple facets of the participants' lives such as (a) personal and professional experiences to attempt to collect (b) simultaneous clues to meaning for the individual (psychological data), (c) changes in physical states, and (d) behavioral changes. The desirability of (e) longitudinal studies if the issues of (f)

minimum interference in individual participants' lives could be attained while (g) acknowledging that any intrusion had ethical implications and (h) the real possibility of sensitizing researchers to the topic and changing lives (either harmful or beneficial). These crucial concerns would (i) necessitate a design involving a minimum of directions and definitions (a simple theory base) and one as (j) unobtrusive as possible. Also needed would be an attempt in some way to (k) combine social science techniques with medical measures or information. Many of the (l) subcategories of organizational sources of stress ought to be considered in the instrumentation (e.g., interpersonal relationships with superiors, colleagues, and others; level of responsibility for people and things; working conditions; qualitative and quantitative work; and time pressures and deadlines) which have relevance within the school setting. Special care would need to be taken to allow for the very real possibility that the ongoing nature of the study would result in changes in lives and hence changes in data, causing data contamination or distortion. Yet, if successful, the research could be a useful early attempt to assess the status quo in teachers' personal and professional lives. It is intended to point out areas needing further research or to new areas of research.

Carruthers

Carruthers' book The Western Way of Death (1974) was the catalyst that eventually led to the creation of the basic design for this study. Important concepts and suggestions were taken from the writings of Pelletier (1977) and Cooper and Marshall (1977), but in large part Carruthers' ideas provided the springboard for the eventual concrete proposal. Carruthers is an English medical doctor and researcher whose book deals, in part, with the biochemical and

medical aspects of heart disease and their relationship to emotions, the mind-body connection, and life style.

Like Pelletier, Carruthers traced the history of medicine, especially heart disease, from about 1000 B.C. to the present, but with a different perspective from that of Pelletier. Carruthers' summary focused on the rise and fall of the emotional theory as a causative factor in heart disease. He wrote, "Probably the earliest recorded heart attack is described in the Old Testament dating from about 1050 B.C." (p.15) The victim was a man with an uncontrollable temper. Carruthers ended the story with this statement: "This story suggests that from earliest times it has been thought that the emotion of anger, particularly when directed against oneself, could damage the heart." (p.15-16) About this same time the early Greeks "began to transform medicine from a mystical art to an objective science" (p. 16). Paying particular attention to rituals, they emphasized the role of sleep, a healthy regime, and exercise in pleasant surroundings.

The ancient Egyptians also included a concern for the emotions in their treatment of heart disease.

Ancient Egyptian medicine was mainly concerned with driving out evil spirits by a series of empirical remedies to be found in the thirty-two Hermetic books of the god Thoth, teacher of Alchemy. As long as the physician followed the exact treatments specified in these books to the hieroglyphic, no one thought any worse of him if the patient died. Traces of this hermetic sealing of the mind can be found in some of the ineffective but orthodox treatments applied to heart disease today. The heart was considered to be the most important organ in the body, and was the only one left in place during embalming. Since during life remedies were applied to overcome possession by devils, any medicine taken had to be directed to the scene of action by incantations such as the one in Ebers Papyrus dated about 500 B.C. 'Welcome, remedy! Welcome! that dost drive away that which is in this my heart and in these my limbs.' Such positive psychotherapy is sadly lacking in most drug prescriptions and may account for the popularity of some health foods which have similar inspiring messages on the label. (p. 15)

Continuing his brief history of emotion as one cause of heart attacks, Carruthers points out that the Greeks believed "The brain, not the heart, was the organ which was most important to the senses" (p. 16). It was Hippocrates who "insisted on an ordered, scientific, and objective study of disease" (p. 16). In time, Greek medicine was absorbed by the expanding Roman Empire. After a lull in medical progress, Galen (about 150 A.D.), a brilliant clinician and experimenter, wrote so extensively that his ideas were to "dominate medical thought and practice for the next 1,200 years" (p.17). During that time medical practice and medical research were generally at a standstill. William Harvey's discovery of the circulation of the blood revived interest in medical issues and research, some of which centered around the emotional theory of heart disease. About 1700 the English surgeon John Hunter, who believed that "my life is at the mercy of any fool who shall put me in a passion" eventually "proved his point by dying abruptly during a meeting of the board of governors of his hospital" (p.17).

But after 4,000 years during which emotions were linked with heart disease, the era of modern scientific research began. And the role of emotions in health and disease lost credence. Medicine and medical research became increasingly specialized as researchers, including heart specialists, focused on structure and function as revealed by dissections and laboratory study. As the result of meticulous research "Attention was diverted from the whole patient to elegantly thin slices of the wall of his blood vessels" (p. 17). In Carruthers' words "It is the classical example of the dubious triumph of science over common experience" (p.17).

He explains what happened from the medical point of view.

Specialization within medicine probably has to bear some of the blame for the slow advance in knowledge of the causes of heart trouble. Pathologists could describe what happened but not why it happened. Blood chemists could measure rises in blood fats but not explain them. Cardiologists could diagnose heart trouble and save

some patients during the acute attack, but not prevent them. Heart surgeons could even plumb in a completely new heart, which in some cases then underwent the same arterial changes as the old one.

The revival of the theory that emotional stress might be a major cause of heart disease was therefore left to the general physicians and general practitioners. The latter especially saw evidence in their everyday experience of viewing people's illness against the background of home and work that was a characteristic pattern of life preceding many of the deaths from heart disease. (p.21)

It is only in the second quarter of this century that emotions began to regain credence as a component in heart disease and other illnesses.

Racing drivers and medical evidence of stress. Carruthers explains in detail the hormonal, biochemical nature of stress reactions, especially the relationship between adrenaline and nonadrenaline and the presence of fats in the blood during periods of stress. As the result of a "chance remark by a friend of mine" (p.41). Dr. Peter Taggart, a heart specialist and international class racing driver, the pair carried on in-depth research on race car drivers during an actual race.

In 1969 Taggart recorded the heart rate of racing drivers during the stress of major events and documented the continuous rise in pressure between the time the drivers arrived at the track and the end of the race. He observed "Often the heart was revving as fast as it could go, about 200 beats per minute. This is faster than one would find in a young man exercising to exhaustion" (p.41). Both adrenaline and nonadrenaline levels increased measurably but his crucial observation

. . . was that the racing drivers' blood plasma, clear before the race, became milky after it. This was in spite of the fact that owing to pre-race nerves, they seldom had anything to eat previously. This could mean only one thing -- that large amounts of the only type of fat that you can see as droplets in the blood plasma, neutral fat, were being made by the drivers themselves, under the aggressive emotional stress of the race. It was the missing biochemical link between emotion and coronary artery disease, connecting stress hormones, and the free fat they liberated, with the fatty degeneration of the blood vessels which causes heart attacks. (p. 41)

Carruthers felt this evidence "not only provided the vital clue leading to a clearcut theory, but it gave the ideal test bed for demonstrating the biochemical effect of intense aggressive emotions" (p.42).

Carruthers and Taggart joined forces to carry out a sophisticated study of 17 racers including Taggart. Using equipment such as a portable centrifuge and electric generator plus all the routine equipment and supplies needed for blood tests, the doctors set up shop both in the pits and in close proximity to the race track to quick-freeze and analyze the blood samples during the races. This was necessary because of the fragile nature of the blood chemicals. "As stress hormones and fat levels vary so rapidly, most of the blood samples were taken with the drivers still sitting in their cars" (p.43). It was imperative to use extreme care in every stage of the analysis.

The doctors were able to identify the extremely perishable hormones and fats in the blood and to further confirm Taggart's observations. After careful explanation of the details involved in collecting and analyzing the blood samples, the researchers felt that it was possible to express emotion in terms of blood chemistry.

Other research. Taggart and Carruthers collaborated on studies of public speakers and television performers as a part of their research into heart function. After pointing out the role that audience size makes for public speakers and the sources of anxiety for speakers, even experienced ones, the doctors sought to document physical evidence especially by means of tape- or radio-ECG recorders. "The results were dramatic . . . the heart rate of the speakers, whether experienced or inexperienced, rose . . . averaging out at about 150. This is as fast as many people's hearts go when doing heavy physical work and yet the subjects were standing still" (p. 67). A similar study was made

using young television reporters. He summarizes his reports of his research with the statement: "From these examples of some of the increasing multitude of jobs with a lot of mental stress but little physical activity, we can see how our work can influence our heart and blood chemistry" (p. 71). (Does this not fit teachers?)

In addition to summarizing his own research and that on public speakers and television performers, Carruthers also reports on other bio-medical stress studies. Among these are investigations on television watching, film viewing, and a study of London bus drivers and conductors. He reviews the study of accountants by Rosenman and Friedman and two studies of Levi, one of clerical workers and the other on military personnel. In each situation, he discusses the physiological, especially biochemical, aspect of each.

In an exciting way Carruthers operationalizes with medical research the careful scientific explanation of the mind-body, psychosomatic interrelationship (Pelletier, 1977). He demonstrated, in collaborations with Taggart, the role of emotions on functions of the heart including blood chemistry.

Monat and Lazarus.

The anthology Stress and Coping compiled and edited by Monat and Lazarus (1977) contained up-to-date readings by recognized authorities in the psychosocial disciplines which were extremely useful to an educational researcher. The introduction summarized the views of Monat and Lazarus as well as pointing out some of the current issues and controversies in the field. Included in the 26 selections were pertinent readings by Seyle; Cannon; Rahe and Arthur; Mechanic, Appley, and Trumbull; McGrath; Menninger; Janis, Friedman, and Rosenman; and Lazarus, all recognized experts in psychosocial stress and coping. Each writing challenged and/or added in some way to this research

attempt. Those having the most significance have been briefly reviewed and, in several instances, have been combined with other writings by the same or other authors.

Monat and Lazarus. After pointing out the dilemmas existing among the definitions and concepts of stress, Lazarus' position is presented in the introduction:

It seems wise to use "stress" as a generic term for the whole area of problems that includes the stimuli producing stress reactions, the reactions themselves, and the various intervening processes. Thus, we can speak of the field of stress, and mean the physiological and psychological phenomena and their respective concepts. It could then include research and theory on group or individual disaster, physiological assault on tissues and the effects of this assault, disturbances or facilitation of adaptive functioning produced by conditions of deprivation, thwarting or the prospects of this, and the field of negatively toned emotions such as fear, anger, depression, despair, hopelessness, and guilt. Stress is not any one of these things; nor is it stimulus, response, or intervening variable, but rather a collective term for an area of study. (Lazarus, 1966)

To amplify this, the arena that the stress area refers to consists of any event in which environmental demands, internal demands, or both tax or exceed the adaptive resources of an individual, social system, or tissue system. (p. 2-3)

Implicit in the review of types of stress studies, concepts, and writings should be the awareness that authors are using diverse definitions of stress, i.e. Selye's concept of distress, or to stress overload as used in this study. These writers are generally concerned with the extreme situations, or those perceived to be extensive enough to be damaging to the physical and/or psychosocial aspects of the individual or group. Generally, a cause and effect model is used in the analysis. In some writings particular attention is paid to concepts such as frustration, threat, conflict, and stress and physical illness as well as identification of, meaning, and role of coping strategies. Each writer has his own conceptual milieu.

Monat and Lazarus' concept of "adaptation" provided a key concept for this study although applied differently to normal individuals in a normal environment and was an attempt to collect data on the nature of multi-faceted, day-to-day stress/adaptation.

Two scales on the Weekly Reports were designed to measure the conflict teachers' felt in their lives. The authors state that

. . . conflict involves the presence simultaneously of two incompatible goals or action tendencies, and so in conflict, frustration, or threat of some sort is virtually inevitable. This makes it of great importance in human adaptation. Goals or action tendencies may be incompatible because of the behavior and attitudes necessary to reach one such goal are contrary to those necessary to reach the other . . . conflict is a major source of psychological stress in human affairs and is a life-long problem requiring much adaptive effort . . . (p. 4, emphasis added)

Tinbergen. Tinbergen, British zoologist, animal psychologist and pioneer in the field of ethology, the scientific study of the behavior of animals in their natural environment, was awarded the 1973 Nobel Prize for Medicine and Physiology, for his study of autistic children. He demonstrated that the relationship between the behaviors of autistic children and normal children was a matter of degree but not of difference. He states that "The majority of autistic children, as well as their parents, seem to be genuine victims of environmental stress" (p. 57). While Tinbergen's study of stress is not important to this project, his recommendations concerning research are. He cites his research as an example of using the "old method of 'watching and wandering' about behavior (which incidentally we revived rather than invented)" and acknowledges its source as "our ancestral hunter-gatherers" (p. 45), which is still used by hunting-gathering tribes today. Another piece of advice is contained within a quote from P. B. Medawar, "it is not informative to study variations of behavior unless we know beforehand the norm from which the variations depart" which Tinbergen

characterizes as "a commonsense but sound warning." Finally, he warns of the possible "confusion between correlations and cause-effect relations" (p. 46) which may lead to erroneous assumptions.

McGrath. In his chapter in Monat and Lazarus (1977), McGrath reviews 200 stress studies. Based on an analysis of these, he has identified five underlying themes that he believes are reasonable empirical generalizations concerning psychosocial stress. In spite of the limited samples, he believes they represent a beginning toward a systematic theory of stress. He states these themes as follows:

1. the cognitive appraisal theme. Emotional experiences, and to some extent physiological and performance measures, are in part a function of the perceptions, expectations, or cognitive appraisal which the individual makes of the stressful situation. (p. 67).

After explaining the basis for this category, McGrath divides this theme into three subsets: individual differences, adaptation, and learning.

2. the experience theme. Prior experience with the task, the stressor, and/or the situation attenuates the effect of the stress. (p. 68)
3. the negative experience theme. The experience of failure on a task is stressful in itself and has a number of effects which subsequently lead to decreased performance effectiveness. (p. 70)
4. the inverted-U theme. The intensity of environmental stimulation (broadly conceived) is curvilinearly related to degree of felt stress and to degree of effectiveness of subsequent performance. (p. 71)
5. the social interactive theme. The presence of other people appears to have positive or negative effects on stress. Others may reduce the effects of stressful situations or increase the levels of stress depending on the personality of the individual, the number of people involved, the quality of the relationship, and the degree of restriction in the environment.

In addition to pointing out the many problems involved in stress studies, McGrath states that

The occurrence of stress and its effects can be measured at physiological, psychological, behavioral (task and interpersonal performances), and organizational levels. Within each of these levels, various operational types of measures can be applied: subjective reports, aided or unaided observation, trace measures, archival records. (p. 75)

In his conclusion McGrath acknowledges that "these five themes add up to something less than a systematic theory of stress, but they do represent a beginning in that direction" (p. 74).

Cannon. Cannon, a contemporary of Selye and Wolff, contributed an article on voodoo death (1977). In this article, Cannon points out the role of strong emotions such as fear and of rejection by society/social environment in this type of death. He relates these strong emotions to physiological changes known to occur in humans predisposing individuals to death.

In Part I, "A Historical View of the Stress Field," Mason (1975a) recognizes the role of Walter Cannon, as early as 1914, in introducing and using the concept of stress in his scientific papers. Cannon used the word stress in a variety of combinations, referring to physiological as well as psychological phenomena. Many, including Mason, credit him for being most influential along with Walter G. Wolff for the resurgence of interest in the role of emotion in health and disease.

Selye. The first article in Stress and Coping contains selections from Dr. Hans Selye's book, The Stress of Life (1976). Since his first publication in 1936, almost fifty years ago, Selye has written extensively (over 1500 articles) on stress from the physiological point of view. His definition of stress is, "Stress is the non-specific response of the body to any demand made upon it" (Selye, 1974, p. 27). This definition/concept centers around the General Adaptation Syndrome (GAS), which he has extensively researched in his laboratory at the University of

Montreal, Canada, where he is Professor and Director of the Institute of Experimental Medicine and Surgery.

According to Selye the stress syndrome evolves through three stages: alarm reaction, resistance, and exhaustion which eventually leads to adaptability or adaptation energy. Selye explains that the last stage of exhaustion is strikingly similar to senility; it is a kind of accelerated, premature aging. The GAS is a triad consisting of (a) the alarm reaction, (b) the stage of resistance, and (c) the stage of exhaustion which he has repeatedly demonstrated in his research. In the process of adaptation/stress, the organism experiences the GAS triad and each time uses adaptation energy, although it may be in minute amounts for "life is a continuous series of adaptations."

The term adaptation energy has been coined for that which is consumed during continued adaptive work, to indicate that it is something different from caloric energy we receive from food; but it is only a name, and even now . . . almost thirty years after this hypothesis was first formulated . . . we still have no precise concept of what this energy might be.

It is as though at birth, each individual inherited a certain amount of adaptation energy, the magnitude of which is determined by genetic background, his parents. He can draw upon this capital thriftily for a long but monotonously uneventful existence, or he can spend it lavishly in the course of a stressful, intense, but perhaps more colorful and exciting life. In any case, there is just so much of it, and he must budget accordingly. (1976, p. 82)

In Stress of Life (1956) and Stress Without Distress (1974), Selye discusses at length the link between stress and disease.

Selye points out the universality of stress and that stress is an innate part of life. It "cannot and should not be avoided" (1976, p. 63), but must be recognized and managed. He has coined terms for differing levels of stress. Distress he defines as "unpleasant or disease-producing" (p. 456) stress while "pleasant or curative stress" (p. 466) has been labeled eustress. Most researchers are dealing with what Dr. Selye called distress when they speak of stress. He

considers stress a universal human condition. "Complete freedom from stress is death" (1974, p. 32).

Selye's work has been criticized by other experts such as Mason (1975a and 1975b) and Manat and Lazarus (1977), especially for his concept of the nonspecificity of the stress response and for the general oversight of the role of emotion in stress and in his stress research.

Appley and Turnbull. Appley and Turnbull in their chapter "On the Concept of Psychological Stress" critique the status of definitions, concepts, and research from the stimulus-response perspective. As they point out

. . . typically, the experimenter manipulates the environment in a manner intended to produce a response, and then measures the extent and/or direction of the behavior change produced. (This is, of course, the pattern of all psychological experiments. Stress studies are usually distinguishable primarily in the selection of stimulating conditions.) (p. 60)

They point out the many problems facing the researcher and the interpretation of research. These include diverse types of environmental manipulations, various types of physiological measures such as pulse rate or blood volume, individual differences in all but immediate life-threatening situations, role of individual meaning/response/interpretation, nature of threat, emotional patterns and responses, differences in personality and personality temporal factors, and related aspects of psychological aspects of psychological stress and stress research.

The concept of vulnerability in this study reflects the position of Appley and Turnbull, who point out

. . . the personal education in assessing reactions to stress. It is consistently found that these reactions vary in intensity from person to person under exposure to the same environmental event It has also been noted that, with few extreme exceptions, the kind of situation which arouses a stress response in a particular individual must be related to significant events in that person's life To

know what conditions of the environments are likely to be effective for the particular person, the motivational structure and prior history of that individual would have to be taken into account. (p. 64-65)

Each individual's "vulnerability profile" is unique, depending upon, in part, individual perception of threat and "motivational structure and prior history of the individual."

Rahe and Arthur. In this chapter "Life Change Patterns Surrounding Illness Experience," Rahe and Arthur discuss a study using some 3,000 U. S. Navy personnel as subjects "to study the relationship between life-change and illness." Using the Schedule of Recent Experiences (SRE), the life changes preceding, concomitant with, and following illness experience were compared and found to have a positive relationship to illness.

Other research involving Rahe includes the study of three classes of naval aviators and a four-month study of underwater demolition team training which include biochemical measures (Gunderson and Rahe, 1974). Rahe wrote of his extensive work with U.S. Navy personnel and of the development of his research and the SRE and SRS in his chapter in Stressful Life Events by Dohrenwent and Dohrenwent (1974).

Hay and Oken. In one selection "The Psychological Stress of Intensive Care Unit Nursing," Hay and Oken (1977) report on a study of stress experienced by nurses working in intensive care units (ICU) and make suggestions for possible ways to diminish it. While acknowledging that other hospital settings such as the emergency room may be equally stressful, they emphasize the many sources of stress experienced by ICU nurses. Among these are the frequency of monitoring patients (often at 15-minute intervals) and the wide variety of vital signs and services required, all of which must be charted. There are no slack periods-- "The work is formidable--even in periods of relative calm" (p. 121). Working

knowledge of a large quality and quantity of complex technical equipment is required. The nurse "must maintain an underlying alertness to discern and respond to cues which have special meaning" (p. 122). The work may be physically hazardous for it may involve infectious conditions, working with portable X-ray equipment, lifting heavy patients, using sharp tools, such as needles and scalpels, and on occasion the possibility of assault from delirious patients. The job entails maintaining a positive working relationship between doctors, administrators, other staff, patients, and their relatives. Mistakes are potentially life-threatening. And finally, death is a frequent experience. While there are rewards, "in this special environment, the psychological burdens posed upon the nurse are extraordinary" (p. 118).

American Teachers and Stress

At the time this research was initiated and instrumentation begun, very little literature reporting studies of the stress of American public school teachers was available. There were reports and articles, however, about teachers' feelings of frustration, anxiety, burn-out, and related topics. While this study would encompass some of these issues, they had no direct relationship to the general thrust of this investigation and were not pursued. The paucity of materials available is revealed by the results of two Educational Resources Information Center (ERIC) searches. During the summer of 1980 (after the study began) an ERIC search of 100 articles dating back to 1940 revealed only a couple of entries having any type of relationship to the focus of this study. A second ERIC search in 1982 revealed a similar situation, but by this time most of the articles dealt with some type of educator stress or a closely related topic. Many of these articles concerned subtopics of stress such as burnout (a symptom of stress overload as defined in this study), anxiety, role stress, job satisfaction,

student teaching, mental health, and teacher roles such as special education, reading teachers, or social studies teaching. These were not available at the start of this research.

However, at this time, informal studies provided some clues to the nature of teacher stress. Both large studies involved the voluntary self-reporting of teachers who were readers of a newspaper or educational journal.

In September, 1976, Instructor asked its readers, "Is teaching hazardous to your health?" Nearly 7000 responses were received (not a random sample). The analysis of the responses reported by the magazine indicated that stress was the biggest problem reported by the responding teachers. Among the chronic health problems mentioned were "headaches (migraine, sinus), allergies, colds, post nasal drip, hypertension, bladder, kidney, and bowel problems, colitis, 'nervous stomach,' acne, and overweight" (p. 12).

Landsmann (1978a), reporting on the Instructor study in Today's Education, arrived at further conclusions based on the responses of the teachers. She prefaced her analysis with this statement:

Two years ago Instructor, a magazine for elementary school teachers, took this question ("Is teaching hazardous to your health?") to a number of governmental agencies, insurance companies, medical groups, university research facilities, and teachers' organizations. We got a startling answer. Ample health data were available on a number of other professional groups, but no one knew of studies on the effects of teaching on teachers. (p. 49)

Landsmann reported that over 9000 teachers responded. She acknowledged that the results do not constitute a scientific sample, yet they provided clues to the concerns of teachers:

First, we note that 84% of teachers responding believe there are health hazards in teaching. The questions that elicited open-ended answers isolated three major areas of health concern--stress; weight, diet, and exercise; and physical environment. (p. 49)

Landsmann continued by pointing out that these responses do provide some clues to the conditions of teacher health.

Over and over, teachers named stress (tension, pressure) as the major force affecting their health. The tension arose from predictable sources: large class sizes, lack of teaching materials, increase in discipline problems over the past few years, more public pressure on teachers, schedules that permit few breaks or none. In many localities, elementary teachers are still fighting for duty-free lunches. The schools of some large cities have a rule that primary children may not be left unattended. For teachers without aides, this often means that even bathroom breaks are a major problem. (p. 50)

Among the responses indicating stresses resulting from the physical environment were concerns such as inability to control classroom temperature as some buildings are drafty and poorly insulated. Newer schools with large areas of glass, which become overheated during summer months, and air conditioning often turns summer into winter. Other concerns were for lighting problems of all types, poor acoustics, noise, cold cement floors, dirty classrooms, and smoke-filled teachers' lounges. Another source of stress was the problem of injuries to both students and teachers.

The teachers indicated that principals could do a great deal to improve teacher health because the principal can control many of the sources of stress or health problems.

Principals can offer more positive reinforcement; help with curriculum decisions, especially controversial ones, act as buffer; and aid teachers in improving school/community relations. They can help reduce class size, foster more open communication among staff members, provide adequate inservice preparation for such programs as integrating the handicapped, sign the work orders to fix drafty windows, and enforce policies that keep sick children home until they are well. (p. 50)

Landsmann concluded her article on a hopeful note. Teachers are asking for district-wide medical and counseling services, preventive programs, assistance with needs such as smoking cessation programs. Individual teachers are paying more attention to diet, exercise, positive attitudes, and other aspects

of health. She encouraged teachers to "realize that health is a dynamic state--different for every individual, changing throughout a lifetime. Health is physical and mental well-being, not merely absence of disease" (p. 50).

The second informal study was conducted by the Chicago Tribune in 1975 and reported in the American School Board Journal (1976). About one-fourth of the teachers responding indicated that student discipline was a constant problem. All but 18% had some type of discipline problem at one time or another, and they indicated concern for their physical safety. Eighty-two percent felt that parents had not adequately prepared their children for the experience of school. Among other concerns were lack of student interest in learning, the board of education, administrators, and the overall quality of textbooks, teaching materials, and the educational environment.

Several other polls have received similar responses. Divoky (1979) reports on a poll taken by Learning magazine to which 800 teachers responded. Based on the responses, she concluded that (a) teachers are unhappy with their lot which seems to have something to do with both the students and their feelings; (b) teachers feel that students have changed, "perhaps both more ignorant and more superficially sophisticated" (p. 577); and (c) students are being treated differently by society.

A poll by the National Education Association (NEA) in 1975 and reported in Today's Education asked teachers, "If you could make one change that you think would improve your own morale or professional satisfaction as a teacher, what would the change be?" (p. 14). The changes receiving the most "votes" were lower class size; better curriculum, ability grouping, etc.; better or fewer administrators; higher salaries; and improved discipline.

Broadbelt (1973) reported on a study of 379 elementary and secondary school teachers and found that "35.7% had mild to moderate symptoms of mental illness, and 2.9% actually had psychiatric impairment" (p. 268).

A few other sources touch on some of the issues and experiences that teachers face. Block (1977) reported on his "evaluation of 250 classroom teachers . . . who had symptoms of either physical trauma and/or prolonged psychic stress" (p. 58). He identified the following problems faced by the traumatized teachers: psychological and somatic complaints, anxiety concerning the continuum of campus violence, lack of preparedness, difficulty in reporting incidents, overcrowded classrooms, poor leadership and ultimate breakdown in morale, and difficulty in obtaining transfers out of stress areas.

. . . the battered teachers of this series have shown the same correlation between incidence of their symptoms and factors of stress as military personnel suffering from combat neurosis.

Military personnel, however, know that upon completion of a combat mission or upon surviving for a certain period of time in a war zone, they will be rotated to a nonstressful place for rest and recuperation before being returned. Studies show that this procedure has a positive effect on their adverse physical symptoms.

Treatment for military psychiatric casualties includes rest, sedation, ventilation of anxieties, abreactions and narcosis, followed by a rapid return to the front. **Treatment for teachers who present symptoms of trauma or continued stress, however, is usually disallowed until they collapse from complete physiological or psychological depletion.** There are administrators who simply dismiss them as "unsuccessful teachers." (p. 62) (emphasis added)

Ferren (1971) in his "Exploratory Study of Teachers' Adaptive Techniques Within the School Organization" found that teachers' adaptive behaviors or survival techniques coincided with those in industrial research. Teachers employed adaptive behaviors in all categories but "becoming defensive and becoming apathetic were the most frequently employed adaptive behaviors" (p. 1977). Other survival techniques used by the teachers included belittling students, lying, disassociation of oneself from the teaching role, projecting

problems on others, and limiting personal involvement with students and colleagues.

In a slightly different kind of study, Carranza (1974) "sought to determine the strength of the relationship between teacher performance and life changes" (p. 73). He based his study on the Holmes and Rahe Schedule of Recent Experiences and on eight measures of teacher performance: teacher absenteeism due to illness, teacher absenteeism-frequency, teacher absenteeism-duration, requests for transfer, teacher times moved, units earned beyond the Bachelor of Arts degree, student dropouts and distribution of high and low grades. The results showed significant correlations, some of which were between life change unit scores and measure of absenteeism, changed residence, and credits beyond the Bachelor of Arts degree.

As indicated at the beginning of this brief review of literature concerning teacher stress, very little information even remotely related to the thrust of the present research was available. The studies reported here, while interesting and providing clues, did not provide a basis for building this study. Somewhat more research had been done in England in the late 1970s, and the results of those studies are reported in the following section and include a comparison with German teachers.

British Teacher Stress Studies

Introduction

During the 1970s, a number of British researchers investigated the stress experienced by British teachers. Most of the studies were questionnaires of predetermined items presented to teachers for their evaluations. The reports of the studies have been grouped under three headings: prevalence of stress; sources of stress, especially teacher satisfaction/dissatisfaction; and symptoms

and manifestations of stress. The different investigations have been analyzed to fit these headings and may be quoted under each of the subtopics. A single British longitudinal study will be included as well as a comparative study of English and German teachers.

Prevalence of Stress

Kyriacou (1980) summarized sources of stress among British teachers in a chapter of Cooper and Marshall's (1980) book White Collar and Professional Stress. In a study reported in 1976, Dunham asked teachers attending a conference to describe their stress situations, how they responded to them, and what recommendations they would make for reducing stress. The major conclusions from this group of 658 teachers was that "more teachers are experiencing stress" and that "severe stress is being experienced by more teachers" (p. 113). Although Kyriacou questioned Dunham's conclusions, he acknowledged that other authors found teacher stress on the increase.

Four studies by Kyriacou and Sutcliffe (in Kyriacou, 1980) based on random samples of medium-sized mixed comprehensive schools in England during four different terms (one each spring and autumn and two summer) used anonymously completed questionnaire surveys. In both cases, the amount of stress reported in the summer was less than for spring or autumn:

. . . the proportion of teachers in medium-sized mixed comprehensive schools in England who are experiencing a great deal of occupational stress is somewhere between a fifth and a third. Interestingly, Kyriacou and Sutcliffe have found no association between self-reported teacher stress and the biographical characteristics of the teachers they looked at: sex, qualifications, age, length of teaching experience, and position held in the school. (p. 115)

In a study that used nervous strain as an indication of teacher stress, Pratt (1978) reported some unpublished data, obtained from the British National Survey of Health and Development in 1972, of 26-year-olds in response to the question,

"Would you say that in your work you were under severe nervous strain, some nervous strain, or little or no nervous strain?" Of the 227 school teachers in the sample, 60.4% reported some or severe nervous strain compared with 51.1% of the 311 "other professionals" and 36.1% of the total sample of 5,245 (p. 114).

In a separate article, Kyriacou (1980) compared the stress and health of teachers to those of other professionals using as a basis studies reflecting mental and physical health, death rates, and suicide data. After reporting data from the British National Survey of Health and Development, he discussed the mental health status of British teachers.

Unfortunately, no study conducted in the United Kingdom appears to have been reported which compared the mental health of schoolteachers with those of other professions. The Registrar General's (1978) data regarding suicide rates among different occupations does not include schoolteachers in the list of occupations with high suicide rates Although Hodges (1976) has reported that the number of schoolteachers qualifying for a breakdown pension had more than trebled over the previous ten year period, it is difficult to ascertain to what extent this may reflect improved conditions of service whereby teachers can opt for early retirement rather than be obliged to return to work after a period of absence. (pp. 155-156)

To assess the physical health of teachers, Kyriacou quoted a 1978 study comparing 100 teachers and 100 matched semi-professionals with the 1978 British Registrar General's figures for occupational mortality, indicating that school teachers have one of the lowest death rates among the professions. He concluded:

There . . . appears to be evidence indicating that schoolteachers report finding their job stressful more so than do other professions, but there is no evidence of greater mental or physical ill-health among schoolteachers which may be stress related. To interpret these findings, a number of possible explanations may be offered. Firstly, it may be argued that teachers are prone to complaining about stress in excess of their actual experience of it. For those familiar with school staff rooms, there is no doubt that teachers do discuss amongst themselves their problems and difficulties, which may well create a milieu within which the notion of stress is a salient concept. Secondly, it may be argued that teachers do in fact experience greater stress but that factors such as the length of school holidays and the presence of social support in the form of

colleagues with whom one can discuss one's problems and seek advice may serve to mitigate the extent to which stress they experience actually precipitates ill-health. (p. 157).

In the face of scarcity of data and limited studies, it could be concluded that no definitive evidence exists in Britain concerning the extent/prevalence of teacher stress and that much research needs to be done to clarify the situation.

Sources of Stress

Kyriacou and Sutcliffe (1977b) discussed studies on the sources of teacher stress. In a study of 658 primary and secondary teachers in Britain, Dunham collected reports at conferences in which three common stress situations were identified: "reorganization, role conflict and role ambiguity, and poor working conditions" (p. 301). In an early study reported in 1962 by Rudd and Wiseman, nine areas of professional dissatisfaction were identified: (a) teachers' salaries, (b) poor human relations among staff, (c) inadequacies of school buildings and equipment, (d) teaching load, (e) teacher training, (f) large classes, (g) feelings of inadequacy as a teacher, (h) more time needed, and (i) status of profession in society (p. 300).

Kyriacou and Sutcliffe (1977) report that while teachers face numerous problems dealing with difficult students,

. . . It is interesting to note that maintaining classroom discipline has not been identified as the most important source of teacher stress in the studies so far reviewed. Nevertheless, Caspair (1976, p. 26) has argued that "the exhaustion felt by most teachers at the end of the term is more closely linked to the demands made on the skills and personality of a teacher in keeping discipline over the children he teaches than to any other aspect of his work." If the contribution of maintaining classroom discipline to teacher stress is indeed greater than that indicated in the studies that have been reviewed, then at least three explanations may be advanced: 1) that teachers distinguish between aspects of the job which are regarded as an integral part of the job (teaching children, maintaining discipline), and those aspects of the job which can be changed by administrative decisions (salary, large classes). Although both aspects may contribute to teacher stress, only the latter may be reported as sources of discontent; 2) that ego-defensive processes lead to the

underreporting of dissatisfactions which imply personal failures or deficiencies; 3) that the contributions of maintaining discipline may involve constant monitoring of the pupil's behavior, and as such teachers may not be fully aware of its significance. These explanations may be useful hypotheses for further investigations. (p. 301)

Pratt (1978), using 124 full-time primary teachers from schools selected "to provide a balance of teachers between children's age and hardship levels" (p. 5), investigated the relationship between effects of age and background of the children taught and the perceived stress of the teachers. The home background of the children "was considered in terms of financial hardship in the homes, and for the purpose of the research, judged to be reflected in the percentage of free meals provided by the schools where the subject was taught" (p. 4). Each teacher filled out a General Health Questionnaire and a Teacher-Event Stress Inventory (TESI) for five days. In his conclusions, Pratt stated:

Results showed that stress arose from five main areas: a general inability to cope with teaching problems; non cooperative children, aggressive children, concern for children's learning, and staff relationships. Financial deprivation in the home background was found to be positively and highly significantly related to the incidence of perceived stress among teachers of all but the very youngest children; among those teaching the more deprived, stress increased with the age of children taught. A positive association was found between the amount of stress recorded and illness, as measured by the General Health Questionnaire. (p. 3)

Kyriacou and Sutcliffe (1979) in their study of 218 teachers in 16 medium-sized mixed comprehensive schools in England summarized their findings.

The results indicated that self-reported teacher stress was negatively associated with job satisfaction ($r = -.27$; $p = .11$), and positively associated with intention to leave teaching ($r = .18$; $p = .01$). . . . The association between self-reported teacher stress and frequency of absences failed to reach significance, but for total days absent the association was significant and in the predicted direction. (p. 89)

Kyriacou (1980) reviewed additional studies on sources of teacher stress and related topics. Cox and Dunham monitored the conference on teacher stress

held by the Clwyd County Council in 1977 which was attended by teachers, administrators, and members of the Council's Department of Education.

Cox grouped the sources of teacher stress/dissatisfaction considered by the conference participants under five headings: (1) training and career development (e.g., inadequate induction, unfulfilled ambition), (2) nature of work (e.g., excess workload, disruptive pupils, constraints on resources, rate of educational change), (3) working environment (e.g., ill-designed, noisy), (4) school organization (e.g., size of school, poor administration, bad management, role conflict), and (5) school and community (e.g., lack of support from parents, excessive demands made by society). Dunham, utilizing reports on stress situations elicited from the participants identified six categories of stress situations: (1) educational and social change, (2) role conflict and role confusion, (3) poor physical and social working conditions, (4) problem pupils, (5) poor inter-professional communication and cooperation, and (6) problem teachers. (p. 119)

In Pratt's (1978) study, previously discussed, 124 primary school teachers were given the Teacher-Event Stress Inventory of 43 potentially stressful occurrences and asked to rate each event on five consecutive days.

A cluster analysis of 43 TESI items indicated six clusters which were labeled (1) staff relations, (2) non-cooperative children, (3) inadequate teaching, (4) aggressive children, (5) extra jobs, and (6) concern for children's learning. Perceived stress, as indicated by mean daily TESI scores, and the six item-clusters were compared for biographical subgroups of the teachers for the variables sex, age, length of service, and posts of special responsibility. None of the comparisons however revealed significant differences. (p. 121)

Kyriacou and Sutcliffe (in Kyriacou, 1980) studied 257 teachers in medium-sized English mixed comprehensive schools, asking teachers

... to rate 51 sources of stress in response to the question, "As a teacher, how great a source of stress are these factors to you?" on a five point scale labelled from "no stress" to "extreme stress" A principal components analysis of the sources of stress revealed four factors which together accounted for 52.0% of the total variance. These four factors were labelled "pupil misbehavior" (noisy pupils, difficult classes, difficult behavior problems), "poor working conditions" (poor career structure, poor promotion opportunities, inadequate salary, shortage of equipment), "time pressures" (not enough time to do the work, too much work to do, administrative work), and "poor school ethos" (inadequate disciplinary policy of school, lack of consensus on minimum standards, attitudes and behavior of the headmaster). Kyriacou and Sutcliffe also noted a

number of differences in sources of stress between biographical subgroups. (p 121)

Sources of British teacher stress, as revealed by these studies, seem to include all aspects of school life with no one area indicated as significant. Little British research has investigated the impact of life style on teacher stress, although several have included demographic data.

Symptoms/Manifestations/Responses to Stress

According to Cooper and Marshall (1977), each individual has his own distinctive repertoire of stress symptoms which manifest themselves in three levels of operation: psychological, physical, and behavioral. Kyriacou (1980) and Kyriacou and Sutcliffe (1977b, 1979) have summarized the British studies and literature concerning the most common manifestations/symptoms/responses of teachers to stress.

The manifestations of stress identified may be psychological (e.g., depression, anxiety), physiological (e.g., increased heart rate), and behavioral (e.g., deterioration in work performance, deterioration in interpersonal relationships). The long term effects of occupational stress may include both physical and mental ill-health (Cooper and Marshall, 1970) The distinction between sources of stress and the manifestations of stress may often be unclear. For example, poor relations with other members of staff may be the result of a heavy work load, and thus can be considered a manifestation of stress or they may be the primary sources of stress themselves. Indeed, the failure to deal with one source of stress may quickly lower one's ability to tolerate another source of stress. Furthermore, the primary sources of stress may arise outside the work situation, such as marital difficulties, although home and work situations undoubtedly influence each other. (p. 122)

After noting the three classifications of stress responses/manifestations, Kyriacou and Sutcliffe make no distinction among them in reporting British studies. Two studies by Dunham (in Kyriacou, 1980) were reported. In a 1976 report, Dunham argued that

. . . there are two main types of common stress responses among teachers. The first is frustration, and is associated with headaches, stomach upsets, sleep disturbances, hypertension and body rashes, and

in prolonged cases, depressive illness. The second is anxiety and is associated with feelings of inadequacy, loss of confidence, confusion in thinking, and occasionally panic. Cases of severe anxiety may lead to psychosomatic symptoms such as twitchy eye, a nervous rash, loss of voice, and weight loss. Prolonged stress can lead to a nervous breakdown. (p. 122)

Kyriacou went on to point out that

It is unclear, however, as to how Dunham has arrived at this clinical dichotomy of an "anxiety" and a "frustration" dominated response syndrome and clearly more research is needed here to substantiate this dichotomy. Dunham has further argued that absenteeism, truancy, leaving teaching and early retirement are forms of withdrawal associated with situations which become too stressful to tolerate. (pp. 122-123)

In his report of the Clwyd County Council's conference of stress, Dunham lists the most frequent stress responses of the participants (from a checklist of 47 items) as follows:

. . . tension headaches, general irritability and bad temper, hypersensitivity to criticism, moodiness, frequent forgetfulness, inability to concentrate, depression, loss of a sense of humor, excessive aggressiveness, feverish activity with little purpose, insomnia, and excessive smoking. (p. 123)

One of the Kyriacou and Sutcliffe studies (in Kyriacou, 1980) in which they asked teachers to rate 17 items regarding symptoms of stress, those "with the highest mean frequencies, in descending order, were exhausted, frustrated, under stress, very angry, very tense, anxious, and depressed" (p. 123). Thirty-four percent of the total variance appeared to be largely defined by "feeling very tense."

In the study of Cox et al. reported by Kyriacou and Sutcliffe (in Kyriacou, 1980) of 100 matched pairs of teachers and semi-professionals, they reported only two significant differences. "These were that female teachers compared to male teachers and non-teachers reported sleeping longer, and that teachers compared with non-teachers reported drinking less!" (p. 124). In another study these two

researchers found low levels of correlations between teacher stress and job satisfaction, absenteeism, and intention to leave teaching.

Study of British and German Teachers

A number of British studies give comparative data, either between teachers in different types of schools or between teachers and other occupational groups. Dunham (1980) made an exploratory study of the teachers from two West German and two English comprehensive schools during 1977. Teacher volunteers (59 German and 69 English) completed a questionnaire and a check list to identify "stress situation in the school and the behavioral, emotional, and psychosomatic responses to these situations" (p. 12). In addition, Dunham held half-hour interviews with about half of the participating teachers in each school in each country. As he pointed out,

This methodology has two major limitations because of the relatively small samples and the manner in which they were obtained. But I was able to check that the results which I achieved with my research methods presented an accurate account of the stress experienced by the majority of the teachers in the schools. I did this in the English schools by reporting my research to all the teachers in the two staff development conferences. They discussed my results in small groups. Their comments strongly supported the evidence which I had obtained from my samples. In the two German schools I used my third visit to discuss my research with small groups of teachers. Their assessment of my study was that it was a realistic report of their occupational stress. (p. 13)

The major stress situation identified by both national groups, although ranked differently, were almost identical. They were:

(1) Feel unclear about what the scope and responsibilities of your job are, (2) think that you will not be able to satisfy the conflicting demands of your colleagues, parents of your pupils, pupils, etc., (3) feel that you have to do things at school that are against your better judgment. (p. 16)

In addition the German teachers also checked "feel that you have too little authority to carry out your responsibilities" (p. 13) while the English teachers indicated that they "feel unable to influence your headteacher/head of

department's decisions and actions that affect you" (p. 13). Although the lists are similar, the English teachers checked more items as being stressful. "This evidence suggests that on the criteria provided by these questionnaire items the English teachers were identifying more stress situations than the German staff" (p. 14).

In the interviews additional stress situations were identified. The German teachers expressed concern about the growing size of schools and school staffs, the distance between administration and teachers, and the behavior problems of students who had repeated grades (as much as three times) because the students had not satisfactorily passed examination grades. The British teachers indicated in their interviews that poor communication was a source of stress. Dunham summarized the additional sources of stress identified in the interviews.

There was a high degree of similarity in the stress situations which the German and English teachers identified in their interviews with me. The organizational pressures included the rapid growth in the numbers of pupils and colleagues, many meetings, difficulties in receiving the right amount of information about administrative decisions, the uncooperative attitudes and the disruptive behavior which they encounter in their interaction with their pupils. There is one important difference in these reports: the German teachers did not have the role confusion and conflict which the English teachers reported from their responsibilities as subject teachers and members of the pastoral care organizations in the school because in these two German schools, a pastoral system to help students with personal problems has not been developed. (p. 15)

The symptoms of stress as identified by the check list were similar for the two national groups. Again while there were rank order differences, both British and German teachers checked the following as being their major stress responses: general irritability and bad temper, the loss of a sense of humor, moodiness, inability to concentrate, depression, frequent forgetfulness, tension headaches, hyper-sensitivity to criticism, and apathy" (p. 16). In addition, the

English teachers included "feverish activity with little purpose." Dunham summarized the responses to the check list as follows:

On the whole the differences between the teachers who checked the items are quite small although it may be noted that there were nine items which were ticked by at least 30% of the English teachers as compared with the six items which were ticked by a similar percentage of German teachers. (p. 16)

In the interview, both groups of teachers reported additional stress responses such as anxiety, exhaustion, poor teacher cooperation, feelings of anonymity, disenchantment, unhappiness, "comfort eating," hopeless cynicism. Dunham reported that some teachers "were developing new professional skills but there were a greater number of reports of frustration being experienced and expressed as irritation, anger and indirect forms of aggression" (p. 17).

Other Types of Stress Research

At the time this study began, most stress research concentrated on indepth study of one or a few aspects of stress. Cooper and Marshall (1977) state that "few studies treat job stress comprehensively" (p. 47). Likewise, most research was limited to one discipline, although studies were being done that involved several disciplines.

There were numerous medical studies involving the relationship between illness and stress (Orth-Gomer & Ahlbom, 1980; Pelletier, 1977), Type A behavior and health issues (Dembroski et al., 1979; Waldron et al., 1980), life change events and health (Bramwell et al., 1976). Some focused on medical topics such as stresses experienced by different types of hospital patients (Volicer, Isenberg, & Burns, 1977); biomedical studies of U.S. Navy underwater demolition training (Rubin & Rahe in Gunderson, 1974); illness and stress (Mechanic, 1976a); stress, cardiac activity, and sleep (Anch et al., 1976); behavior patterns, stress, and coronary disease (Glass, 1977); and various aspects of physiology (Frankenhaeuser

& Johansson, 1979). Others measured the somatic changes within the body under carefully controlled or monitored conditions (Carruthers, 1974; McQuade & Aikman, 1974).

Examples from sociology include the studies of Antonovsky (1979) and Levine and Scotch (1970). Mechanic (1975) reported on some problems in the measurement of stress and social readjustment. Examples of multidisciplinary studies are Glass' (1977) report on behavior patterns, stress, and coronary disease; and Frakenhaeuser and Gardell's (1976) study of "Underload and Overload in Working Life: Outline of a Multidisciplinary Approach," as well as the study of task demands on catecholemine excretion and heart rate done by Frankenhaeuser and Johnson (1979). Stress and Survival: The Emotional Realities of Life Threatening Illness edited by Garfield (1979) presents a report of various types of critical situations.

Valliant (1979) reported in the New England Journal of Medicine on the results of a longitudinal study covering 40 years of one group of men. This research, begun during the adolescent years, documented a statistically significant relationship between mental health and physical health.

This has been a brief sample of some of the topics and types of stress studies, especially medical, that were surveyed for the present study.

Conclusion

When this study was designed, the current thrust of stress research was in an early stage of interest and development. While there had been studies of other occupations and professions, there had been little basic research into teaching experiences and levels of teacher stress. Although this study was primarily an educational endeavor, the research design and concepts had to be drawn from other disciplines which, combined with the expertise provided by the

Consultation Team, provided the basis for this study. Employing a simple concept of levels of stress, the research focused on the collection of data from multiple facets of teachers' personal and professional lives on a weekly basis for a school year. In this chapter, the literature and research most widely used in planning and carrying out the study have been reviewed.

In Chapter III the details of the research will be described.

CHAPTER III

METHODOLOGY

Introduction

The purpose of this study was to systematically observe the professional and personal lives of public school teachers for factors relating to stress. The method to be used was weekly self-reports by the teachers on selected aspects of their professional and personal lives for the duration of a nine-month school year. These teachers' reports were assumed to reveal changes in their lives which could be analyzed to identify times when they might be most vulnerable to stress overload. Likewise, it was hoped that these times might be linked in significant ways to identifiable, stressful, aspects of their professional and/or personal lives.

To be described in this chapter will be (a) the formulation of the study design, (b) instrumentation and preparation for data collection, (c) the research setting, (d) data collection procedures, and (e) data evaluation procedures. Also, the problems and limitations inherent in such a long-term study will be discussed.

Initial Issues and Concerns

Preliminary Questions

The researcher of job stress (no matter how defined) confronts many issues and questions. Does one investigate a brief point in time, selected times, or make a longitudinal study of a natural interval? Does one research an isolated element of stress or seek to gather data on whole individuals as they experience their personal and/or professional life? Does one seek to provide/allow/monitor

for individual differences such as personality, life style, health, or life experiences? Is it necessary to limit the research to the perspective of a single discipline such as medicine, psychology, sociology, or occupational studies and/or to limit the research to the definitions and theories encompassed by each? How can on-going experiences be monitored and data collected in the least obtrusive way, knowing that the study participants cannot be observed through one-way mirrors? In the absence of other in-depth studies, how does the researcher determine the elements to be studied? If the study can be completed, how useful will be the data in pointing to significant areas for further research? If completed, is it possible that significant outcomes will accrue? Acknowledging the many issues and questions that such a research objective raises (whole person studies), especially considering monetary and other limitations, is the idea worth pursuing, knowing that all outcomes might be open to many criticisms and questions?

Inasmuch as stress is a whole person phenomenon (Pelletier, 1977; Schneider, 1984), can the researcher collect significant samples of the many variables involved? Such samples would need to include measures of both the professional and personal facets of the participants' lives. In addition, selected aspects of personal life style, e.g., exercise habits or caffeine consumption, would need to be monitored. Some measures of health status and/or changes ought to be collected. Important, but difficult to sample, would be mind/body/spiritual aspects of participants' lives. In spite of the challenge of including such issues, it might be useful as an initial research endeavor to sample selected multiple aspects of the teachers' professional and personal lives. Therefore, the decision to continue investigating the possibility of such a research design was implemented. Given the breadth of such issues, this study

might be useful as an initial research endeavor in the sampling of multiple aspects of people's professional and personal lives.

Concerns

Early Concerns

Once questions concerning the nature of the study have been considered, then one confronts the problem of recruiting teacher participants and completing the study. Would full-time teachers even consider participating in such a study no matter how carefully conceived? In the absence of funds to pay participants, would a sufficient number be willing to volunteer? If so, would the participants sustain the interest and motivation necessary to complete a series of some 35 weekly reports? With what degree of candor and honesty would they respond to the many questions asked? If data can be collected, how then can the participants be monitored for changes in habits resulting from the weekly reminders of their involvement in the study? Before developing instruments for use in the study, it would be necessary to assess the possibility of finding volunteer teacher participants. If these could be recruited, then the other issues would need to be addressed.

Researcher

The study was designed to be manageable as to expense, time commitment, and convenience. Thus, the initial plans were made with the hope that teachers in the researcher's home district might be willing to participate.

To seek teachers in the researcher's district could be both an asset and a liability. Teachers might be more willing to participate in the study because the researcher was known to them. Carrying out the study would be more convenient to supervise, and the conditions and situations occurring during the research year would be easier to monitor. On the other hand, some teachers

might choose not to participate because they knew the researcher. The volunteers would not constitute a scientific sample and would reflect only one level of educator in one district. Therefore, the outcomes and results would not be generalizable to other settings and populations.

Teacher Participant Volunteers

The next step in the creation of the study was to determine the response and the level of interest of public school teachers to the proposal. In June, teachers in two suburban middle schools in the same district were sent a one-page summary of the project as originally conceived. After the teachers had received the flier, the researcher visited briefly with each to answer questions. By this time enough teachers had returned the slips and had indicated a willingness to be involved, so that the development of the instrumentation and the final format for the study was ready to begin.

Need for Consultation Team Support

Before serious consideration could be given to research details, it was imperative to assess the resources available and to recruit expert counsel. Any project involving physical and psychosocial dimensions of human life would need the support and advice of physicians and psychologists having expertise in the area of stress. Dr. John Schneider, psychologist with the Michigan State University medical schools, and Dr. Robert Ward, Director of Special Projects for the College of Osteopathic Medicine, provided these important consultation services. Counsel and on-going advice concerning the educational aspects of the study were provided by Drs. Charles Blackman and Samuel Corl, III, Michigan State University College of Education professors. These four experts provided guidance in the development of the research instrumentation as well as other needed services.

Preparation for Data Collection

Focus

Stress is necessary to life; it is the amount and quality of stress that one experiences which is either healthy or unhealthy. While researchers and writers still disagree on definitions as well as other aspects of the stress phenomenon, there is considerable agreement that stress has physiological, psychological, and social dimensions. Accepting Kenneth Pelletier's (1977) concept of the "feedback loop" required that one monitor the psychosocial as well as the physiological aspects of the lives of research participants.

Stress, for the purposes of this study, was defined as an individual's adaptive responses to internal or external stimuli, either physical, psychological, social, or environmental, or any combination of these. Adaptation and/or adjustment involves change. Therefore, the decision was made to monitor the changes in the reports of the participants in an effort to make preliminary assessments concerning potential levels of stress at different times and in different aspects of their lives. The Weekly Report was the instrument used to collect these data. The responses of the teachers were analyzed for patterns that might indicate areas and times requiring adaptation and/or change. Hopefully, these patterns will provide clues to varying levels of stress.

Following the advice of Dr. Nicholas Tinbergen, Nobel Prize winner (Monat & Lazarus, 1977), the decision was made to "watch and wonder" and to collect the facts as reported by the teachers, but within the careful limits determined by the purpose of the study. To do this, it was necessary to collect data on elements of both the professional and personal lives of teachers and to assess, directly and indirectly, the psychosocial and physical aspects of their lives.

The focus of this study was on the changes (stress) that may occur in the lives of the teacher-participants during a school year. Three approaches were

used to do this: (a) baseline data were collected once, (b) weekly self-reports were collected for an academic year, and (c) physical health was measured. **The focal point of the research was the Weekly Reports and the data contained in them.*** Changes in all measures were felt to be the best way to monitor stress levels; hence, the emphasis was on obtaining weekly measures through the collection of Weekly Reports.

Recruitment Decision

The decision to recruit participants from the middle schools of the district in which the researcher taught was based on several key considerations. The schools were located conveniently for data collection by an outside person. The administration and staff were known to the researcher, which might facilitate access. The middle school teachers in these districts were highly committed professionals, aware of the requirements of research, and concerned about the changing and increasing demands on the teaching profession. However, conducting research using people known to the researcher and with whom the researcher would be teaching during the data collection period would require careful provisions for confidentiality and privacy. Knowing the researcher was felt to have positive and negative aspects. On the positive side, teachers might be more willing to volunteer and to participate in the research and they might provide more candid and open responses than if they did not know the researcher. On the negative side, this situation would limit the value of any research result, as the volunteers would not be a random sample of the teacher population in the research district nor of teachers as an occupational group.

*The other data collected would not be used as a part of this study, but they would be used by members of the consultation team.

Data Collection Decisions

Time Interval

Once the decision was made to monitor the physical and psychosocial elements of teachers' lives for a school year, the first question was, "What time interval ought to be used?" The researcher, a teacher herself, knew that it is often difficult to recall all the elements of a busy day, much less a week. Yet collecting data more than once a week would be too intrusive into teachers' lives. Less frequent data collection times would mean loss of recall of important information, but would be less intrusive. It was decided that teachers would be recruited the week before school began in the fall and would be asked to give data each week that school was in session until the first week of June.

Schedule

What weekly schedule for picking up the report forms would be least disruptive for teachers yet provide the best possible data? Friday was immediately rejected as most employees, teachers included, want to leave work as early as possible for the weekend. Monday, being the first work day of the week, was likewise deemed undesirable. In addition, the weekend might interfere with recall of the previous week's events and feelings. Thus, Thursday was chosen as collection day because it allowed for the most immediate recall of the greatest portion of the work week.

Instrumentation Plans

The next decision was to determine the format of data collection. It was recognized that any direct request for information would automatically interfere with busy teaching schedules as well as influence the nature of the information received. Techniques such as interviews would be too expensive, too time-consuming, and too difficult to standardize. Similar issues arose with the

possible use of journals--if teachers would even do them! The decision was made to develop a self-report form that would take no more than 10 minutes to complete.

Provisions for Confidentiality and Privacy

In a study of this nature, it is important to make careful provisions to guarantee confidentiality and privacy to all research volunteers. Given the multiple types of data to be collected, including medical data, it was decided that all questionnaires, except the Weekly Reports, would be kept by the medical consultant. The secretary to the medical doctor on the consultation team prepared code numbers for all eligible teachers in the two middle schools involved. All questionnaires/inventories, Weekly Reports, etc., were identified solely by individual code numbers. The key to this code was kept by the medical doctor and the chair of the doctoral committee. At no time could the researcher see or have access to individual codes. However, the researcher knew the codes for school building, sex, and whether or not the teachers taught special areas or team subjects.

To further guarantee privacy and the collection of the optimum number and quality of reports, the medical college hired a second-year medical student to pick up all the reports. The medical student was charged with collecting all Weekly Reports and keeping a record for each individual. The student also collected all the inventories and questionnaires, answered questions as they arose, and assisted the school nurse in taking the blood pressures. The student also knew the code number for each participating teacher. All the data except the Weekly Reports were permanently kept at the medical school, but the Weekly Reports were accumulated and given to the researcher at the end of the

year. The researcher could only see or handle summaries of the information housed in the medical school.

To make turning in the Weekly Reports (and other data) as easy as possible, depositories that would provide anonymity and privacy were sought in each school. Each participant could either give the data to the medical student or drop it at the designated location. In one building reports were dropped in a file drawer in the counselor's outer office; in the other building, a faculty mailbox under the student's name was available.

Other Decisions

Subjects

Before the study began, participation was limited to full-time classroom teachers. This decision meant that some of those volunteering initially in the spring could not participate in the study, as they were consultants, librarians, or part-time teachers. Thus, other volunteers were sought in the fall.

Explanation of the Purpose of the Study

The researcher was completely candid in explaining the purpose of the study when volunteers were recruited. However, once the study was underway the word stress was not used by anyone involved in the research in interacting with the teacher participants either in written notes or in conversation.

Permission and Approvals

Previous to the fall recruitment of teachers, permission for the study was requested from the school system and the appropriate University committee. The superintendent of schools gave his written permission, and the principals of both middle school buildings gave verbal approval. Application was made to the University Committee on Research Involving Human Subjects and approval was

received. The Committee gave permission to recruit teachers prior to their approval on condition that no data be collected. This condition was meticulously followed.

Recruitment

The school system, of which the two middle schools are a part, routinely provides two days before the beginning of classes in September for teacher preparation. Meetings to explain the project, answer questions, and recruit volunteers were called in each middle school on one of those days. Three members of the consultation team, both education professors and the medical doctor, attended both meetings to answer questions concerning any phase of the study and the University's involvement. Their presence added credibility to the study. Since the university was not in session, the medical student was not present. At this meeting, the permission slips, the first background packet of questionnaires, and a folder of Weekly Reports were available to volunteers and anyone else who wished to look at the materials.

The study began on the Thursday of the first full week of school. Since it would be two weeks before the medical student could begin his weekly visits to collect Weekly Reports and packets and to answer questions, teachers either held their materials or left them in the building depositories.

Weekly Reports

Introduction

The basic purpose of this study, to collect data on the adaptations and/or changes in teachers' lives over the duration of a school year, was to be accomplished using a form called the Weekly Report (see Appendix H). Three major steps were involved in developing the Weekly Reports. First, the items to be included in this questionnaire had to be determined, and they had to be in

keeping with the concept of sampling elements of the whole person. Once the elements of the Weekly Reports were determined, then the format had to be established to provide a maximum amount of information while taking a minimum amount of time to complete. Finally, the format of the Weekly Report had to be field-tested for problems in content and format. (Note: left out were considerations of how the data would have to be transferred to computer format.)

Inasmuch as this research was focused on teachers, it was deemed desirable to emphasize key elements of their professional task. In addition, information was needed about important segments of their personal lives. Especially important in any attempt to assess the potential for stress overload is monitoring clues or evidence of teacher health.

Professional Tasks

After investigation, no relatively short list or subsets of the responsibilities of teachers was found. However, rather long and detailed lists used for competency-based teacher education were available. It was, therefore, necessary to develop such a list to be used with the Likert scales. Thirteen subsets were selected and special care was taken to write these in a neutral format. Inasmuch as interpersonal conflicts may occur in any aspect of an individual's life where other people are involved, this category was included in both the professional and personal lists.

The 13 subsets of the Professional Tasks included in the Weekly Reports were as follows:

Classroom instruction

Instructional planning and preparation

Personal/social needs of students

Paper work:**Grading and record keeping****Other (specify)****Responsibilities to and interactions with:****Administrators****Parents****Fellow teachers****Others (specify)****Professional meetings:****During school hours****Before 8 AM or after 3 PM****Evenings (after dinner)****Interpersonal conflicts--school**

In addition, a final inquiry, "Professionally, I would summarize this week as . . ." was included.

Personal Life Subsets

Asking people about their personal, private lives is always a touchy question and one to which the participants might well not respond unless the questions were carefully chosen and phrased. Therefore, the list was kept short and included only the five following items for use with the Likert scales:

Family**Social****Meetings (non-school)****Personal economic situation****Interpersonal conflicts--home/social/etc.**

Assessment Scales for Professional Tasks and Personal Life

Having chosen the areas (subsets) in which weekly responses were desired for the teachers' professional and personal lives, two other decisions remained. What categories/dimensions should be assessed to monitor changes and in what way? Likert scales seemed to be the most efficient format, taking the least amount of the teachers' time. But what information ought to be sought concerning the subsets of the professional and personal lives of the participants using these Likert scales?

First, it was necessary to determine, during any given week, if the teachers were involved in any of the subset activities and the amount of that involvement. To collect these data, a five-point energy scale was used with the low point being "no involvement" and the top point being "very high demand." This Likert scale was labeled Energy Expended.

Some researchers (Cooper & Marshall, 1977) seem to equate degrees of stress with levels of felt pressure. Hence, a second Likert scale was included in the Weekly Reports to assess the participants' feelings of pressure. This five-point scale began with "little or none" and the top indicated "very high" pressure. This Likert scale was called Pressure.

Levels of satisfaction are another indication of a person's feelings concerning events. To gather some indication of the positive or negative feelings of the teachers concerning the subsets of their lives, a Satisfaction Likert scale was chosen as the final part of the trio. In this case, the low end of the scale indicated "little or no" satisfaction and the top "very satisfying."

These three Likert scales--Energy Expended, Pressure, and Satisfaction--were used for the 13 Professional Tasks and the five Personal Life categories.

Conflict Scales

One source of anxiety occurring in life is the tug and pull between one's job and one's personal life. Many consider anxiety to be a major component of stress or closely allied to stress (Monet & Lazarus, 1977). For the purposes of this study, only two aspects of conflict and anxiety were measured weekly. One type of conflict labeled "Conflict: Professional/Personal" was targeted when the teachers were asked to indicate on a five-point scale the "extent to which professional demands on my time conflicted with my personal or family demands/needs." Another type of conflict called "Conflict: Duties/Desires" was inherent in the question asking the "extent to which things I thought I should do conflicted with things I wanted to do." The lower end of the five-point Likert scale used for both conflict statements was labeled "not at all" and the opposite "a great deal." These two questions concerning conflict demands and decisions and the two questions about interpersonal conflict were constructed to assess some of the anxiety and conflict in teachers' lives.

Life Style Inventory

If one is to monitor changes in people's lives in an attempt to measure levels of adaptation or change, then it is necessary to sample not only key elements of their jobs and personal lives, but also elements of their life styles. In an attempt to collect information that might provide these clues, questions were asked about the following:

Average number of hours of sleep per night this week and how much did you dream while sleeping

Exercise this week: type, hours, and frequency

Social and recreation activities: type and total time

Beverage intake: coffee, tea, soft drinks, wine, beer, cocktails, liquor

Snacks (such as donuts, sweet roles, and/or candy)

Changes in:

Diet

Smoking habits

Amount and use of privacy/personal/alone time

Discussion of personal or professional concerns with new person or group

Weekly Health Summary

Four types of questions were posed to collect data on health. First, teachers were asked if they had visited a doctor during the week and, if so, to give the reasons and the number of visits. Second, they were to list all medication(s) and drugs taken, including symptom-relieving compounds such as aspirin, Bufferin, Tylenol, etc., and to give type and quantity. Next, for each day of the week, they were requested to "very briefly list physical symptoms and health problems for each day" and to indicate none if there were none. Finally, they were asked to give the number of days they missed school each week on sick leave.

In addition to the main categories indicated above, the teachers were to complete several sentence stems and were provided an opportunity to make comments or give explanation or write notes. The sentence stems, while not a part of this portion of the research, asked the teachers to recall the most satisfying experience(s), most frustrating experience(s), and to give suggestions they had concerning ways the professional week might have been better. An additional inquiry asked them to record significant life events.

Summary

The purpose of the Weekly Report was to gather information from teachers on a regular basis for a school year. The weekly questionnaires were designed to

be as simple as possible to collect samples of multiple aspects of the teachers' lives. In keeping with the educational focus of the study, professional tasks were emphasized. Data were also sought about the individuals' personal lives, their life styles, two conflict situations, and their physical health.

Data Collection

Research Setting

Community Profile

As indicated previously, the researcher's home district was chosen for this research for convenience and for financial reasons. The school system is located in a Midwest suburb near the state's capital and adjacent to a major university. The city, with a permanent population of over 20,000 people, incorporated all the advantages and disadvantages of a town/gown community. During the regular academic year, the resident population is increased 150% by university students. Not only does the city house the professors, university staff, and students, but it is a bedroom community for the government, business people, and factory workers from the capital city. Although it is a desirable place to live, taxes are high because of its limited industrial base.

Educational Climate

Because of the nature of the community, the citizens place a high priority on education. They support and pay high taxes for educational purposes, and they expect excellence from their school system. For teachers this means better than average teaching environments, adequate supplies and equipment, as well as above average salaries. In exchange, the community expects educational excellence. Parents support their high expectations with participation in school activities such as open houses, parent conferences, and musical, theatrical, and athletic events. Teachers, especially elementary and middle school team

teachers, are expected to be accessible by phone and/or in person as parents request. A great deal of attention to individual students is taken for granted. The community has high expectations for its students and teachers.

School System Organization

The school system follows a traditional pattern. Nine elementary schools feed into the two middle schools which serve grades six, seven, and eight. The district has one high school for grades nine through twelve. In addition to the expected administrative staff of superintendent, assistant superintendent, personnel officer, and other administrators, each building has a principal. In the middle and high schools, the principals and teachers are supported by assistant principals, counselors, and librarians. Both middle schools have the services of a reading consultant and special education consultants/teachers. Aides provide a variety of services which differ from building to building.

Middle School Organization

The district has operated the two middle schools for 10 years using a six, seven, and eighth grade organizational pattern. While sharing a basic organizational and curricular plan, each building has developed its own unique personality and methods of operation. There is both cooperation and competition between the two buildings. One building is a converted high school which handicaps some aspects of team teaching. The other building was built to house a middle school and provides the physical flexibility needed for team teaching.

The academic subjects are taught within teams of students and teachers and vary from two to four teachers per team. Inasmuch as the curriculum, budget, report cards, and leadership roles are organized by academic areas, there is little interdisciplinary teaching with the possible exception of the sixth grade. However, units cutting across academic lines such as sex education, career

education, and computers are taught by all teachers of a team. The team teachers jointly share in organizing time and students for instruction and are responsible for building a sense of community with their students. Consequently, these teachers act as the first phase of counseling services and provide support for students in a wide variety of ways. The team teachers are given five periods a week for team planning (including counseling and conferencing) and four periods a week for personal planning. Because of a common planning time, these teachers are available to meet with parents and school staff daily. Within the teams, the ratio of students to teachers is approximately 30 to 1.

In contrast, the other school subjects such as physical education, industrial arts, art, music, homemaking, and foreign languages are taught by faculty called special area teachers. These teachers meet eight groups of students three times a week for instruction. Class sizes vary widely, and some areas such as physical education and music have large numbers of students, although physical education and choral music teachers have aides. Other special area classes may be somewhat small. Because of the vastly differing schedule and pattern of expectations, there is limited communication between the two parts of the staff.

At the time of the study, the middle schools were using a narrative report card. Teachers had their own bank of statements on the district computer and for each marking period would indicate the students' grades as well as narratives chosen to indicate the type of work accomplished, the areas of academic strength and weakness during the marking period, the skills where a child needed improvement or excelled, and several comments concerning the child's social/emotional state. This reporting system requires not only the compilation of a bank of narratives which fit the curriculum and the teacher's individual approach but which are flexible enough to individualize the report to the parents. At each reporting period, each teacher makes out a computer scan sheet for

each student, checking between 10 and 20 items for each child. In addition, a "grade" is given to evaluate each child according to his/her abilities and skills rather than on the traditional A-B-C-D-F scale. Such a reporting system requires careful organization on the part of the teacher and takes more than the usual amount of time at the end of each reporting period. The completed report card, printed by computer, fills four to six pages of narratives.

Traditionally, the middle schools in this district hold parent conferences twice a year in addition to teachers being available daily to any parent on request, either by telephone or in person. Two released half days are used for these twice-yearly conferences as well as an evening session. Parents are scheduled for 10 minutes each and, if longer conferences are desired, another appointment is made. At the time of this research, parents were invited to attend according to an alphabetical schedule, and teachers had no idea how many would appear during any one session. As a result, parents often had long waits to see teachers. In general, the special area teachers were not as busy as the team teachers at conference times.

Initial Steps

As indicated earlier, teachers in the two middle schools were contacted at the close of school in June to assess their willingness or interest to participate in a year-long study of teacher stress. Every teacher who was interested talked with the researcher and/or turned in a slip indicating interest and the level of that interest. With this information, the researcher approached the consultation team concerning the feasibility of such a study and requesting their professional expertise to support the project. With their willingness to assist in the research, detailed plans for the collection of the data and the preparation of the appropriate questionnaires began. From the beginning, it was acknowledged that

the study would raise more questions than it would provide answers. It was acknowledged that the model was in marked contrast to usual, in-depth, one-issue research, and that the long-term data collection would be a challenge in data analysis.

After the instrumentation was in place, approvals for the study were received from the appropriate sources (see "Permissions and Approvals," p. 9). Plans were made to recruit teachers for the study during the first week of school, at separate planning meetings in each middle school (see "Recruitment," p. 9). Approximately 30 teachers indicated an interest, so the study was considered viable--or, at least, started.

Nine-Month Pattern

Two aspects of the research began the first week of school. First, most of the baseline questionnaires along with the personality measures were given to each volunteer. At the end of the first week of school, on Thursday, the first Weekly Reports were collected. One teacher joined the study the second week. Collection of data for the first few weeks was informal as the medical student hired to collect the information had not returned to school. During the fall, several more questionnaires were distributed and collected. However, from the first, Weekly Reports were collected regularly. Several times during the year, such as Christmas vacation and spring break, the submission of the Weekly Reports was left to the teachers. However, when there were changes in the collection pattern, a ditto was placed in each participant's mailbox telling him/her of the situation. Teachers who did not turn them in or have them ready for the medical student were reminded. Inasmuch as the participants were volunteers, it was felt that no pressure could be applied.

An especially important role was filled by the medical student and the counselor assigned to the building in which the researcher did not teach. The counselor provided a space in her outer office where questionnaires and Weekly Reports could be dropped. She was familiar with the research details and answered many questions the participating teachers had and/or alerted the researcher to problems. The medical student who picked up the information also answered questions and alerted the researcher as appropriate. The researcher herself did not initiate conversations about the study or answer questions unless asked in person. At the end of the year, a note of thanks was sent to all participating teachers. In addition, the medical student talked with each individual expressing thanks and answering any questions.

Data Handling and Storage

As indicated earlier, careful plans were made for privacy and confidentiality. All the baseline data were to be kept from the researcher. They were collected by the medical student and stored in the medical school, and only the summary information was given to the researcher. All keys to the identification of individuals were also withheld from the researcher; but the medical student, the medical member of the consultation team, and the major professor had keys to the identification numbers. During the school year, teachers could either turn their Weekly Reports and questionnaires into a central repository in each building or hand it personally to the medical student. The Weekly Reports were held by the medical student until the end of the year when they were given to the researcher for compilation and coding, etc. This original plan was strictly adhered to in collecting and handling all information collected from the teachers.

Data Analysis

Introduction

The purpose of this study was to monitor the changes, if any, that occur in teachers' lives during a school year and to ascertain, if possible, any relationships among the separate elements of the study. Initially, it was hoped that it would be possible to plot these changes over a nine-month period for both individual participants and for the group as a whole. For this report of the research, the focus is on the group profiles rather than on both the individual and the group. **The primary data were the computation of means for each element of the study for the group turning in Weekly Reports for each week.** Data analysis involved changes among the scores. Also, a yearly average was computed to ascertain the reported differences between aspects of Professional Tasks and Personal Life.

In addition, using a few of the most complete sets of data, correlations using various combinations of the three scales (Energy, Satisfaction, and Pressure) would be computed to ascertain the relative values among the differing patterns. Such a screening might be useful to identify items for further study. Completeness of data would pertain to two areas: (a) individuals who turned in all or nearly all of the reports for the school year and (b) sets of data for which the greatest number of items received responses on a regular, weekly basis.

Analysis of Baseline Information

The baseline information was collected via a series of questionnaires (see Appendix: Demographic Data and Life Style Inventory) in the fall. The data were collected by the medical student and filed in the medical school where they were transferred to computer sheets by someone other than the researcher. The compilation of the baseline data was simple and included only the computation of means.

After the completion of the computer analysis, the values of all the items containing alcohol were combined. In addition, conversions for coffee, tea, and soft drinks were made from cups to grams of caffeine. A cup of coffee was felt to approximate 100 grams of caffeine, and a serving of tea or soft drink was computed as having 47 grams per serving.

Analysis of Weekly Reports

From the beginning of the study, it was acknowledged that analysis of the multitude of data would be difficult. The Statistical Package for the Social Studies (SPSS) was used to synthesize and analyze the information. Because of the small sample size and the varying number of teachers who might turn in Weekly Reports each week and the patterns of missing data within these Reports, there were limited opportunities for statistical analysis.

Means

Means would be calculated for all 13 subsets of the Professional Tasks and for the five subsets of the Personal Life for each of the three stress-related scales: Energy Expended, Satisfaction, and Pressure. These means were to be computed for the 35 weeks of the school year for each item. Similarly, the means would be computed for the two conflict statements, alcohol consumption, caffeine intake, drug usage, and daily health symptoms. In spite of the varying n , it was hoped that these means might show patterns that could be used in raising questions and in identifying areas for further research. Each Weekly Report was coded as presented with spaces for missing data left blank.

Year Means (Rank Order)

In addition to the weekly means, a mean was computed for the full academic year for each of the Professional Tasks and Personal Life subsets for

Energy, Satisfaction, and Pressure. A comparison of these means might provide clues to the relationships between and among the various aspects of the teachers' professional and personal lives. Again, in a simple way, these means and the subsequent rank ordering of them might suggest areas for further research.

Correlations

It was hoped that at the end of the school year and after the data had been collected, correlations might be computed for the year between selected subsets of the data. Such correlations, if possible to compute, might accomplish two goals. First, the results might show tentative relationships between independent and dependent variables/elements of the study. If significant correlations resulted, they might give added value to the research design and strengthen the importance of the data collected. If few or no correlations occurred, then other methods for this type of research might be indicated. Second, if it were possible to do correlations on all possible combinations of Energy, Satisfaction, and Pressure, valuable information might accrue concerning the usefulness of the three categories either singly or in combination. The clues, if existing, might point to the most fruitful areas for further research or to results that might be most significant.

Measurement Issues

A study such as this, where no previous research of the same type or models or instruments existed, presented concerns for the issues of reliability and validity.

Reliability

Over the course of the school year, during which more than 25 teachers would be completing the forms, the Weekly Reports were used repeatedly in a

single, unchanged form. This repeated use, over 700 times, is, in and of itself, a form of checking reliability.

Construct Validity

The basic concepts undergirding this study were included in the scheduling the collection of the data and in developing the instruments used. Stress was defined as an individual's adaptive responses to internal or external stimuli, either physical, psychological, social, or environmental, or any combination of these. Therefore, the study attempted to monitor the adaptations and/or changes in the teachers' lives over the school year by means of the Weekly Reports (see Appendix H). The subsets of the Weekly Reports were directly related to the belief that levels of stress are a whole person phenomenon; therefore, it was necessary to sample significant elements of the participants' lives. The involvement with activities, both professional and personal, and their meanings to the teachers were sought by means of three Likert scales: Energy Expended, Pressure, and Satisfaction. In addition to the general measures used for Personal Life Likert scales, the teachers responded weekly to multiple facets of their life styles, e.g., sleep patterns, exercise, social activities, caffeine and alcohol consumption, medication and drugs, and physical symptoms.

Concurrent Validity

A claim could be made for a modified type of concurrent validity based on the simultaneous collections of the subsets of the Weekly Report: Professional Tasks, Personal Life, Weekly Life Style Inventory, Changes in Life Style, and Weekly Health Summary.

Summary

From the beginning of this study, it was accepted that any analysis, statistical or otherwise, would be difficult and would involve an enormous amount of data. Because of the long-term, on-site, human elements of the research, it was anticipated that the information might be incomplete either with number of Weekly Reports or with inconsistencies on items within the Weekly Reports, and that incompleteness would limit the usefulness of the data and the statistical analysis. Yet such problems seemed inherent in such a longitudinal study of multiple aspects of teachers' lives. While they could not realistically be eliminated, they could be diminished by careful planning, execution, and interpretation. This was done by making the Weekly Report as easy to complete as possible to encourage complete responses.

Summary of Methodology

After the decision was made to study the changes in teachers' personal and professional lives as a measure of potential levels of stress, expert educational, medical, and psychological support and consultation was recruited. Before developing instrumentation, a group of teachers was surveyed to ascertain their willingness to participate in the research. Two types of instruments were developed. Preliminary data were collected at the beginning of the school year using the Demographic Questionnaire (Appendix C) and the Life Style Inventory (Appendix D). The basic data for the school year were collected weekly using a form called the Weekly Report (Appendix H). The data from the Weekly Reports were analyzed in two ways, by computing weekly means for the various subsets of the Weekly Reports and by submitting sample sets to Pearson correlation analysis. Twenty-four teachers completed a sufficient number of Weekly

Reports for the school year for their responses to be analyzed. The results of this analysis and other data from this study will be presented in Chapter IV.

CHAPTER IV

RESULTS OF DATA ANALYSIS

Introduction

The method of this study was to gather weekly self-reports from classroom teachers in an attempt to ascertain levels of stress in their professional and personal lives during a school year. In September, at the beginning of this study and the start of the academic year, the teacher volunteers completed several questionnaires to establish baseline data. The collection of the Weekly Reports by a medical student began with the end of the first full week of classes. The data were not analyzed until after the end of the school year for convenience and to ensure privacy/confidentiality.

In this chapter the results obtained from the questionnaires and the Weekly Reports will be presented. One focus of the research was to ascertain the changes in the teachers' professional and personal lives during the nine-month school year and to analyze those changes in relation to identifiable elements in their professional and personal lives and/or events on the school calendar. A second objective was to examine these changes for correlations with their reports of selected aspects of their personal lives. The data analysis was divided into three main categories: (a) demographic information from baseline questionnaires, (b) summaries of the Weekly Reports (professional and personal scales) including data pertaining to the basic research questions and responses to the conflict questions and (c) correlations between summaries of Professional Tasks and Personal Life Scales for Energy Expended, Pressure, and

Satisfaction (independent variables) and four life-style subsets and the two conflict questions (dependent variables).

Demographic Data

Introduction

At the beginning of the school year, all participants completed a series of surveys including a demographic questionnaire. Subjects were asked to provide personal information indicating age, sex, education, type of certification, teaching experience both in the present school district and in total, degrees held, and teaching assignments for the current year. They were also asked to provide information about elements of their personal life style (see Appendices C and D).

Research Population

Approximately 40 middle school teachers were eligible to participate in the study, and 25 both volunteered and completed a sufficient number of Weekly Reports to be included in the final study and data analysis.

Population Data and Analysis

Of the 25 volunteers, 9 were male and 16 were female. One of the participants was single, one widowed, three divorced, and the others were married (20 teachers). Included in the group were one black and one Mexican-American; the remaining 23 were white. The ages ranged from 24 to 58 years, with a mean age of 37.4 (see Table 1).

Leadership Roles

Most of the middle school teachers were involved in some type of educational role other than classroom teaching and less than half participated in community activities. Seventeen of the participants indicated some type of educational leadership role such as president, treasurer, or committee

Table 1
Age Distribution of Teachers in the Study

<u>Age Range</u>	<u>Number of Teachers</u>
20-29	2
30-39	16
40-49	3
50+	4

chairperson with many having major responsibility for more than one activity. Seventeen teachers had a total of 46 leadership roles, and 16 teachers reported working on 41 committees exclusive of a leadership responsibility. A significant portion of the teachers participating in this study committed themselves to out-of-classroom educational responsibilities (see Table 2).

Table 2
Leadership Roles of Teachers

	<u>Number Involved</u>	<u>Total Roles</u>	<u>Average per Teacher Involved</u>
Leadership:			
Education	17	46	2.7
Community	5	7	1.4
Other active involvement (committee member, etc.):			
Education	16	41	2.5
Community	6	6	1.0

In contrast to the participation in educational activities, only five teachers indicated involvement at the leadership level in community activities other than

education. Six teachers reported working in the community-at-large at the committee level or felt they were actively involved (see Table 2).

Commitment to Teaching as a Career

A slight majority of the teachers indicated a commitment to teaching for the rest of their professional careers. Fourteen indicated "I will teach until I retire," and three checked "I'll probably teach until I retire but I often think about changing occupations." Three reported that "I feel it's about a 50-50 chance that I'll continue teaching until retirement." Two indicated that "If the right opportunity presented itself, I'd change jobs as soon as possible." One was firm about "I plan to change occupations as soon as feasible for me to do so." For whatever reason, all but three of the teachers in this study perceived themselves as probably remaining in teaching until retirement. Yet, 11 of 25 teachers either planned to leave the profession or had some questions about teaching until retirement.

Teaching Assignments

School Organization

Thirteen of the subjects taught in one middle school, 11 in the second middle school, and one had teaching responsibilities in both middle schools. Both middle schools have an informal staff division between those responsible for the academic subjects--English, social studies, math, and science--which are taught in teams, and those teaching the other classes which are known in this district as special area classes including such courses as art, music, home economics, industrial arts, and physical education. Eight of the participants were special area teachers and 17 were team teachers. To be eligible for the study, all teachers had to have full-time assignments in the classroom. No auxiliary personnel such as counselors or librarians were included in the study.

Subjects Taught

Teachers were asked to indicate the subjects they taught, and the responses are reported in Table 3. The subjects are listed in the order in which each subject was given on the questionnaire. No particular significance can be assumed from the order in which they were given.

Table 3
Subjects Taught

<u>Subject</u>	<u>Listed First</u>	<u>Listed Second</u>	<u>Listed Third</u>
English	8	1	1
Social studies	1	7	
Math	7		
Science	1	6	
Art	2	1	
Music	2		
Homemaking	2		
Industrial arts	1		
Foreign language			1

Grade Level

Seven teachers taught exclusively in sixth grade, four only in seventh grade, and five just in eighth grade. Eight had responsibilities for students in all three grades—sixth, seventh, and eighth. One teacher reported teaching only seventh and eighth grade students.

Team Size

Team size varies according to the middle school building and the grade level taught. Both schools have two-teacher teams, three-teacher teams, and

during the 1979-80 school year, four-teacher teams. In each team, the teacher-student ratio is approximately 30 to 1. Teachers assigned to each team are responsible for teaching English, social studies, math, and science. Twelve of the teachers reported assignment to two-teacher teams, one to a three-teacher team, and three were involved in four-teacher teams.

Teacher Preparation and Credentials

Teacher Certification

All participants had the required certification for public school teaching. Eighteen held elementary certificates, 10 had secondary certificates, and seven had both elementary and secondary certification.

Degrees Held

All teachers had bachelor's degrees and one teacher had two. Nine reported credits beyond the bachelor's degree with the average reporting slightly over 12 term hours beyond the degree (mean = 12.080 term hours). Eighteen of the participants held master's degrees with six reporting term hours beyond the degree. The average number of term hours was slightly over 13 (mean = 13.200). No one reported having a specialist's degree, but one teacher indicated a Ph.D.

Years Taught in District

The average number of years the teachers had taught in the district was 9.04. One teacher was new to the district and three had taught there over 20 years.

Total Years Teaching Experience

Many of the teachers had taught in other districts. One had no middle school experience while others had taught over 25 years total. The mean for the total years of teaching experience was 12.48.

Life Style Data

Introduction

Additional information from the baseline questionnaires regarding teachers' life styles provided a basis for comparing data with the results of the Weekly Reports and added information to the profile of the research group of teachers. Any attempt to apply the holistic concepts to research necessitates the monitoring of the professional life and personal styles of the participants. To do this, one must collect samples of both as well as establish the conditions (baseline) existing at the beginning of the study.

Caffeine Consumption

On the fall questionnaire the teachers reported consuming an average for the whole group of about 255 milligrams of caffeine per day. A cup of coffee was assumed to have an average of 100 milligrams of caffeine per cup and tea and soft drinks 47 milligrams per serving (Pennington & Church, 1980). However, 10 reported drinking no coffee. The teachers were asked to indicate the number of soft drinks consumed and the average number of cups of coffee and tea drunk per day. No attempt was made to ascertain size or volume of containers. The means were as follows: coffee--2.040 cups per day, tea--0.313 cups per day, and soft drinks--0.833 servings. The means for the 15 who drank coffee was almost 3½ cups per day. Most of the teachers in the study consumed drinks containing caffeine--coffee, tea, or soft drinks.

Alcohol Consumption

Data were collected from the teachers for servings of beer, wine, and cocktails on the fall questionnaires and on the Weekly Reports. Alcoholic consumption was a part of one research question and for five participants was used in correlation with Professional Tasks and Personal Life.

Support by Individuals and/or Groups

All the teachers in the study reported having at least one individual or group that provided support in time of need. The mean for the participants was between two and three individuals and/or groups.

Competitiveness

After a lead statement, "Reflecting on your recreational, sports, and work-related activities, which of the following sentences seems to fit your attitude best?" four choices were given (see Table 4). Most of the teachers considered themselves to be neither extremely competitive nor non-competitive but, rather, felt themselves to be somewhere in the middle of the continuum.

Table 4
Competitiveness

<u>Statement</u>	<u>Number</u>
I'm a highly competitive person in most things.	4
I like to compete but losing isn't too upsetting to me.	7
It depends on the situation whether I'm competitive or not.	11
I'm usually non-competitive with others.	3

Summary of Demographic Data

The middle school teachers who volunteered and participated in the study were a diverse group. Their ages varied from those in the 20s to teachers over 50 years of age with the average age being 37. Most of the teachers were married, but single, widowed, and divorced individuals were among the respondents. Teaching experience ranged from one individual who was a beginning teacher to several who had taught over 25 years. One black and one

Mexican-American were included in the otherwise totally white group. Out-of-class time was spent more with educational leadership and committee involvement than with other community roles. Collectively, the teachers indicated having an average of two support groups and/or individuals and considered themselves neither excessively competitive nor non-competitive.

In general, the participants were well-educated and appear to be a good sample of all middle school teachers in the district. More than half of the full-time teachers in the district middle schools were female and team teachers. In comparison, 16 of the 25 participants were female and 17 were academic team teachers. As a group, they were well qualified: one held a Ph.D. and 18 of the 25 held master's degrees. All had bachelor's degrees and all had teaching certificates. Almost a third of them held both elementary and secondary teaching certification. There was high participation in out-of-class educational leadership roles. All but three indicated that they expected to continue teaching until retirement. The teachers who participated in this study were highly educated and reported a high level of commitment to teaching as a profession.

Weekly Reports of Participants

Introduction

In this section, the responses of the teachers to the Weekly Reports will be presented and data analyzed as they pertain to the basic research questions (see Table 5). Each week the teachers were asked to complete and turn in to the medical student collecting the data a questionnaire called the Weekly Report. This Weekly Report, which covered both sides of a legal-sized sheet of paper, was organized into six sections: (a) professional and personal scales reporting Energy Expended, Pressure, and Satisfaction for selected items; (b) two conflict questions; (c) a weekly life-style inventory; (d) a weekly health summary

including drugs and symptoms; (e) changes in life style; and (f) miscellaneous other items. Results of all or parts of the first four categories will be presented focusing on professional and personal tasks and the conflict questions.

Twenty-four teachers completed Weekly Reports for all or most of the 35 weeks of the school year, and these were tabulated and analyzed. Four additional male teachers began the study, but their responses were so erratic that they were not included in the analysis. Two were fairly regular until mid-winter; then they dropped out. Few participants turned in Weekly Reports for each of the 35 weeks of the school year. At least 20 teachers turned in Weekly Reports each week with the exceptions of the weeks before vacations (Christmas, spring, and summer). Given the nature of the study and the reality of working with an active population for a period of nine months and collecting data on a weekly basis for those weeks that school was in session, the results were more complete than expected.

Within each set of Weekly Reports, few participants reported a complete set of information for every item for every week. It is legitimate to assume that for certain items for certain weeks there would be no involvement. The most consistent responses were given to the Professional Tasks scales and the two conflict questions. The results for each of the Professional Tasks and Personal Life subsets for the conflict questions will be presented and discussed. In addition, each was used in the sample correlations using five subjects.

In addition to a brief discussion of each of the subsets of Professional Tasks, Personal Life, and life style elements, graphs of the weekly means will be presented. The graph of the weeks of the school year has been coded to show significant events (weeks): open houses, ends of marking periods (report cards), parent conferences, and the week of the Michigan Association of Middle School Educators (MAMSE) annual state conference hosted by the middle schools. For

the purpose of graphing, all means were rounded to the nearest tenth although they are reported in the appendix to the nearest thousandth. The number of teachers reporting each week varies; this fact should be kept in mind when making tentative appraisals of the data.

Responses for Professional Tasks Weekly Reports

Introduction

In this section the responses of the teachers on the Likert scales for each of the Professional Tasks or subsets for Energy Expended, Pressure, and Satisfaction will be presented and their relationship, if any, to the research questions noted. Weekly each teacher was offered an opportunity to indicate the level of Energy Expended, Satisfaction, and the Pressure s/he felt for Professional Tasks. Results will be presented separately for Energy Expended, Pressure, and Satisfaction. The data will be discussed in two ways: first, a summary of the means and the "change units" for each of the subsets for each week of the school year, and, then, a year-end summary of the rank-order of means from highest to lowest. In conclusion, the data will be summarized and reviewed as it may or may not pertain to the questions for research.

Missing Data

For this portion of the analysis, missing data will be assumed to indicate that there was no involvement or response to the subset, and these data were not included in the computation. The reader is cautioned to keep in mind that the number of responses was not constant week-to-week and care needs to be used in interpreting results. It is legitimate for items to have been left blank for a variety of reasons. Many subset items may not have been a part of the professional task for any given week; for instance, a teacher may not have had

Table 5
Weekly Reports

TEN MONTH TEACHER RESEARCH

Identification Code _____

Weekly Self-Report

Week ending _____

		energy expended				satisfaction				pressure			
		no in-	very	high		little	very		little	very			
		volve-	demand			or none	satis-		or none	high			
		ment				fying							
I. PROFESSIONAL:													
1.	Classroom instruction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.	Instructional planning and preparation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.	Personal/social needs of students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Paper work:													
4.	Grading and record keeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.	Other (specify): _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Responsibilities to and interactions with:													
6.	Administrators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.	Parents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.	Fellow teachers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9.	Other (specify): _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Professional meetings:													
10.	During school hours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11.	After 3 pm or before 8 am	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12.	Evening (after dinner)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13.	Interpersonal conflicts - school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
14.	Professionally, I would summarize this week thusly:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PERSONAL AND MISCELLANEOUS:													
1.	Family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.	Social	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.	Meetings (non-school)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.	Personal economic situation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.	Interpersonal conflicts--home/social/etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
II. OTHER:													
Extent to which professional demands on my time conflicted with my personal or family demands/needs						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Extent to which things I thought I should do conflicted with things I wanted to do						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
III. In the next section, please complete each sentence stem with one or more ideas and then rate each one as directed on the instruction page.													

Rating

1. The most satisfying experience(s) of this past week _____

2. The most frustrating experience(s) of this past week _____

3. Professionally, this week would have been better if _____

IV. Anniversaries, celebrations, significant losses, and dramatic changes in my life this week: _____

V. COMMENTS AND/OR EXPLANATIONS(S) OF ITEMS: _____

Weekly Reports, cont.

I. WEEKLY LIFE STYLE INVENTORY

1. Average number of hours of sleep per night this week: (Circle.)
4 5 6 7 8 9 10 over 10

How much did you dream this week while sleeping?
none ☐ some ☐ a lot ☐
2. Exercise this week:

type hours frequency
.
3. Social and recreational activities:

type total time
4. Beverage intake (average per day):
coffee ___ cups (appx. 8 oz.)
tea ___ cups (appx. 8 oz.)
soft drinks ___ units of ___ (size)
alcoholic drinks:
 wine ___ glasses (appx. size ___)
 beer ___ units of ___ (size)
 cocktails ___ glasses (appx. size ___)
 liquor ___ glasses (appx. size ___)
5. ___ average number of units (whole ones) of donuts, sweet rolls, and/or candy per day.

VII. CHANGES IN LIFE STYLE THIS WEEK

1. Changes in diet: none ☐ some ☐ a lot ☐
If a lot, briefly describe the change.
2. Changes in smoking habits:
none ☐ some ☐ a lot ☐
If a lot, explain change:
3. Changes in amount and use of private/personal/alone time:
amount: none ☐ some ☐ a lot ☐
use: none ☐ some ☐ a lot ☐
If there were a lot of changes in either use or amount of private time, please explain very briefly.
4. Did you discuss personal or professional concerns with new person(s) or group(s) this week?
yes ☐ no ☐
If yes, please indicate type of person(s) or group(s) (e.g., new friend(s), social group(s), or institution(s)).

VIII. WEEKLY HEALTH SUMMARY

1. Did you visit a doctor or other health professional this week?
yes ☐ no ☐
If yes, please give reason(s) and indicate number of visits.
2. Please list all medication(s) and drugs taken this week and include symptom-relieving compounds such as aspirin, Bufferin, Tylenol, etc.

type quantity
3. Very briefly list physical symptoms and health problems for each day this past week. If none, please so indicate.
Thursday:

Friday:

Saturday:

Sunday:

Monday:

Tuesday:

Wednesday:

Thursday (to pick up time):
4. How many days did you miss school on sick leave this week?

_____ days

X. COMMENTS, NOTES, ETC.

any involvement with parents or may not have participated in evening meetings. Where fewer than 10 responses were given, the situation was noted and the data will not be analyzed; but they are available in Appendix E.

Pattern for the school year. Both middle schools follow the same school calendar with the exception of fall open house and fall parent conferences. The year of this research study, the open house was scheduled during the second and third weeks of school. The marking periods ended at the conclusion of weeks 10, 20, and 29 as well as at the end of the school year. As indicated previously, fall parent conferences were not held during the same week during the research year; however, spring parent conferences were held at the same times. Had the conferences been held during the same week in the fall, several of the means might have shown more change or higher values or the reverse. Christmas vacation was between weeks 15 and 18, and spring vacation began after the MAMSE Conference held during week 27. These are indicated on the charts of the school year by broken lines.

The basic graph used for reporting weekly means shows the end of the marking period for students. A bit of a problem in portraying the situation graphically was the fact that the marking periods traditionally end on Fridays while this study ended each week on Thursdays. An exception was the third marking period which closed on Thursday because students were dismissed on Good Friday before Easter. In addition, teachers were allowed several extra days in which to complete their computer code sheets used for the narrative computer report cards. Therefore, two weeks have been coded into the basic graph at the end of each term except at the end of the school year. Because of the time needed for computer processing of the report cards, it was about 10 days after the end of the marking period before students (and parents) received

their report cards. Obviously, most parent concerns emerged only after the cards reached home. This really is important to keep in mind when assessing data from the Weekly Reports.

In addition, charts showing "change units" for most of the subsets of the Professional Tasks will be presented and discussed. Change units are the comparisons of the weekly means of the teacher responses to each of the subsets of the Likert scales expressed in tenths. In this research design, stress is defined as adaptation to change regardless of the direction of change. While positive and negative changes have been noted (see Appendix F), only the absolute value of the changes is used in the analysis. Whether change is perceived as eustress or distress (Selye, 1976) is not a part of this study.

Research Questions Revisited

Seven questions provided the framework for this study. Three were duplicates with one set focusing on professional tasks and the other on the teachers' personal lives and were directly related to the data collected on the Likert scales portion of the Weekly Reports:

1. Do middle school teachers' reports of Energy Expended, levels of Satisfaction, and Pressure on selected subsets of the **professional** teaching task (Professional Tasks) change over an academic year? If so, how?
2. Do the teacher participants suggest times/periods of potential stress overload vulnerability by the patterns of their responses to the **professional** subsets (Professional Tasks) of the Weekly Reports? If so, how and in what way(s)?
3. Do the teacher participants suggest areas of potential stress overload vulnerability by the patterns of their responses to the **professional** subsets (Professional Tasks) of the Weekly Reports? If so, how and in what way(s)?
4. Do middle school teachers' reports of Energy Expended, levels of Satisfaction, and Pressure on selected subsets of their **personal** life (Personal Life) change over an academic year? If so, how?

5. Do the teacher participants suggest times/periods of potential stress overload vulnerability by the patterns of their responses to the **personal** life subsets (Personal Life) of the Weekly Reports? If so, how and in what way(s)?
6. Do the teacher participants suggest areas of potential stress overload vulnerability by the patterns of their responses to the **personal** life subsets (Personal Life) of the Weekly Reports? If so, how and in what way(s)?
7. How do changes in the reports of exercise, alone time, alcoholic beverage intake, medication and drug use, and significant life events compare with changes in the reports of Energy Expended, Pressure, and Satisfaction for Professional Tasks and Personal Life?

The last question was unanswerable as stated. However, there were subsets of the data similar in nature and sufficiently complete and quantifiable from the same portion of the Weekly Reports to be worth discussing, and this information will be provided and used to make the comparisons.

The results for Professional Tasks and Personal Life portions of the research will each be presented in three sections: Energy Expended, Pressure, and Satisfaction. Each provides data to be related to the research questions. Each summary will be a discussion of the relationship, if any, between the research results and the original research questions.

As a further check on the potential value of the research data, additional analyses were made and will be briefly summarized.

Professional Tasks--Weekly Means--Energy Expended

Introduction--energy expended. Each week, each participant checked the appropriate box on a five-point Likert scale to indicate the amount of energy he/she expended for each subset of the Professional Task. The first box was labeled "no involvement" and the fifth box was labeled "very high demand." Weekly Reports were collected for the 35 weeks of the school year, omitting vacation weeks. For the purposes of analysis, it is assumed that an average

amount of Energy Expended on a task would result in a check in the middle box or a 3. (Note: Each teacher established his/her own criteria for the scale, for no directions were given to the participants.) The following analysis is based on the mean of all responses for each subset of Professional Tasks. When the number of responses for any item falls below 10, that situation or the actual number of responses will be indicated.

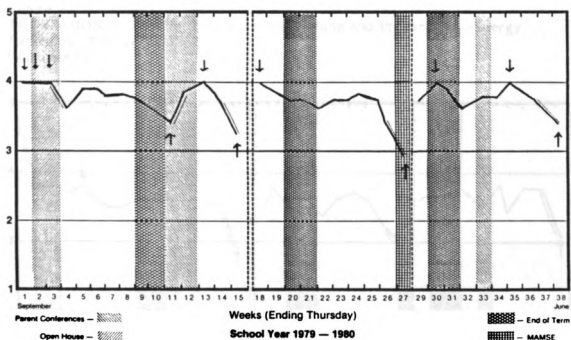
Special notes. At the beginning of this study, it was assumed that if no energy were involved in a task for a week, the participant did not engage in the task for the week. However, in a few cases, the pattern of responses was such that this assumption may not be valid. In the case of a few subjects, the pattern of responses seemed to indicate that while they did not feel that energy was expended on a task, they did indeed derive some satisfaction and/or feel some pressure from the item. However, for this portion of the analysis, all data were utilized as presented.

To assist the reader in following the discussion of the many charts of the school year presented in this chapter, several accent marks have been added to those charts. An arrow has been used to point out the high and low means. A second line has been drawn at those places (times of the year) when there are shifts in the means which exceed 10% (four change units).

Classroom instruction--energy expended. The means of the reports of Energy Expended for Classroom Instruction are generally high, ranging between 2.9 and 4.0. The weeks with the highest means were each of the first three weeks of the school year, the third week before Christmas vacation (just after parent conferences), the first week after Christmas vacation, the second week after spring break, and the fourth week before the end of the school year. The lowest mean was reported for the week before spring break when the schools

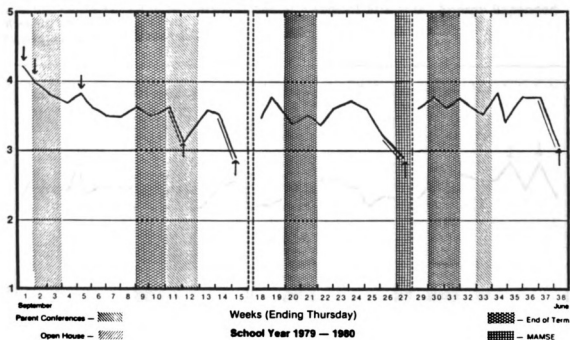
hosted a MAMSE Conference and classes were dismissed for two days (2.9). With this exception and the weeks before Christmas vacation and at the end of the school year and during fall parent conferences, the means never fall below 3.5 for energy input. These relatively high reported levels of energy use are reflected in the "change units" for each week which only vary between 0 and 3 except for four intervals: during open house weeks, one week of fall parent conferences, and the weeks before winter and spring vacations (see Figure 1).

Figure 1
PROFESSIONAL TASKS: Classroom Instruction--Energy Expended--
Weekly Means
(Variable N)



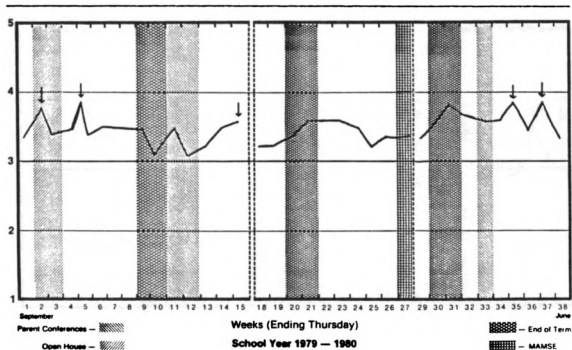
Instructional planning and preparation--energy expended. Like Classroom Instruction, the means for energy used in Instructional Planning and Preparation were highest the first two weeks of school (4.2 and 4.0). Only twice during the year does the mean fall below 3.0, and that is during the weeks before Christmas vacation and spring break (MAMSE Conference) with a similar decrease reported the week before school is dismissed in June. For the balance of the year, the mean varies between 3.2 and 3.8, again seeming to indicate a fairly consistent, high level of input. Change units varied between 0 and 3 except for five weeks: fall parent conferences, and as indicated above, all three weeks before vacations (see Figure 2).

Figure 2
PROFESSIONAL TASKS: Instructional Planning and Preparation--Energy Expended--Weekly Means
(Variable N)



Personal-social needs of students--energy expended. An analysis of the graphs for the Personal-Social Needs of Students for Energy Expended input shows a fairly consistent high level of energy expenditure in interactions with and needs of students with means between 3.1 and 3.8. The change units never exceeded 4, also indicating a relatively constant pattern (see Figure 3). The pattern changes least between Christmas vacation and spring break, but the changes during the year do not seem to be related to specific school events. However, as educators know, students are usually on their good behavior the first few weeks of school. The high mean for week 2 might be as the result of parent concerns expressed at open house. The second high, week 5, probably marks the end of the "honeymoon" period when students begin testing and/or showing their "true colors." The excitement of the holidays with the increased social activity

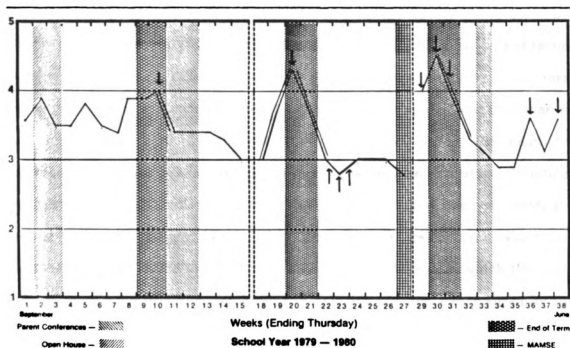
Figure 3
PROFESSIONAL TASKS: Personal-Social Needs of Students--Energy Expended--
Weekly Means
(Variable N)



and forthcoming vacation may explain the high mean for the week before Christmas vacation. "Spring fever" and the anticipation of summer vacation might be the reasons behind the high means for weeks 35 and 37.

Paper work: grading and record keeping--energy expended. Both the means and the change units for Energy Expended on paper work vary widely (see Table 9). Not surprisingly, the means of the ratings for grading and record keeping are highest at report card times. For the end of the first semester (Week 20), the mean reaches 4.3; and for two weeks at the end of the third marking period, the mean is 4.0 and 4.5. This may be explained in part by the fact that the teachers may have given priority to preparing for the MAMSE Conference and had a lot of catching up to do in order to meet the third term report card deadline. (Note: for the week of the conference, the mean was 2.8.) At the end of fall term, for

Figure 4
PROFESSIONAL TASKS: Paper Work: Grading and Record Keeping--Energy Expended--Weekly Means (Variable N)



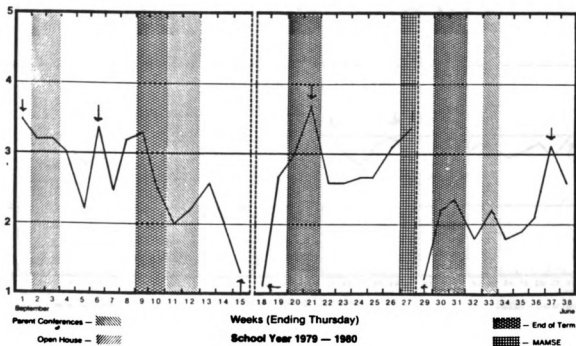
three weeks in a row the mean is 3.9 or higher. The second, third, and fourth weeks of second semester, the mean falls below 3.0. It is interesting to speculate as to the reasons for this: the traditional winter "lows" which occur in February and/or a rest period after the flourish of the semester end. In early May the mean again drops a bit below 3.0 for two weeks. For the balance of the year, the mean is at or above 3.0 with an unexplained peak during week 36.

For the first three marking periods, the change units reflect the wide fluctuation in Energy Expended for grading and record keeping. The change units rise as the report card deadline approaches and then fall quickly the week the grades are turned in to the office. The greatest changes were at the semester report card time, term change, and the third marking period (probably due to MAMSE). The means for Paper Work: Grading and Record Keeping dropped steadily for three weeks before Christmas vacation and were lowest, with the fewest change units, during the third term (mid-winter).

Paper work: other—energy expended. Like Paper Work: Grading and Record Keeping, the reports for Energy Expended involved in other paper work vary widely, but have a greater range. Paper work other than grading and record keeping would include data requested by the administration such as mid-term warning notices to students and parents, enrollment and student data summaries, or changes to narrative computer banks used for report cards. The means for reported energy use are as low as 1.2 the weeks before and after Christmas vacation and spring vacation and higher than 3.5 for the first week of school and at the semester change (Week 21). Most of the "peaks" are potentially explainable, based on the usual school patterns for the district in which the study was made. During the first week of school, a lot of data are required by the administration and teams do a lot of organizing. The peak for week 6 may

possibly have been the week that the additions and changes were made to the computer banks in anticipation of report cards. Week 21 is the week that semester grades were due and the new semester began, and week 27 was the MAMSE conference. Week 37 may have included a variety of year-end activities such as recommendations for placement of students the following year. The change units for this category are very diverse (from 0 to 13), reflecting the diverse levels of energy committed to paper work other than grading and record keeping (see Figure 5).

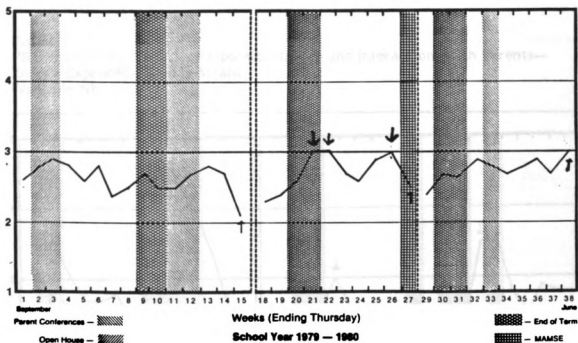
Figure 5
PROFESSIONAL TASKS: Paper Work: Other--Energy Expended--Weekly Means
(Variable N)



Responsibilities to and interactions with administrators--energy expended.

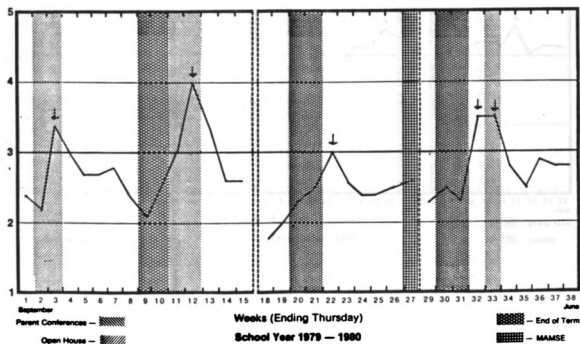
The reports for Responsibilities to and Interactions with Administrators regularly received means below 3.0 except for the weeks after the semester change, the week before the MAMSE Conference, and the last week of the year. In general, the means fluctuate between 2.4 and 2.9 except as noted above. The change units fluctuate relatively little, plus or minus four-tenths, except for the weeks before the two vacations (see Figure 6).

Figure 6
PROFESSIONAL TASKS: Responsibilities to and Interactions with
Administrators--Energy Expended--Weekly Means
(Variable N)



Responsibilities to and interactions with parents--energy expended. The four highest means for reports of energy spent in dealing with parents were during open house (third week of school), after fall and semester report cards (allowing for computer delays in completing cards), and during spring conference time, with the highest mean during one of the fall parent conference weeks (4.0). These events appear to be reflected in the pattern of means for these same weeks for evening meetings. For the remainder of the year, teachers' reports of energy demands attributed to parental needs fell below the mid-point (3) with the full range being from 1.8 (the first week after Christmas vacation) to 4.0 (fall parent conference time). The change units support this picture (range, 0 to 12). (See Figure 7.)

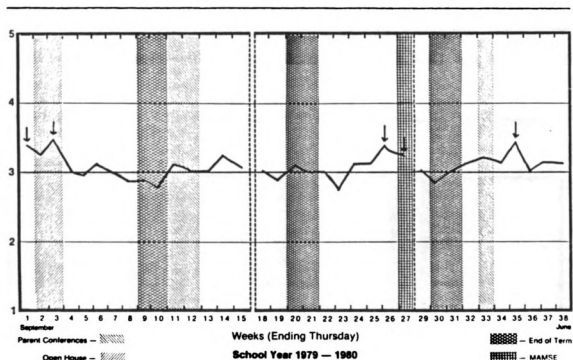
Figure 7
PROFESSIONAL TASKS: Responsibilities to and Interactions with Parents--
Energy Expended--Weekly Means
(Variable N)



Responsibilities to and interactions with fellow teachers--energy expended.

The graph of means of the teachers' reports of Energy Expended carrying out their responsibilities and interactions with other teachers show no dramatic highs or lows. The means cluster in a narrow band on either side of the mid-point (3) with some slightly higher averages for the first weeks of school, the two weeks before spring break (MAMSE Conference), and a week in the first part of May. The relatively steady commitment is also reflected in the narrow range of change units ($\pm .4$ with one exception). (See Figure 8.)

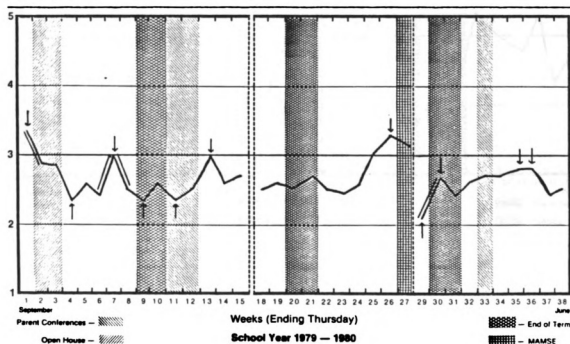
Figure 8
PROFESSIONAL TASKS: Responsibilities to and Interactions with Teachers--
Energy Expended--Weekly Means
(Variable N)



Responsibilities to and interactions with others--energy expended. The data for this subset of Professional Tasks will not be analyzed because fewer than 10 teachers responded each week to this category in the Weekly Reports. (See Appendix E for details.) In buildings with secretaries, clerks, aides, volunteers, and custodians, this lack of response is surprising.

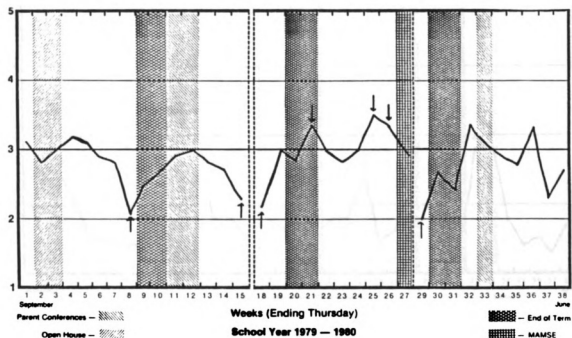
Professional meetings during school hours--energy expended. Only twice during the year do the means for daytime professional meetings exceed the midpoint (3), the first week of the school year and the week before the MAMSE Conference. Reports of Energy Expended show other highs during the 7th, 13th, 30th, 35th, and 36th weeks of school. The means are lowest during the week after spring break. Other weeks with low means were during the fourth week of school, fall report cards, and parent conferences. Much of the variation in these means is not explainable with the evidence as collected. (See Figure 9.)

Figure 9
PROFESSIONAL TASKS: Professional Meetings During School Hours--Energy Expended--Weekly Means
(Variable N)



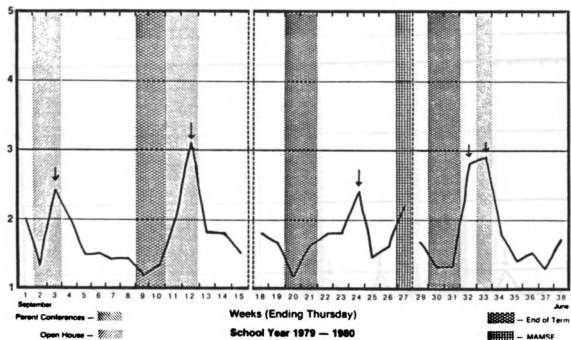
Professional meetings after 3 PM and before 8 AM—energy expended. This category of Professional Tasks includes faculty meetings that are held regularly in one building and only as needed in another. Since no record of these faculty meetings was kept during the year of the study, much of the pattern formed by the means cannot be related to known events. This pattern is one of the most erratic of the Energy Expended subsets. The highest mean is two weeks before the MAMSE Conference. The weeks before fall report cards, before and after Christmas vacation, and after spring break received the lowest means for meetings before and after school hours. (See Figure 10.)

Figure 10
PROFESSIONAL TASKS: Professional Meetings After 3 PM and Before 8 AM--
Energy Expended--Weekly Means
(Variable N)



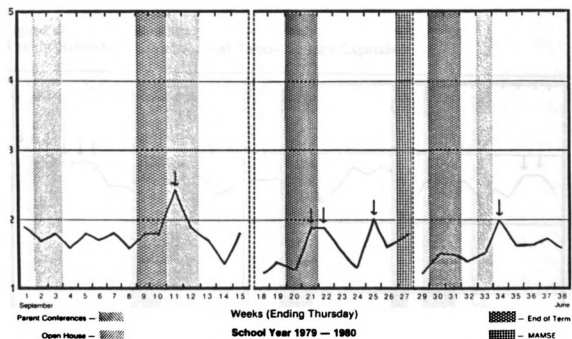
Professional meetings in evenings (after dinner)--energy expended. Three of the four weeks having the highest means for this category are at expected times: fall open house and fall and spring parent conference weeks. The reason for the high mean for week 24 is unknown. Like the pattern for meetings before and after school, the graph for evening meetings shows wide variation in the teachers' reports of Energy Expended. Change units for evening meetings show the greatest variation for any of the subsets for professional tasks (from 0 to +15). (See Figure 11.)

Figure 11
PROFESSIONAL TASKS: Professional Meetings in Evenings (After Dinner)--
Energy Expended--Weekly Means
(Variable N)



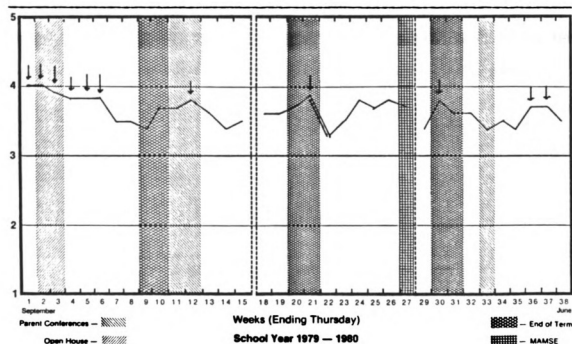
Interpersonal conflicts--energy expended. Interpersonal conflicts consistently received low ratings with means for Energy Expended ranging from 2.4 to 1.33 (change units from 0 to +7). Teachers may, in fact, expend small amounts of energy on interpersonal conflict and/or were successful in handling interpersonal problems, or they were unwilling to report them. The times with high means were week 11 (parent conferences), weeks 21 and 22 (beginning of new semester and post-report cards), week 25 (two weeks before the MAMSE Conference) and week 34 (post-report cards in the spring). The two weeks with lowest means were those following Christmas vacation and spring break. (See Figure 12.)

Figure 12
PROFESSIONAL TASKS: Interpersonal Conflicts--Energy Expended--
Weekly Means
(Variable N)



Weekly summary of professional tasks--energy expended. At the end of the list of subsets of Professional Tasks, the statement, "Professionally, I would summarize this week thusly": was followed by the three Likert scales for Energy Expended, Pressure, and Satisfaction. The responses to the scale for Energy Expended were well above the mid-point throughout the year. The participants reported the highest involvement of energy for the first six weeks of school with means of 4.0, 4.0, 3.9, 3.8, 3.8, and 3.8. These are the weeks when teachers are initiating classes, learning to know students, establishing norms and procedures, hosting parent open house, and, in general, getting the year started. During the remainder of the year, the means were high the first week of the second semester (3.9) when some teachers started new classes with new students and all were completing narrative report cards. Other high weeks were the second week of fall parent conferences, twice during the third term, and the last week of the third term (after spring break).

Figure 13
Weekly Summary of Professional Tasks--Energy Expended



During the remainder of the year, the range was from 3.3 to 3.7 (full range was 3.3 to 4.0) with all but six weeks having means of 3.5 or higher. The means were lowest the last week of fall term, two weeks before Christmas vacation, the second week of the third term, the first week after spring break, the week of spring parent conferences, and week 35.

In general, teacher respondents reported using consistently higher than average amounts of energy in fulfilling their professional teaching tasks.

Rank order for professional tasks--energy expended: Summary of year means. The mean for the year for each of the subsets of the Professional Tasks for Energy Expended was calculated. Keep in mind that the N varied from week to week so that care must be taken in interpretations. The Energy Expended ratings varied from 3.8 for Classroom Instruction to 1.7 for Interpersonal Conflicts. Five of the categories for Professional Tasks received year-long ratings above 3.0, the mid-point. In order, they were: Classroom Instruction, Instructional Planning and Preparation, Personal-Social Needs of Students, Paper Work: Grading and Record Keeping, and Responsibilities to and Interactions with Fellow Teachers. One subset has been bracketed because it received too few responses for the statistic to be meaningful. The rankings are as follows:

<u>Professional Task</u>	<u>Mean*</u>
Classroom Instruction	3.8
Instructional Planning and Preparation	3.6
Personal-Social Needs of Students	3.6
Paper Work: Grading and Record Keeping	3.5
Responsibilities to and Interactions with Fellow Teachers	3.1
Professional Meetings: Before 8 AM and after 3 PM (Excluding Evenings)	2.8
Responsibilities to and Interactions with Administrators	2.7
Responsibilities to and Interactions with Parents	2.7
Professional Meetings: During School Hours	2.6
Paper Work: Other than Grading and Record Keeping	2.3
Professional Meetings: Evenings (After Dinner)	1.8
Interpersonal Conflicts	1.7
(Responsibilities to and Interactions with Others Excluding Teachers, Administrators, and Parents	1.5)

*Variable N

See Appendix J for standard deviations.

Research questions and responses for professional tasks--energy expended.

The summary of the means for the Likert scale for Energy Expended for Professional Tasks will be presented as responses to each of the research questions.

First question: Do middle school teachers' reports of Energy Expended (level of Satisfaction and Pressure) on selected subsets of the **professional** teaching tasks change over an academic year? If so, how?

The answer, based on the data from this study, is yes! The graphs and tables of means show a clear pattern of change. Among the three primary classroom teaching responsibilities--Classroom Instruction, Instructional Planning and Preparation, and Paper Work: Grading and Record Keeping, the greatest variations were in the means for Paper Work: Grading and Record Keeping. For the supportive tasks, the most changes were in Responsibilities to and Interactions with Parents, Meetings During the School Day, and Meetings before and after the School Day (Excluding Evenings). The fewest changes in Energy Expended were reported for Responsibilities to and Interactions with Fellow Teachers.

Second question: Do the teacher participants suggest times/periods of potential stress overload vulnerability by the patterns of their responses to the **professional** (Professional Tasks) subsets of the Weekly Reports? If so, how and in what way(s)?

If it is assumed that vulnerability to stress overload may occur when an individual must adjust to rapid changes and/or to multiple changes occurring at one time and/or to continued high levels of energy involvement, then there are patterns within the teachers' responses to the subsets and across subsets for Professional Tasks that fit these criteria.

High energy expenditures for multiple tasks were reported for the first few weeks of school, at report card time, especially the first three marking periods, and during parent conferences. Hosting the MAMSE conference also required high levels of energy commitment.

Rapid changes in energy input as reflected in change units were also reported before, during, and after the same "events": the beginning of school which included open house for parents, during report card marking times, and before and after parent conferences. Other times that received means which might suggest that the potential for stress overload might exist were the weeks

before vacations, especially Christmas vacation. The spring, after the last parent conferences, seemed to be the time requiring the least change in energy expenditure (except week 36).

Teachers in this study reported consistently high energy involvement during the whole school year for Classroom Instruction, Instructional Planning and Preparation, Personal-Social Needs of Students, and Paper Work: Grading and Record Keeping.

Third question: Do the teacher participants suggest areas of potential stress overload vulnerability by the patterns of their responses to the **professional** (Professional Tasks) subsets of the Weekly Reports? If so, how and in what way(s)?

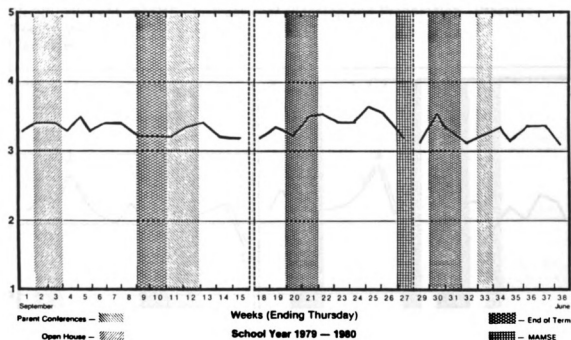
The responses of the teachers indicate the highest levels of energy commitment in the five basic areas of the Professional Tasks: Classroom Instruction, Instructional Planning and Preparation, Personal-Social Needs of Students, Paper Work: Grading and Record Keeping, and Responsibilities to and Interactions with Fellow Teachers. Until combined with the responses from Pressure and Satisfaction, no conclusions may be drawn concerning the potential for vulnerability to stress overload, unless the amount of energy committed, in and of itself, is a source of stress overload. The teachers are, however, reporting using more than an average amount of energy for the five key professional tasks for the year.

Professional Tasks--Weekly Means--Pressure

Introduction--pressure. A five point Likert scale was used for collecting data from the teacher participants for levels of Pressure they felt each week for the subsets of the teaching tasks. For the purposes of consistency in looking at the means for the subsets of the Professional Tasks, the mid-point of means will be used as the point of reference.

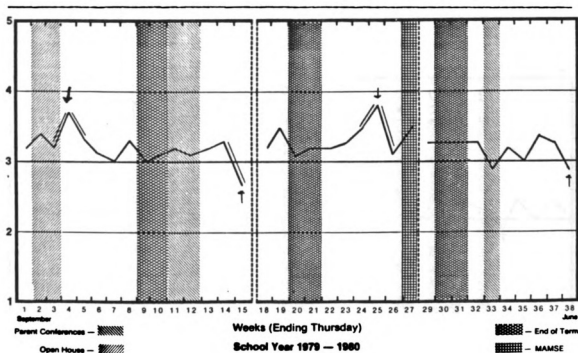
Classroom instruction--pressure. At no time during the 35 weeks of this study did the mean for Pressure in Classroom Instruction fall below 3.1. At no time during the year did the mean vary more than four-tenths or more than 10%. The changes are so slight (generally 0 to ± 3 change units) as to be of little or no significance. However, the pressure felt by the participants seemed to be consistently high. The third marking period (mid-winter) with the exception of the week before spring break (also the MAMSE Conference) may have been a period when the teachers felt slightly more consistent pressure from the demands of classroom instruction (see Figure 14).

Figure 14
PROFESSIONAL TASKS: Classroom Instruction--Pressure--Weekly Means
(Variable N)



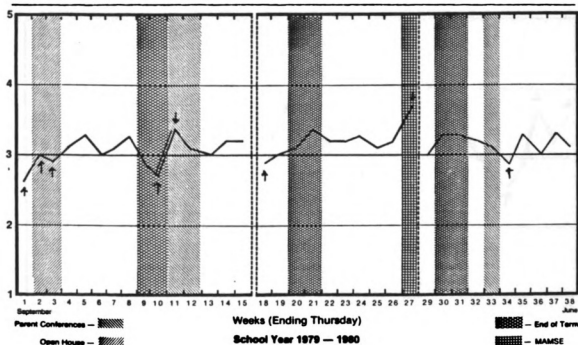
Instructional planning and preparation--pressure. Except for the weeks before Christmas vacation and summer vacation, the means for the year for the reports of Pressure for Instructional Planning and Preparation were always above 3.0 but less than 4.0. The weeks receiving the most consistent and relatively high means are clustered between Christmas vacation and spring break with the highest reported mean for week 25. While there are no dramatic changes from week to week in the reports for Pressure for Planning for Instruction, the means do change constantly with the greatest changes (exceeding 10%) for the third week of school, the week before Christmas vacation, and two weeks (weeks 25 and 26) before spring break. Moreover, the means vary much more from week to week than do those for Classroom Instruction (see Figure 15).

Figure 15
PROFESSIONAL TASKS: Instructional Planning and Preparation--Pressure--
Weekly Means
(Variable N)



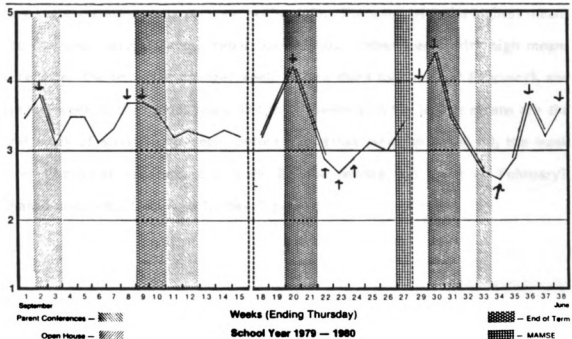
Personal-social needs of students--pressure. The weekly means for the Pressure felt from dealing with the Personal-Social Needs of Students vary but not dramatically. Only twice, at the end of the first term and during the MAMSE Conference, were the change units 10% or more. Based on the graph of means, it could be argued that the students were on their best behavior, as perceived by teachers in this study during the first three weeks of school and at the end of the first marking period (lowest means). The weeks after the Christmas holidays and after spring parent conferences were times that also received low means. The week with the highest reported mean for Pressure was the week before spring break which was the week of the MAMSE Conference. Like the reports for Classroom Instruction, this graph of means may be interpreted as indicating that during the third term teachers may feel the most consistent Pressure from the Personal-Social Needs of Students. (See Figure 16.)

Figure 16
PROFESSIONAL TASKS: Personal-Social Needs of Students--Pressure--
Weekly Means
(Variable N)



Paper work: grading and record keeping--pressure. The Pressure reported by teachers for paper grading and record keeping varies widely during the school year. The weeks with the highest means correspond to the end of the first semester and the first two weeks after spring break, both at end of terms. This latter may be due to the fact that teachers postponed paper work to prepare for the MAMSE Conference and and, when faced with the end of the marking period after spring break, felt more than the average amount of pressure in order to meet the report card deadline. Three other weeks receiving high means were the second week of school, the week before and at fall report card time, the third week before the end of the school year, as well as the last week (again, report cards). The lowest means occur during February (the second, third, and fourth weeks of winter term) and again about midway through the last marking period (during and after parent conferences). (See Figure 17.)

Figure 17
PROFESSIONAL TASKS: Paper Work: Grading and Record Keeping--Pressure--
Weekly Means
(Variable N)

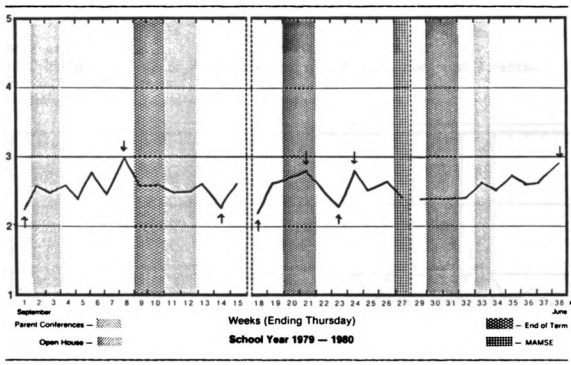


Another way to analyze the data is to compare the differences between demands during the year. The sum of change units (108) reflects the wide variation that teachers reported for Pressure (for the full year, over double that for Classroom Instruction—108 vs. 41). Nine times during the year, the change units exceed 10%: between the second and third weeks of school (open house), the first four weeks after Christmas vacation, weeks 31/32 and 32/33 which were during and after third term grades, and weeks 35/36 and 36/37.

Paper work: other—pressure. In spite of the fact that most of the teachers responded weekly to the Likert chart concerning the degree of Energy Expended for Paper Work: Other--Energy, too few responded to the Likert chart for Pressure to be analyzed. It is interesting to note, however, that those few who did respond indicated high levels of pressure. See Appendix E for details.

Responsibilities to and interactions with administrators--pressure. Based on the means, the teachers, with few exceptions, consistently reported below average (3.0) feelings or levels of Pressure in their Responsibilities to and Interactions with Administrators. In addition, the chart of change units shows very little variation, only once exceeding 10%. The week with the highest means was the week before the fall report cards (3.0). Other weeks with high means were after the semester change, week 24 (the third full week of February), and the last week of the school year. The three weeks with the lowest means are the first week of school, two weeks before Christmas vacation (week 14), the week after Christmas vacation, and week 23 (the second full week of February). Change units vary from 0 to 5. (See Figure 18.)

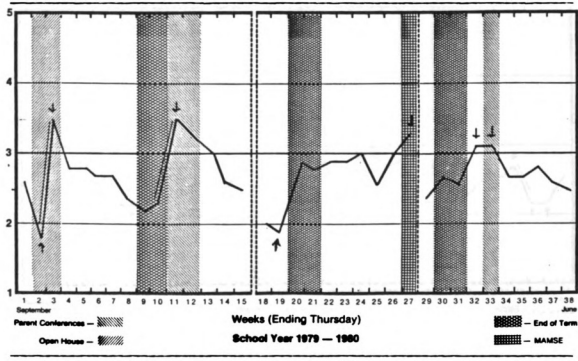
Figure 18
**PROFESSIONAL TASKS: Responsibilities to and Interactions with
 Administrators--Pressure--Weekly Means**
 (Variable N)



Responsibilities to and interactions with parents--pressure. The means for the Pressure felt by teachers in fulfilling their Responsibilities to and Interactions with Parents vary widely. It was highest during fall open house (increasing over 40%) and fall parent conference week (increasing over 30%). Had both schools held open houses and conferences in the fall during the second week of school, the means may have been much higher or lower. Lesser levels of high pressure were indicated during the week of the MAMSE Conference (just before spring break and the last week of the third term) and the week before and during spring parent conferences. Reports of Pressure were most consistently high during most of the third term. Weeks during which reports of Pressure were lowest were during the second week of school (open house in one building), fall report card weeks, and the second week after Christmas vacation. An analysis

of the change units reflected dramatic shifts (sum = 100), especially in the fall (see Figure 19). (Note: the week after Christmas vacation, only 10 teachers responded to this item.)

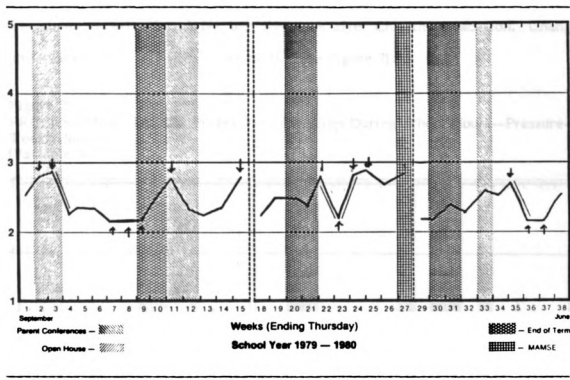
Figure 19
PROFESSIONAL TASKS: Responsibilities to and Interactions with Parents--
Pressure--Weekly Means
(Variable N)



Responsibilities to and interactions with fellow teachers—pressure. The means of teachers' reports of Pressure from their Responsibilities to and Interactions with Fellow Teachers vary between 2.2 and 2.9, below the mid-point (3.0). The scores were highest during fall open house and fall parent conferences, the week before Christmas vacation, weeks 22, 24, and 25 (in February), the week of the MAMSE Conference, and week 35 (the second week in May). With the exception of week 23 (the second week in February), the third marking period has more consistently high scores than the other three terms. Those weeks with the lowest means (2.2) are the seventh week of school, the two

weeks following week 23 (February), and two weeks in mid-May. Only four times during the year do the change units exceed 10%, between weeks 3 and 4, between weeks 22 and 23 and 23 and 24, and weeks 35 and 36. (See Figure 20.)

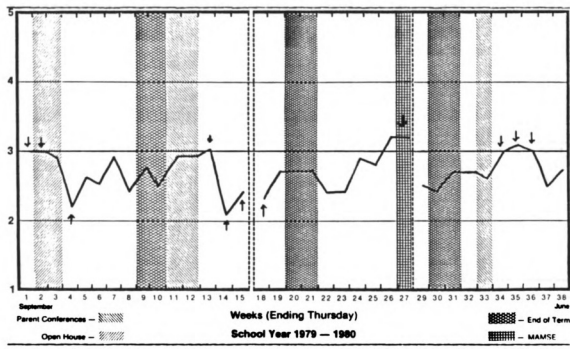
Figure 20
PROFESSIONAL TASKS: Responsibilities to and Interactions with
Fellow Teachers--Pressure--Weekly Means
(Variable N)



Responsibilities to and interactions with others--pressure. Too few teachers responded to this item for an analysis to be made. This omission is hard to understand since both the middle schools in this study have many secretaries, aides, clerks, parent volunteers, university students, and custodians actively involved in the operation of the schools. (See Appendix E for details.)

Professional meetings during school hours--pressure. Only four times during the year do the means for teachers' reports of Pressure felt for meetings during the school day rate 3.0 or higher: the first two weeks at the beginning of school, the week after fall parent conferences, the weeks before and during the MAMSE Conference, and the first three weeks of May. The felt pressure appears to be lowest the fourth week of school (after open house), the two weeks before Christmas vacation (week 14), and the week after Christmas vacation. Change units vary from 0 to 9 with a sum of 81. (See Figure 21.)

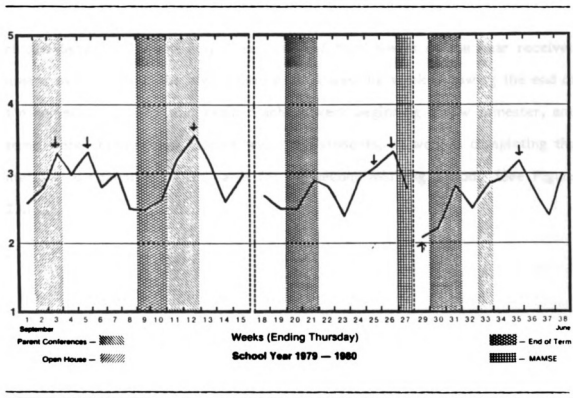
Figure 21
PROFESSIONAL TASKS: Professional Meetings During School Hours--Pressure--
Weekly Means
(Variable N)



Professional meetings after 3 PM or before 8 AM--pressure. Meetings before and after school (excluding evenings) include faculty meetings that were held regularly in one building but not in the other. The week with the highest reports of Pressure was the second week of parent conferences in the fall (3.6).

Other weeks with means above the mid-point were during the second week of open house (one building), the fifth week of school, and weeks 25 and 26 (just prior to the MAMSE Conference), and the second week of May. The lowest mean was the week following spring break. The sum of the change units for daytime meetings before and after school varied more than any other category for pressure (sum = 110) (see Appendix E). For this study, no data were collected on the number or types of meetings held by the two schools. (See Figure 22.)

Figure 22
PROFESSIONAL TASKS: Professional Meetings After 3 PM or Before 8 AM--
Pressure--Weekly Means
(Variable N)



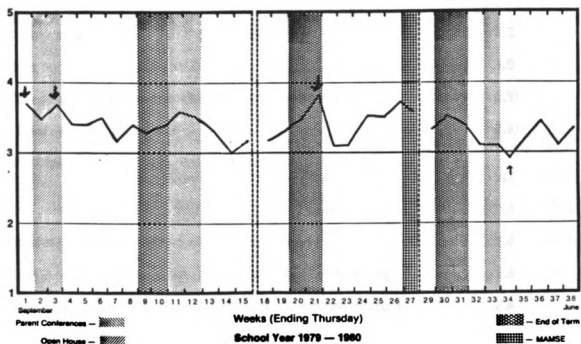
Professional meetings in evenings (after dinner)—pressure. With four exceptions, 10 or fewer teachers responded to this item weekly; hence, no analysis will be made. See Appendix E for details.

Interpersonal conflicts--pressure. While most of the teachers turning in weekly reports each week responded to the Likert scale for Energy Expended for Interpersonal Conflicts, too few completed the chart for Pressure for meaningful analysis. See Appendix E for details.

Weekly summary of professional tasks--pressure. At the end of the list of subsets for Professional Tasks on the Weekly Report, this open-ended statement was presented: "Professionally, I would summarize the week thusly": followed by the three Likert scales.

For only one week of the year was the mean for Pressure for Professional Tasks less than 3.0 (mean = 2.9 on the 34th week) and that was near the end of the year. For the balance of the year, the mean for each week of the year ranged between 3.0 and 3.8. The first and third weeks of the year received means over 3.7, and the high pressure week was the week following the end of the semester. During this week, teachers were beginning a new semester, and some were starting new classes with new students, as well as completing the marking of computer report cards for the second marking period. (See Figure 23.)

Figure 23
PROFESSIONAL TASKS: Summary of Professional Week--Pressure



Rank order for professional tasks--pressure--summary of year means. In contrast to Energy Expended, the relative positions for key subsets of the Professional Tasks have shifted, although the limits of the means are consistent with those for Energy Expended. Four professional tasks rank above 3.0: Paper Work: Grading and Record Keeping, Classroom Instruction, Instructional Planning and Preparation, and Personal-Social Needs of Students. All the remaining categories have means of 2.5 or higher. Those items with too few responses for meaningful analysis are in brackets (three items).

<u>Professional Task</u>	<u>Mean*</u>
Paperwork: Grading and Record Keeping	3.3
Classroom Instruction	3.3
Instructional Planning and Preparation	3.2
Personal-Social Needs of Students	3.0
(Professional Meetings: Evenings (After Dinner)	2.9)
(Interpersonal Conflicts	2.8)
Professional Meetings: Before 8 AM and after 3 PM (Excluding Evenings)	2.7
Responsibilities to and Interactions with Parents	2.7
Professional Meetings: During School Hours	2.6
Paper Work: Other (than Grading and Record Keeping)	2.6
Responsibilities to and Interactions with Administrators	2.4
Responsibilities and Interactions with Fellow Teachers	2.4
(Responsibilities to and Interactions with Others (Excluding Teachers, Administrators, and Parents)	1.6)

*Variable N

See Appendix J for standard deviations.

Research questions and responses for professional tasks--pressure. Like Energy Expended, the summary of the means for responses to the Likert scales for Pressure will be given as answers to the research questions.

First question: Do middle school teachers' reports of (Energy Expended) Pressure (and levels of Satisfaction) on selected subsets of the **professional** teaching tasks change over an academic year? If so, how?

The answer is a clear yes for the reports of Pressure show an ever-changing pattern of variation in responses. All the subsets receiving enough responses to be reported show change with Paper Work: Grading and Record Keeping, Responsibilities to and Interactions with Parents, and Professional Meetings

after 3 PM and before 8 AM demonstrating the most variation over the year. No dramatic changes were shown in the responses for Classroom Instruction, Instructional Planning and Preparation, Personal-Social Needs of Students, and Responsibilities and Interactions with Administrators.

Second question: Do teacher participants suggest times/periods of potential stress overload vulnerability by the patterns of their responses to the professional (Professional Tasks) subsets of the Weekly Reports? If so, how and in what way(s)?

The patterns of teacher responses to the Pressure scale as indicated by the means show four major times/periods when the possibility for stress overload vulnerability might exist. The first of these times was at the beginning of school when pressure was felt for beginning the school year which, for the reporting year, included open houses in both schools. The two weeks at the end of the first marking period were immediately followed by parent conferences which were reported as high pressure weeks. The patterns for Classroom Instruction, Instructional Planning and Preparation, Personal-Social Needs of Students, and Responsibilities to and Interactions with Parents and Fellow Teachers seemed highest during winter term. High pressure was also reported just before spring break and the MAMSE conference and just after spring break as teachers completed the responsibilities for the third term. Lesser degrees of pressure were felt just before and after Christmas vacation, at the semester change (with report cards), during spring parent conferences, and at the close of the school year.

Using change units as a measure of cumulative pressure, the highest pressure seemed to have occurred the first three weeks of school and between weeks 10 and 11 (between fall grades and fall parent conferences). Weekly shifts in Pressure as measured by change units were much less than for Energy Expended.

Third question: Do the teacher participants suggest areas of potential stress overload vulnerability by the patterns of their responses to the professional (Professional Tasks) subsets of the Weekly Reports? If so, how and in what way(s)?

Based on the Rank Order for Professional Tasks and for the patterns existing within means for subsets of Professional Tasks, two types of pressure seem to have been felt. Consistent high pressure seems indicated by the pattern and summary of year means for Paper Work: Grading and Record Keeping, Classroom Instruction, Instructional Planning and Preparation, and Personal-Social Needs of Students, all of which rated consistently above 3.0. Wide variations in Pressure were felt for Responsibilities to and Interactions with Administrators, Parents, and Fellow Teachers as well as for Meetings before 8 AM and after 3 PM. When these pressures were high at the same time and/or combined with those that were consistently high such as third term (mid-winter), the possibility might exist for feelings of stress overload.

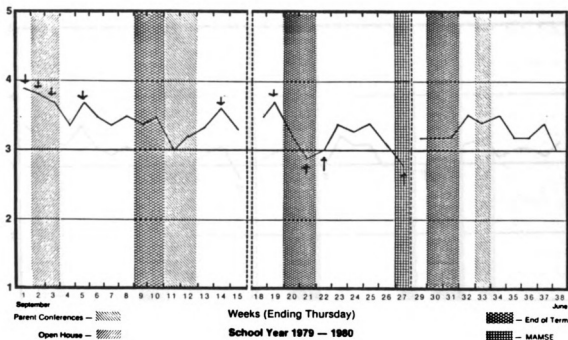
Professional Tasks--Satisfaction--Weekly Means

Introduction--satisfaction. Using a five-point Likert scale, each teacher was asked to indicate on a weekly basis his/her feelings of Satisfaction for each of the subsets of the professional teaching tasks. Following the pattern used for Energy Expended and Pressure, for the purpose of analysis it is assumed that the average amount of satisfaction in a task is 3.0.

Classroom instruction--satisfaction. The weekly means of the teachers' reports for their Satisfaction with instructional activities in the classroom consistently ranked between 3.0 and 4.0 for each week of the school year with three exceptions--the two weeks following the semester change and the week before spring break (MAMSE Conference). The teachers' reports indicated highest levels of Satisfaction (3.5 or higher) for four of the five first weeks of

school, week 14 (two weeks before Christmas vacation, and the second week after the holidays). At no other times during the year do the means exceed 3.5 or fall below 3.0. This is reflected in the change units which vary within a range of 0 to ± 4 (with two exceptions) which is a relatively consistent pattern of small changes. Teachers participating in this study report above average satisfaction in their Classroom Instruction. (See Figure 24.)

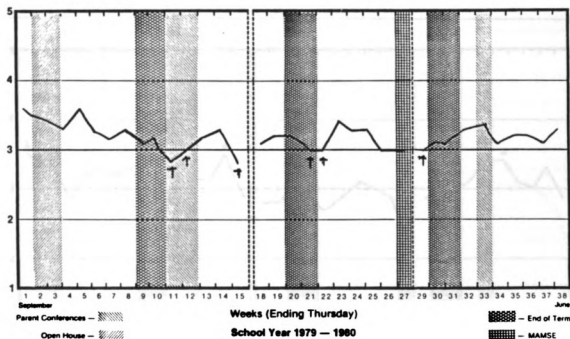
Figure 24
PROFESSIONAL TASKS: Classroom Instruction--Satisfaction--Weekly Means
(Variable N)



Instructional planning and preparation--satisfaction. The low mean scores for teachers' reports of feelings of Satisfaction for planning for classroom instruction occur at four distinct times of the school year. The weeks following the end of the first marking period, the week before Christmas vacation, the two weeks in February after the semester change, as well as the week following

spring break. However, these scores fall below 3.0 only twice. With the exception of several weeks at the beginning of the year when the means are highest, the means for Instructional Planning and Preparation vary less than 0.5 (5 change units). The responses of the teachers as reflected in the mean scores would seem to indicate feelings of above average satisfaction with their Instructional Planning and Preparation. (See Figure 25.)

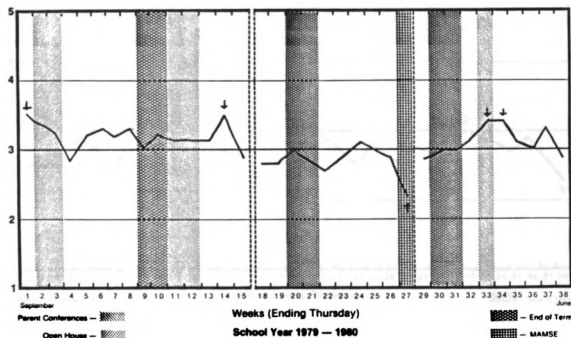
Figure 25
PROFESSIONAL TASKS: Instructional Planning and Preparation--Satisfaction--
Weekly Means
(Variable N)



Personal-social needs of students--satisfaction. The variation of means from week to week (change units) for the Personal-Social Needs of Students is quite small, ranging from 0 to 0.3 with only two exceptions. In spite of generally small weekly variations in feelings of Satisfaction in dealing with social and personal needs of students, over time there are considerable differences in

means (between 3.5 and 2.3). Twice during the school year, the first week of school and two weeks before Christmas vacation (week 14), the means reach a high of 3.5. For two other weeks, the second and third weeks of May, the means are 3.4. For the week of the MAMSE Conference, the mean drops to 2.3. An analysis of the year-long graph shows consistently lower means, lower feelings of Satisfaction, for the time period between Christmas vacation and spring break with a slightly higher mean for week 24. (See Figure 26.)

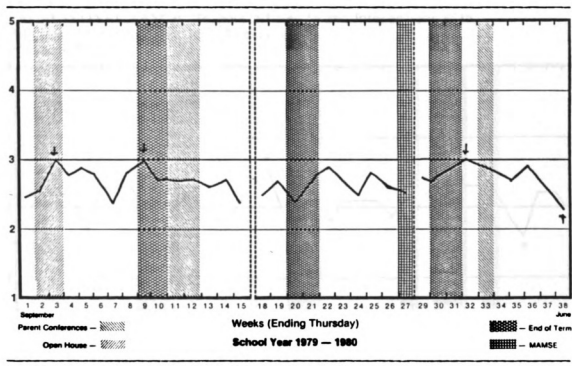
Figure 26
PROFESSIONAL TASKS: Personal-Social Needs of Students--Satisfaction--
Weekly Means
(Variable N)



Paper work: grading and record keeping—satisfaction. With the exception of three weeks, the means of the teachers' reports of Satisfaction with record keeping and grading never reach the mid-point of 3.0. The three exceptions are

the week of fall open house, the ninth week (fall report cards), and week 32 (the third week in April) after the end of the third marking period. The range is from 2.3 (the last week of school) to 3.0 but consistently below the mid-point in reflecting feelings of Satisfaction with this type of paper work. The teachers appear to feel far less satisfied with this portion of the basic tasks of teaching than with Classroom Instruction or Instructional Planning and Preparation. (See Figure 27.)

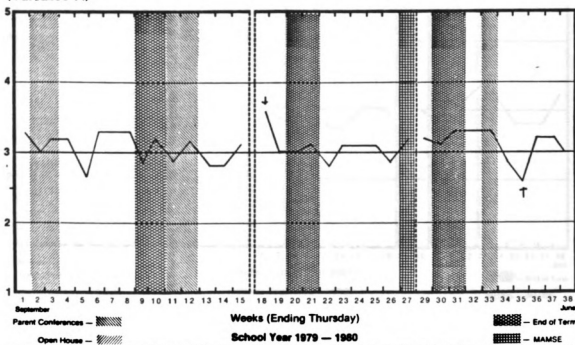
Figure 27
PROFESSIONAL TASKS: Paper Work: Grading and Record Keeping--
Satisfaction--Weekly Means
(Variable N)



Paper work: other--satisfaction. The number of teachers responding each week to this item was too erratic to make a meaningful analysis possible. See Appendix E for details.

Responsibilities to and interactions with administrators--satisfaction. The means for the teachers' responses indicating their feelings of Satisfaction with their relationships with their administrators cluster above and below the mid-point for the entire year. However, there are more consistent reports above than below 3.0. The shifts in means never exceed six-tenths (change units). There is no observable pattern either in changes or in weeks with significant high or low means. The weekly means for this subset of professional tasks ranged from a low of 2.6 to a high of 3.6 (the week after Christmas vacation). (See Figure 28.)

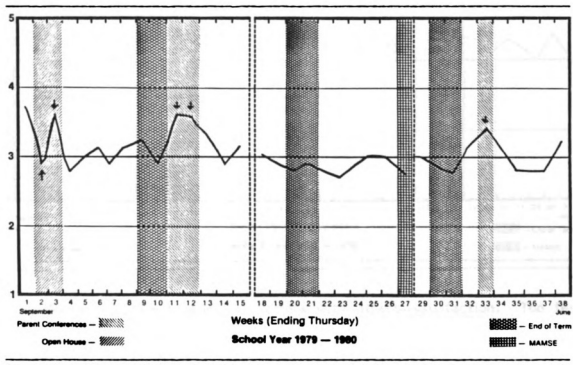
Figure 28
PROFESSIONAL TASKS: Responsibilities to and Interactions with
Administrators--Satisfaction--Weekly Means
(Variable N)



Responsibilities to and interactions with parents--satisfaction. With one exception, the teachers report the most Satisfaction with their Responsibilities to and Interactions with Parents during open house and at fall and spring parent conferences. The one exception is during one open house week (one school),

when the reported mean is low. During the fall (from the start of the school year to Christmas vacation) and after spring break, the means move above and below the mid-point. However, in the interval between Christmas vacation and spring break, the means never exceed 3.0 with all but three weeks having means below 3.0. The satisfaction felt from teachers' relationships with parents seems to be lowest at this time of the year. The reported feelings of Satisfaction change most in the fall, especially the first weeks of school. (See Figure 29.)

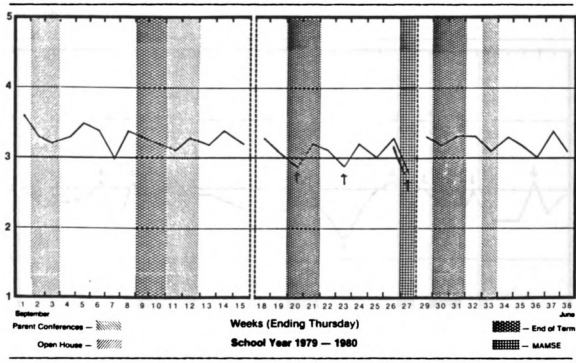
Figure 29
PROFESSIONAL TASKS: Responsibilities to and Interactions with Parents--
Satisfaction--Weekly Means
(Variable N)



Responsibilities to and interactions with fellow teachers—satisfaction. As reflected in their responses, the levels of Satisfaction felt by teachers in their relationships with fellow teachers vary little from week to week. The means are 3.0 or above except for five weeks (at the end of the first semester, two weeks in February, during the MAMSE Conference, and week 36) when they fall below

the mid-point. The means for the year are slightly lower for the third marking period when compared to the other three terms. There is little change from week to week, reaching five-tenths only once (the week before spring break which was also the week of the MAMSE Conference). (See Figure 30.)

Figure 30
PROFESSIONAL TASKS: Responsibilities to and Interactions with
Fellow Teachers--Satisfaction--Weekly Reports
(Variable N)

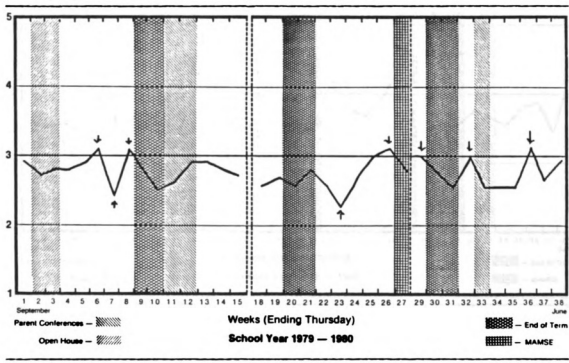


Responsibilities to and interactions with others--satisfaction. Too few teachers responded to this item for any meaningful analysis to be made. This category received the fewest responses of any other Professional Tasks. Again, this seems strange since both buildings have many secretaries, clerks, aides, parent volunteers, and custodians. See Appendix E for details.

Professional meetings during school hours--satisfaction. Only six times during the school year do the weekly means for feelings of Satisfaction with

meetings during the school day reach the mid-point or slightly above. And only twice during the year do the means fall to or below 2.5. For the major portion of the year the means vary between 2.5 and 3.0. Since no record was kept for this study of the number and type of meetings, no further analysis may be made. (See Figure 31.)

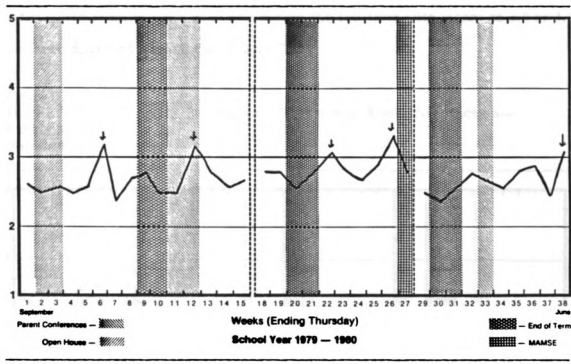
Figure 31
PROFESSIONAL TASKS: Professional Meetings During School Hours--
Satisfaction--Weekly Means
(Variable N)



Professional meetings before 8 AM and after 3 PM—satisfaction. The profile of the means for teachers' feelings of Satisfaction about meetings before and after school including faculty meetings shows means generally between 2.5 and 3.0. Five times during the year the means exceed the mid-point for Satisfaction: weeks 6, 12 (during parent conferences in one building), 22 (two weeks in the second semester), 26 (the week before MAMSE), and the last week of school. These means vary the most for those reported for Satisfaction with

Professional Tasks. Additional data would be necessary to make further analysis. (Note: for weeks 15 and 27, both before vacations, fewer than 10 teachers responded to this item.) (See Figure 32.)

Figure 32
PROFESSIONAL TASKS: Professional Meetings Before 8 AM and After 3 PM--
Satisfaction--Weekly Means
(Variable N)

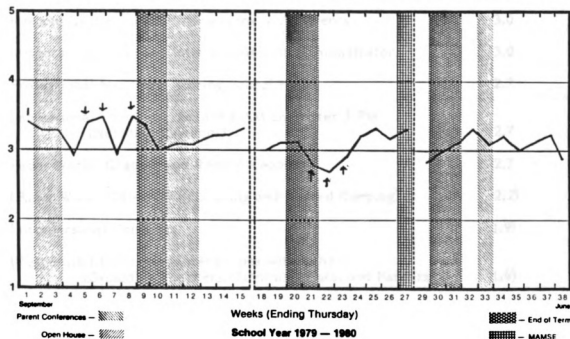


Professional meetings in evenings (after dinner)--satisfaction. Only twice during the school year did more than 10 teachers respond to the Likert scale for satisfaction felt for evening meetings. Both of these weeks were during parent conferences with week 12 (fall conferences) receiving a mean of 4.2 and week 33 (spring conferences) receiving a mean of 3.3. See Appendix E for details.

Interpersonal conflicts--satisfaction. An insufficient number of teachers responded to this item for any meaningful analysis. See Appendix E for details.

Summary of professional tasks--satisfaction. The final item for Professional Tasks was "Professionally, I would summarize this week thusly." For the Likert scale for Satisfaction, teachers indicated feelings that clustered near or slightly above the mid-point for most of the year. Eight times during the year the means fell below 3.0. For the first three weeks of February, the mean was below 3.0 for three consecutive weeks. The strongest feelings of Satisfaction seem to have been felt during the fall term with means of 3.4 or 3.5 for three different weeks. (See Figure 33.)

Figure 33
PROFESSIONAL TASKS: Summary of Professional Week--Satisfaction--
Weekly Means
(Variable N)



Rank order for professional tasks--satisfaction: summary of year means. The means for Satisfaction for Professional Tasks have approximately the same range as those for Energy Expended. However, the relative position for each of the Professional Tasks changed. Six tasks have ratings above 3.0. The subsets that have too few responses for meaningful analysis are in brackets.

<u>Professional Task</u>	<u>Means*</u>
Classroom Instruction	3.3
(Professional Meetings: Evenings (After Dinner)	3.3)
Instructional Planning and Preparation	3.2
Responsibility to and Interactions with Fellow Teachers	3.2
Personal-Social Needs of Students	3.0
Responsibilities to and Interactions with Parents	3.0
Responsibilities to and Interactions with Administrators	3.0
Professional Meetings: During School Hours	2.7
Professional Meetings: Before 8 AM and After 3 PM (Excluding Evenings)	2.7
Paper Work: Grading and Record Keeping	2.7
(Paper Work: Other (than Grading and Record Keeping)	2.2)
(Interpersonal Conflicts	1.9)
(Responsibilities to and Interactions with Others (Excluding Teachers, Administrators, and Parents)	1.4)

*Variable N

See Appendix J for standard deviations.

Research questions and responses for professional tasks--satisfaction. The three research questions will be used as a vehicle to structure the summary of the Likert scales for Satisfaction for the Professional Tasks subsets.

First question: Do middle school teachers' reports of (Pressure, Energy Expended) and levels of Satisfaction on selected subsets of the **professional** teaching tasks change over an academic year? If so, how?

Again, the answer is yes. However, the sums of weekly change units and those for each subset for Satisfaction with Professional Tasks showed much less variation than for Energy Expended or Pressure. This pattern may have been the result of confusion over the scale.

Second question: Do the teacher participants suggest times/periods of potential stress overload vulnerability by the patterns of their responses to the **professional** subsets (Professional Tasks) of the Weekly Reports? If so, how and in what way(s)?

The patterns within subsets and in the summary of the professional weeks for Satisfaction are unclear, i.e., do not clearly identify times of high or low Satisfaction with the following possible exceptions. In most cases, Satisfaction was high at the beginning of the year and seemed to be lowest overall during the winter term, February and March. In addition, the means seemed to indicate high Satisfaction during fall open house and fall and spring parent conference times.

Third question: Do the teacher participants suggest areas of potential stress overload vulnerability by the patterns of their responses to the **professional** (Professional Tasks) subsets of the Weekly Reports? If so, how and in what way(s)?

The rank order of means showed that the teachers participating in this study reported Satisfaction at the mid-point or above for all of the professional teaching tasks except for meetings during the day, meetings before and after school hours, and paper work involved in grading and record keeping. These two categories tied for the lowest measures of Satisfaction. At the opposite end of the scale, teachers reported high Satisfaction with Classroom Instruction followed by Instructional Planning and Preparation and Responsibility to and Interaction with Fellow Teachers. Satisfaction with Parent Interaction was

highest during one fall open house week and during both spring and fall parent conferences. The lowest ratings for Satisfaction with Responsibilities to and Interactions with Parents was at report card times and during winter term. Satisfaction with Classroom Instruction was highest at the beginning of both semesters. Instructional Planning and Preparation and Personal-Social Needs of Students had the highest ratings for Satisfaction at the beginning of the year. Satisfaction with their Responsibilities to and Interactions with Administrators was highest the week after Christmas vacation.

Feelings such as satisfaction influence the meaning of events and their potential for becoming a factor in stress overload. In view of the data for the Satisfaction Likert scales, those portions of the professional subsets that might be most powerful were the low levels of Satisfaction with Grading and Record Keeping, some interactions with parents, and meetings during, before, and after the school day. On the other hand, high Satisfaction, which also has an impact, was reported for Classroom Instruction, Instructional Planning and Preparation, Interactions with Fellow Teachers, and some contacts with parents.

Responses for Personal Life (Weekly Reports)

Introduction

The personal portion of the Weekly Reports using the Likert scales, as for Professional Tasks, was divided into five parts: Family Life, Social Life and Activities, Non-professional Meetings, Personal Economic Situation, and Personal Life Interpersonal Conflicts. Again, the three Likert scales were presented for responses to Energy Expended, Pressure, and Satisfaction.

For some reason this was one of the least completed portions of the Weekly Reports. Of these five Personal Life categories, the most complete responses were given to the Family Life scales. All of the Energy Expended scales

Figure 34
Summary of Year Means--Profesional Tasks

Classroom Instruction

Energy	3.8	
Pressure	3.3	
Satisfaction	3.4	

Instructional Planning and Preparation

Energy	3.6	
Pressure	3.2	
Satisfaction	3.2	

Personal/Social Needs of Students

Energy	3.5	
Pressure	3.1	
Satisfaction	3.0	

Paper Work: Grading and Record Keeping

Energy	3.5	
Pressure	3.3	
Satisfaction	2.7	

Paper Work: Other

Energy	2.3	
Pressure	(2.6)	
Satisfaction	(2.2)	

Responsibilities to & Interactions with Administrators

Energy	2.7	
Pressure	2.5	
Satisfaction	3.0	

Responsibilities to & Interactions with Parents

Energy	2.7	
Pressure	2.7	
Satisfaction	3.0	

Responsibilities to & Interactions with Fellow Teachers

Energy	3.1	
Pressure	2.5	
Satisfaction	3.2	

Responsibilities to & Interactions with Others

Energy	(1.5)	
Pressure	(1.6)	
Satisfaction	(1.4)	

Professional Meetings: During School Day

Energy	2.6	
Pressure	2.7	
Satisfaction	2.7	

Professional Meetings: Before 8 a.m. and after 3 p.m. (excluding evenings)

Energy	2.8	
Pressure	(2.8)	
Satisfaction	2.7	

Professional Meetings: Evening (after dinner)

Energy	1.8	
Pressure	2.9	
Satisfaction	(3.3)	

Interpersonal Conflicts

Energy	1.7	
Pressure	(2.9)	
Satisfaction	(2.0)	

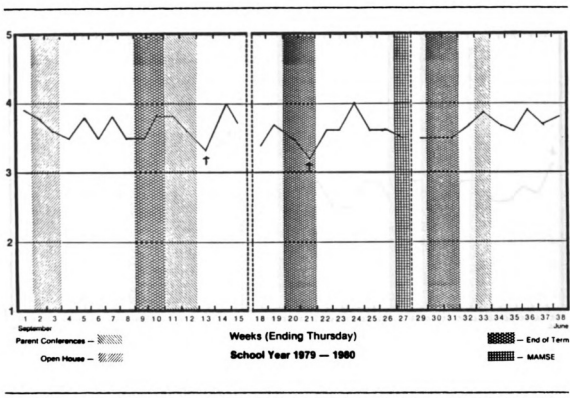
received sufficient responses to be analyzed. Two of the five subsets for Pressure and three of the five for Satisfaction failed to receive sufficient responses (more than 10 each week) and did not warrant analysis (see Appendix E). As before, when too few teachers responded to an item, that fact will be noted. The reader is reminded that the N will vary from week to week and all interpretations must be tentative.

All subsets for Personal Life will be presented for Energy Expended, Pressure, and Satisfaction. This will be followed by the rank order summary for the subsets of the three scales. Again, the research questions will be used to structure the summary.

Personal Life--Energy Expended

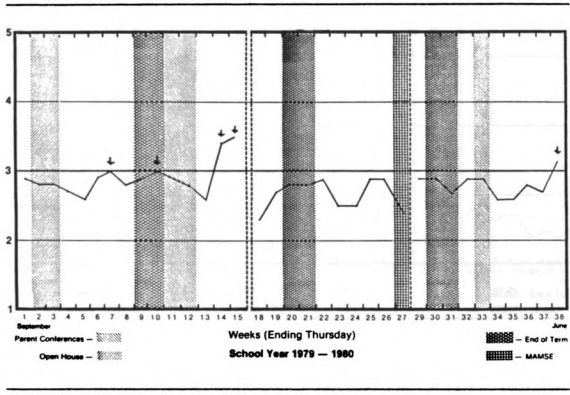
Personal family life--energy expended. As indicated in the introduction, the family portion of the Personal Life weekly inventory received the most complete and most consistent responses. The range of energy input into family ranges from 3.2 to 4.0. The means reach 4.0 (week 24) during winter term (February). The lowest means were reported the week after Thanksgiving, at the end of four continuous weeks of special school activities (fall report cards and fall parent conferences) and again the first week of the second semester when report cards were due and, for some, new classes beginning. (See Figure 35.)

Figure 35
 Personal Family Life--Energy Expended--Weekly Means
 (Variable N)



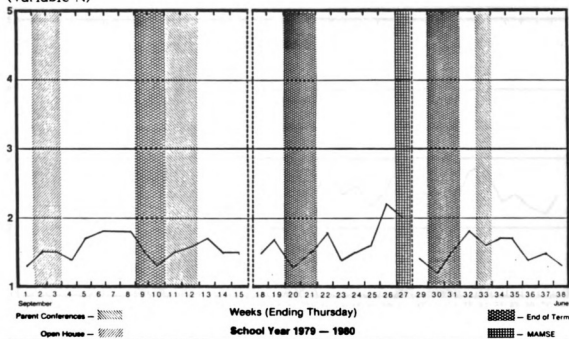
Social life and activities--energy expended. The weekly means for social activities range from 2.5 to 3.5. However, the majority of the means for Energy Expended fall below the mid-point (3.0). The weekly means exceed 3.0 the two weeks before Christmas vacation and the last week of school. The social activities occurring before Christmas vacation and the end of the school year with graduations, weddings, and the beginning of vacations may contribute to the higher ratings. Weeks 7 and 10 are at the 3.0 point, with all other weeks having means below the mid-point. Social life seems to be at its lowest during the winter term. Compared to Family Life and many of the Professional Tasks, teachers in this group appear to spend much less energy in social activities. (See Figure 36.)

Figure 36
Social Life and Activities--Energy Expended--Weekly Means
(Variable N)



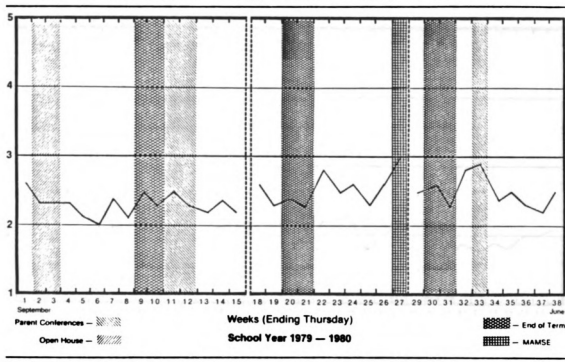
Non-professional meetings—energy expended. A relatively small number of teachers responded to this Likert scale for Energy Expended. Low means, between 1.2 and 1.9 (with one exception), are consistent over the school year. Either teachers chose not to respond to this portion of the Weekly Report or they expended little energy in meetings outside their professional obligations. The latter interpretation is consistent with the small number of teachers involved in non-educational activities (see Figure 37).

Figure 37
Non-professional Meetings--Energy Expended--Weekly Means
(Variable N)



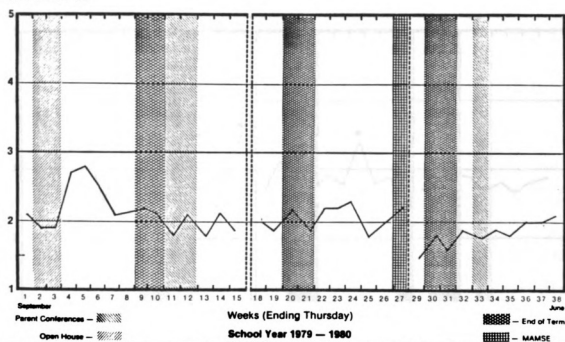
Personal economic situation--energy expended. This personal category received the fewest consistent responses of any of the Likert scales, either personal or professional. The means for the year for Energy Expended were below 3.0 but above 2.0. No attempt will be made to interpret the meaning due to the sparsity of data. However, it might be well to note that most of the teachers are married and many of the spouses work, so they may not have experienced economic needs above those accruing from the energy spent in teaching. Only two of the participants acknowledged having a second job. Another reasons worthy of note may be that the participants did not consider their economic situations a public item--especially since the researcher was a colleague--and may have chosen not to respond. (See Figure 38.)

Figure 38
Personal Economic Situation--Energy Expended--Weekly Means



Personal life--interpersonal conflict--energy expended. Even though the means were not high for Energy Expended, a larger percentage of teachers responded to this item than to those for Non-professional Meetings and Personal Economic Situation. The means are consistently low--between 1.8 and 2.8. Such a pattern may be interpreted to indicate that the research participants as a group spent little energy in interpersonal conflict, handled personal conflict easily, and/or chose not to respond candidly to this item. The two highest means were weeks 4 and 5 (at the beginning of the year and just after open house). (See Figure 39.)

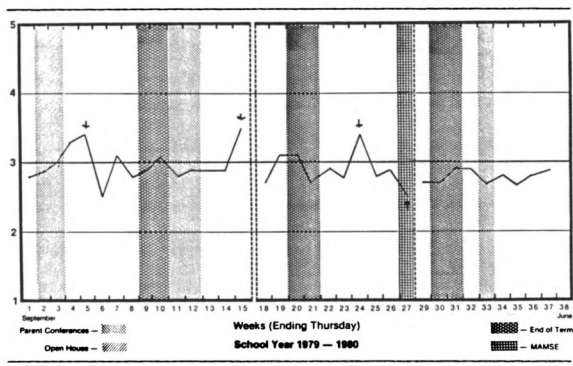
Figure 39
 Personal Life--Interpersonal Conflict--Energy Expended--Weekly Means
 (Variable N)



Personal Life--Pressure

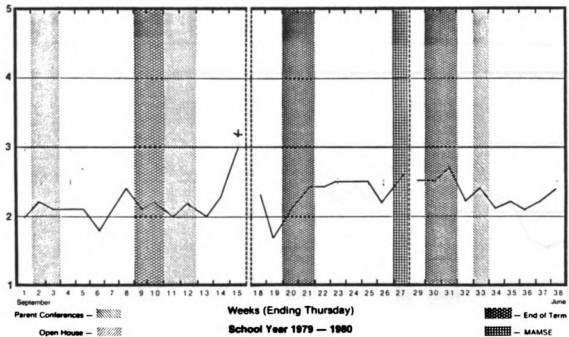
Personal family life--pressure. The weekly means for Pressure vary between 2.8 and 3.5 for Personal Family Life with the highest (3.5) the week before Christmas vacation. Two other weeks receiving high means are week 5 and week 24 (in February). The week with the lowest mean was the week before spring break (MAMSE conference). In general, the reports of pressure for family life are lowest after spring break until the end of school. (See Figure 40.)

Figure 40
 Personal Family Life--Pressure--Weekly Means
 (Variable N)



Social life--pressure. The weekly means for Pressure for social life are erratic, ranging from 1.7 to 2.9. Clearly the highest mean is the week before Christmas vacation. With this exception, the range is from 1.7 to 2.6 and may be interpreted to suggest that these teachers felt little pressure accruing from their social lives. (See Figure 41.)

Figure 4l
 Social Life and Activities--Pressure--Weekly Means
 (Variable N)

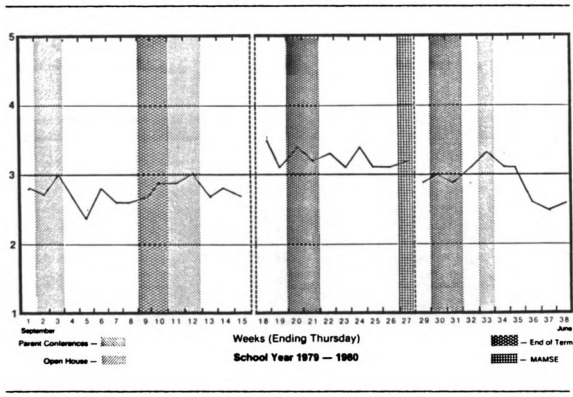


Non-professional meetings--pressure. Too few participants responded to this question weekly to enable one to make any interpretation from the means. However, this response meshes with the data provided in the baseline questionnaires. (See Appendix E.)

Personal economic situation--pressure. The range of the means for Pressure reported by the respondents is from 2.4 to 3.5. Clearly the most pressure was felt during the winter months--between Christmas vacation and spring break. During this time the means never fell below 3.1. In contrast Pressure appears to be lowest during the fall--until Christmas vacation. After

spring break, the means form an erratic pattern, moving above and below the mid-point (3.0). (See Figure 42.)

Figure 42
Personal Economic Situation--Pressure--Weekly Means
(Variable N)



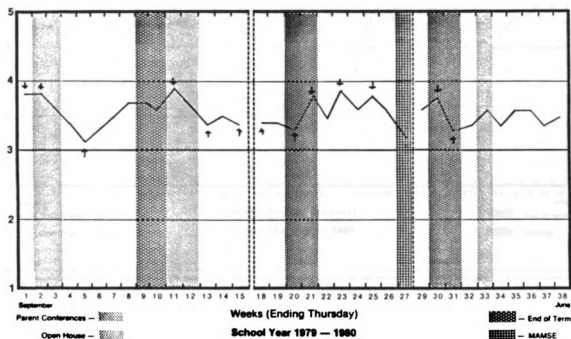
Personal life--interpersonal conflict--pressure. Only nine times during the year do more than ten teachers respond to this item. Due to the erratic pattern of responses, no analysis will be made (see Appendix E).

Personal Life--Satisfaction

Personal family life--satisfaction. The means for the year for Satisfaction with Personal Family Life range from 3.1 to 3.9, always above the mid-point. Such a pattern may be interpreted to indicate that the teachers participating in this study received above average satisfaction with their home lives. The weeks receiving high ratings were the first weeks of school, the first week of parent

conferences in the fall, the first week of the second semester (a report card week), week 23 and 25, and the week at the end of the third marking period (week 30). The lowest means were weeks 5 and 13, the weeks before and after Christmas vacation, week 20 (end of semester), the weeks before spring break (MAMSE), and the first week of the third marking period. (See Figure 43.)

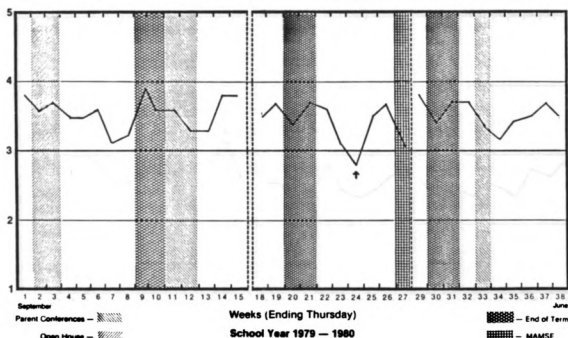
Figure 43
Personal Family Life--Satisfaction--Weekly Means
(Variable N)



Social life and activities--satisfaction. Like personal family life, the pattern for Satisfaction with Social Life and Activities is consistently above 3.0, with the exception of week 24 (in late February). One week, the week before Christmas vacation, only nine teachers responded to this item, and it is interesting to speculate as to the reason in view of other data provided concerning this week before the holidays. Keeping in mind the erratic pattern of

means, the data still seem to indicate that teachers experienced an above average level of Satisfaction with their personal lives. (See Figure 44.)

Figure 44
Social Life and Activities--Satisfaction--Weekly Means

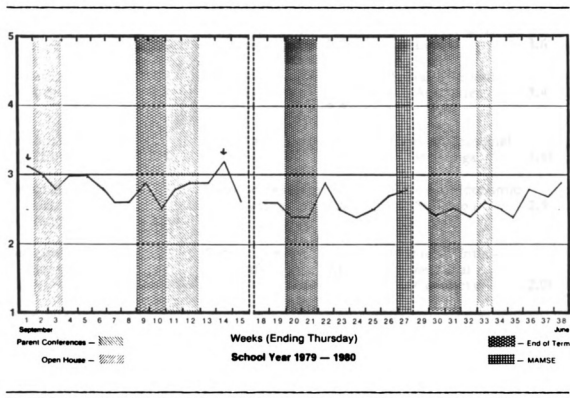


Non-professional meetings--satisfaction. Very few of the teachers responded to this item in any given week; therefore, no group interpretation will be attempted (see Appendix E).

Personal economic situation--satisfaction. In general, the teachers reported below average satisfaction with their Personal Economic Situations as indicated by the means which were 3.0 or below with two exceptions. The first week of school the mean was 3.1, and week 14 (two weeks before Christmas vacation) the mean was 3.2. The two lowest periods were between Christmas

vacation and spring break and between spring break and the first of May. (See Figure 45.)

Figure 45
Personal Economic Situation--Satisfaction--Weekly Means



Personal life--interpersonal conflict--satisfaction. The number of responses varied widely during the year for this category--from 1.7 to 2.8. In fact, this question, as presented, may have been confusing, unclear, or ambiguous. No interpretation of the data will be attempted (see Appendix E).

Rank order for personal life: energy expended, pressure, and satisfaction. An analysis of the rank order for the Personal Life responses indicates nothing especially unusual about the personal lives of the research participants. In interpreting the data, it is well to remember that few of the teachers, as reported in the demographic data, were involved in non-educational leadership or

committee commitments. Those subsets receiving too few responses to be evaluated have been bracketed. (See Appendix E.)

Rank Order of Means for Personal Family Life and Social Activities

<u>Energy Expended</u>		<u>Pressure</u>		<u>Satisfaction</u>	
Personal Family Life	3.6	Personal Family Life	2.9	Personal Family Life	3.6
Social Life and Activities	2.8	(Personal Inter-personal Conflicts	2.9)	Social Life and Activities	3.4
Personal Economic Situation	2.4	Personal Economic Situation	2.7	(Non-professional Meetings	3.4)
Personal Inter-personal Conflicts	2.1	(Non-professional Meetings	2.6)	Personal Economic Situation	2.5
Non-professional Meetings	1.6	Social Life and Activities	2.1	(Personal Inter-personal Conflicts	2.0)

*Variable N
See Appendix J for standard deviations.

The participants, based on their reports, spent the most energy on their families, felt the most pressure from family obligations, yet received the most satisfaction from the family lives. The least pressure was felt for Social Life and Activities. The least satisfaction was reported for their Personal Economic Situation, and they expended little energy in Non-professional Meetings.

**Research Questions and Responses for Personal Life,
Energy Expended, Pressure, and Satisfaction**

As for Professional Tasks, the three research questions will provide the structure for the summary of the Personal Life portion of the Weekly Reports.

Fourth Question: Do middle school teachers' reports of Energy Expended, Pressure, and Satisfaction on selected subsets of the **personal** subsets (Personal Life) change over an academic year? If so, how?

Again, the answer is a clear yes. However, the changes, with a few exceptions, were more moderate than those for Professional Tasks. Most of the changes from week to week vary 10% or less. On occasional weeks, the change may be as much as 20%. This pattern held for Energy Expended, Pressure, and Satisfaction, with satisfaction with Social Life and Activities showing the most variation.

Fifth Question: Do teacher participants suggest times/periods of potential stress overload vulnerability by the patterns of their responses to the **personal** subsets (Personal Life) of the Weekly Reports? If so, how and in what way(s)?

An analysis of the patterns provided by the subsets of means for Personal Life reveals a different pattern than that for Professional Tasks. While energy input into family life was high the first week of school as were those for several subsets for Professional Tasks, the major peaks (or low points) occur during weeks 4 through 7, immediately after the professional beginning of the year high points. Reports of Pressure were high for Family Life during the fourth and fifth weeks while at this same time there was a low feeling of Satisfaction with Family Life. During these same weeks Energy Expended on Interpersonal Conflicts peaks. Also, this was a period when the reports reveal feeling of low Pressure and low Satisfaction with Social Life and Activities.

The patterns for the remaining weeks between the start of school and Christmas present a different profile. During week 9, the first week of fall report cards, the reports of Satisfaction with social life were the highest of the year. During week 13, just following the first term report cards and fall parent conferences, the reports were of low energy committed to Family Life and Social Life and Activities. The week before Christmas vacation, the reports showed a great deal of Energy Expended and Pressure for Family Life and Social Life and Activities.

During the fall months, between the beginning of school and the Christmas vacation period, the means the teachers reported for their Personal Economic Situation varied from those for the rest of the year. In the fall, satisfaction with their economic situation was higher than for the winter and spring. Also, during the fall, reports of feelings of Pressure and of Energy Expended were the lowest of the year for economic concerns. In contrast, the profile of means showed the greatest Pressure from economic concerns between Christmas vacation and spring break. Feelings of Satisfaction with economics were lower from the holidays until summer vacation than in the fall. Energy committed to Personal Economic Situation remained low through the year.

In the weeks following the start of school in January, the reports of teachers showed low energy input into Family Life and low energy input and Pressure from Social Life and Activities. Week 24, unidentifiable as to cause, received high ratings for Energy Expended and Pressure from family life and the lowest ratings for Satisfaction with social life. In general, the mid-winter period received high ratings for energy used in Interpersonal Conflict and low energy ratings for Social Activity. At the same time, the ratings for Satisfaction from family life appeared to be highest during the winter. During the two weeks before spring break which included the MAMSE conference, energy committed to non-professional meetings was high and that committed to social life was low.

The period between spring break and the summer vacation received relatively few high or low ratings as reflected in the means. The weeks immediately following the spring break were ones receiving ratings reflecting high feelings of Satisfaction with Social Life and Activities and low feelings of Satisfaction with Personal Family Life. Small amounts of energy were reported for non-professional meetings and interpersonal conflicts during the spring. Low Pressure for family life and social activities was reported during these months.

The last weeks of the year were ones when teachers reported high energy commitment to their families and social life.

Sixth Question: Do the teacher participants suggest areas of potential stress overload vulnerability by the patterns of their responses to the **personal** subsets (Personal Life) of the Weekly Reports? If so, how and in what way(s)?

Analysis of the areas where the potential for stress overload may exist may be very tentative due to the pattern and completeness of the responses of the teacher participants (refer to the introduction to Personal Life).

The teachers' responses indicated high Energy Expended on their family life and high feeling of Satisfaction with their home life, and their reports showed Pressure levels below the midpoint. The pattern of responses for Personal Economic Situation showed a steady decline in Energy Expended and Satisfaction as the year progressed with increasing feelings of Pressure. On the other hand, Social Life and Activities, while ranking second in energy, received a year-long mean below the mid-point and would seem to indicate a slightly below average involvement. The reports indicated the least feelings of Pressure from social life with the second highest reported year-long level for Satisfaction. The information for Non-professional Meetings and Personal Interpersonal Conflict was too incomplete to be evaluated.

Conflict Responses

Introduction

Immediately following the three Likert scales for Energy Expended, Pressure, and Satisfaction for both Professional Tasks and Personal Life subsets, the research participants were asked to respond to two conflict statements:

Extent to which professional demands on my time conflicted with my personal or family demands/needs.

Extent to which things I thought I should do conflicted with things I wanted to do.

These two statements were the most consistently answered portion of the Weekly Reports. Also, as will be indicated later, these two conflict statements, on the basis of a very small sample of respondents, have the highest correlations with Professional Tasks. The first statement will be referred to as Conflict #1--Professional vs. Personal--and the second as Conflict #2--Duties vs. Desires.

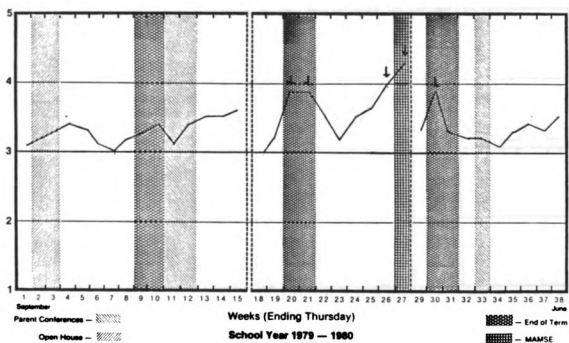
Conflict #1--Professional vs. Personal

Extent to which professional demands on my time conflicted with my personal or family demands/needs.

Three times during the school year, the means for the responses for this statement were significantly higher than during the remainder of the year. The two weeks before the MAMSE conference the means reached 4.0 and 4.3. During weeks 20 and 21 (semester break) and week 30 (third term grades), the means reached 3.9, indicating high levels of conflict. Such a pattern makes sense when the expectations at these special times of the year are analyzed--the pressure to complete grades, to begin a new semester, and to host a conference. (See Figure 46.)

There was a great deal of change during the year, but the mean never fell below the mid-point of 3.0. The means, overall, are higher during the third term, especially late January, late February, and early March. The means of teachers' responses during most of the year fluctuated between the mid-point and 3.6, indicating ever-changing levels of conflict requiring adaptation by the respondents.

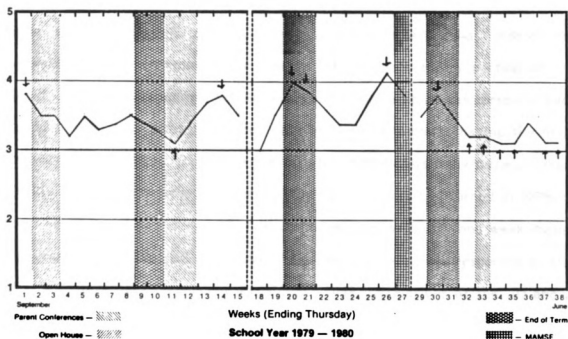
Figure 46
Conflict #1--Professional vs. Personal



Conflict #2--Duties vs. Desires

The pattern of responses as indicated by the means differed in part from that of Conflict #1. The two highest reported means were the week before the MAMSE conference and the weeks at the end of the first semester. Three other highs were the first week of school, two weeks before Christmas vacation, and the end of the third marking period. The weeks with low means were the first week of the fall parent conferences; the weeks before, during, and after spring parent conferences; and at the end of the school year. The lowest mean was 3.0 for the first week after Christmas vacation; during the balance of the year, the range was from 3.1 to 4.1, indicating a continuous pattern of fluctuating levels of conflict between duties and desires. (See Figure 47.)

Figure 47
Conflict #2--Duties vs. Desires



Research Question and Correlation Samples

Seventh Question: How do changes in the reports of exercise, alone time, alcoholic beverage intake, medication and drug use, and significant life events compare with changes in the reports of Energy Expended, Pressure, and Satisfaction for Professional Tasks and Personal Life?

A partial answer to this question was sought by applying the Pearson Product Moment Correlation to the responses provided by five subjects. It was possible to compute values for alcoholic beverages intake and for medication and drug use. However, the data reported for exercise, alone time, and significant life events could not be quantified adequately for analysis for a variety of reasons including inconsistencies among reports, differing interpretations of the relevant portion of the Weekly Reports, and incomplete responses. Caffeine

consumption, physical symptoms, conflict #1 and conflict #2 were substituted for the unusable sets of information for this analysis.

Using the Professional Tasks and Personal Life summaries for each of the three scales--Energy Expended, Pressure, and Satisfaction--as independent variables and six elements of the Weekly Life Style Inventory portion of the Weekly Reports as dependent variables, a Pearson correlation was computed over the 35 weeks of the school year for each of the five subjects having the most complete sets of data. These five teachers had most consistently turned in their Weekly Reports during the year; two of the five teachers had turned in 100% of the Weekly Reports, and the other three had each missed only one week during the year. These five had also given consistent and complete responses to the Life Style Inventory (dependent variables). Only correlations at the .05 and .1 levels of significance were chosen for further analysis.

Method. The subsets of the Professional Tasks and Personal Life were compressed into single numerical values and computed in all possible combinations of Energy Expended, Pressure, and Satisfaction (i.e., singly, in pairs, and using two methods of combining the three scales) with the dependent variables. In all multiple patterns, the product* of the scales was used. Each combination was correlated for each subject with each of the six dependent variables: conflict #1, conflict #2, alcohol, caffeine, drugs and medications, and physical symptoms. (See Appendix G.)

*One important change was made in the computation of the Energy Expended scale. For the purpose of this analysis, the first box, which had been previously valued as one, was rescaled as a zero. This necessitated one small change by the researcher in the values of the reports of one subject used in the analysis. For several weeks, this participant indicated no Energy Expended but checked values for Pressure and Satisfaction. In order not to lose the values for Pressure and Satisfaction, in those few instances where this subject had indicated the first box, the value was changed to the next higher value. To have left Energy Expended as checked for those few weeks would have removed the other values when products were used in computation.

In addition to using the single values and double products of the three scales (Energy Expended, Pressure, and Satisfaction), two combinations of the three scales were computed. In one, the simple product of the three scales was used. This combination of Energy Expended, Pressure, and Satisfaction will be designated as ESP (Energy Expended times Satisfaction times Pressure). For the second computation of the three elements (PSE), the mid-point of the Satisfaction scale was considered as one which gave the items to the right of the zero values of 2 and 3. Accordingly, those to the left of the mid-point became -2 and -3, respectively. This weighting of Pressure times Satisfaction (rescaled) times Energy Expended (PSE) resulted in five sets of correlations for further consideration while the original pattern (ESP) only revealed three.

There are several ways to analyze the results of the 24 significant sets of correlations for the five subjects. A brief summary will be given for each. First, the differences between the patterns for Professional Tasks and Personal Life will be described. Next, comparisons will be made among the three scales (Energy Expended, Pressure, and Satisfaction) with special attention focused upon the results of the computations of the ESP and PSE correlations. Finally, each dependent variable will be highlighted in terms of Professional Tasks and Personal Life as well as with the various combinations of the stress scales.

Professional tasks vs. personal life (independent variables). A comparison between those dependent variables which have sets of correlations with Professional Tasks and with Personal Life shows a dramatic difference. Conflict #1 and conflict #2 correlated only with Professional Tasks with seven sets for the first conflict and five for the second. There was only one set of correlations between physical symptoms and Professional Tasks and none between caffeine

and Professional Tasks. In contrast, there are no sets of correlations between conflict #1 and conflict #2 and Personal Life. However, there were six sets of correlations between Personal Life and physical symptoms and five sets between Personal Life and caffeine. Only one dependent variable had sets of correlations with both Professional Tasks and Personal Life—physical symptoms.

Energy expended vs. pressure vs. satisfaction. When analyzing the three scales (Energy Expended, Pressure, and Satisfaction) for significant sets of correlations, another pattern emerged. Both Energy Expended and Pressure were significant either singly, in pairs, or in trios in nine different combinations each (see Table 6). Neither was clearly more useful than the other. Satisfaction, on the other hand, did not discriminate any set of correlations singly and only showed up in combination with either Energy Expended or Pressure or both (four sets). In the triple products, the weighting which placed 1 at the midpoint (PSE) identified five sets as compared to three for the original weighting (ESP). Correlating the relationship between physical symptoms and the independent variables, using the PSE product was the only combination that identified significant sets of correlations with both Professional Tasks and Personal Life.

Dependent variables--conflict #1. The greatest number of correlations was between conflict #1 and Professional Tasks when the various combinations of the three scales were computed. All five teachers' reports showed correlations for groupings: Energy Expended, Pressure, Energy Expended times Pressure, Energy Expended times Satisfaction, and PSE. Four of the five participants' responses were significant for the other three groupings.

Dependent variable--conflict #2. There were only five patterns of correlations between Professional Tasks and conflict #2. In each situation, only

Table 6
Percent of Significant Pearson Product Moment Correlations Between
Independent Variables and Dependent Variables for Five Subjects for All Possible
Patterns for Energy Expended, Pressure, and Satisfaction

<u>Professional Life</u>				
	<u>Conflict #1</u>	<u>Conflict #2</u>	<u>Physical Symptoms</u>	<u>Caffeine*</u>
Energy	100	80	60	25
Pressure	100	80	40	50
Satisfaction	20	40	60	50
Energy x Pressure	100	80	60	50
Satisfaction x Pressure	80	60	60	50
Energy x Satisfaction	100	80	60	50
ESP**	80	60	60	50
PSE***	100	80	80	50
<u>Personal Life</u>				
Energy	40	40	80	75****
Pressure	40	40	100	75****
Satisfaction	40	40	40	60
Energy x Pressure	20	20	100	75
Satisfaction x Pressure	40	60	80	50
Energy x Satisfaction	40	20	60	50
ESP**	40	20	80	75
PSE**	40	20	80	75

KEY:

*One teacher did not consume caffeine (n = 4)

**Energy x Satisfaction x Pressure

***Energy x Rescaled Satisfaction x Pressure

****One negative relationship

(See Appendix G for details.)

four of the five respondents' reports had correlations for this conflict between duties and desires. Again, all the correlations were with Professional Tasks.

Dependent variable—caffeine. Because one teacher did not consume caffeine, the total possible sets of correlations between caffeine and Professional or Personal Tasks were four. In five computations three of the four teachers' responses had correlations for caffeine with Personal Life but not with Professional Tasks. In one instance, this was a negative relationship.

Dependent variable--physical symptoms. Physical symptoms was the only dependent variable that showed significant sets of correlations with both Professional Tasks and Personal Life. Four of the five teachers had correlations (PSE) between physical symptoms and Professional Tasks, and this was the only significant set of life style correlations with Professional Tasks. In one instance this was a negative relationship. In contrast, there were six sets of correlations between physical symptoms and Personal Life. Both Pressure and Energy Expended times Pressure revealed correlations for all five of the teachers. For Personal Life, the other four sets of correlations only included four respondents.

Summary. A computation of Pearson correlations for the responses of the five subjects using the compressed values of the Professional Tasks and Personal Life as independent variables and six subsets of the Weekly Life Style Inventory as dependent variables provided 24 sets of correlations worthy of further analysis. All possible combinations of the scales (Energy Expended, Pressure, and Satisfaction) were investigated. Satisfaction, in the original weighting, had the fewest sets of significant correlations, while Energy Expended and Pressure appeared to be about equally useful.

Only one dependent variable physical symptoms had significant sets of correlations with both Personal Life and Professional Life. Only the PSE combination showed a relationship with Professional Life while the other six sets were with Personal Life. Two of the sets of correlations with Personal Life included all five of the participants. The single set with Professional Tasks included only four teachers with the responses of one individual showing a negative relationship.

The two conflict variables had only sets (12) of relationships with Professional Tasks. And caffeine had only sets (5) of correlations with Personal Life. This split between the two sets of correlations with Professional Tasks and Personal Life cannot be explained on the basis of the data in this study (see Table 6).

Twenty-four combinations of correlations between Professional Tasks and Personal Life and the six dependent variables examined showed in all but one situation a positive relationship between the changes in the independent variables and four of the dependent variables: conflict #1, conflict #2, caffeine, and physical symptoms. This would seem to be a partial answer to research question seven.

Summary of Results of Data Analysis

The primary purpose of this study was to collect data from a group of teachers for a school year to ascertain, if possible, how they experienced their work and selected aspects of their personal lives and to see if their reports might provide clues to the times and areas of their lives when they might experience vulnerability to stress overload. The following results were based on a simple analysis of means and correlations of the responses of the volunteer middle school teachers to the items on the Weekly Reports.

1. Changes were regularly reported by the teachers for multiple aspects of their professional and personal lives for all subsets for Energy Expended, Pressure, and Satisfaction.
2. Key Professional Tasks and Family Life (a subset of Personal Life) received continuous reports above the mid-point for the major portion of the year for all three measures: Energy Expended, Pressure, and Satisfaction. Among these were Classroom Instruction, Instructional Planning and Preparation, Personal-Social Needs of Students, Paper Work--Grading and Record Keeping, and Personal Family Life.
3. Few weeks of the school year did not have high or low significant means for Energy Expended, Pressure, and/or Satisfaction in addition to those subsets that regularly received reports with high means. The teachers seldom reported weeks when they felt life was average.
4. Multiple reports of high expenditure of energy and/or feelings of high pressure and/or feelings of high or low satisfaction generally coincided with identifiable times of the school year:
 - beginning of school
 - meetings with parents (open house and parent conferences)
 - end of marking periods and preparation of report cards
 - weeks before vacations: Christmas, spring break, and summer vacation
 - MAMSE conference
 - February (mid-winter)
5. Conflict between Personal Life and Professional Life and between wants and desires was high for most of the school year (always above the mid-point).
6. Pearson correlations between Professional Tasks and Personal Life (independent variables) and caffeine, physical symptoms, and both conflict questions for a sample (five) of the teacher participants proved significant in 24 patterns. Alcohol and drugs correlated in a few instances but not for the major portion of the five sets of data examined.

These research outcomes, as well as some other clues and hunches taken from the research data, will be discussed in Chapter V, along with recommendations for further research.



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CHAPTER V

RESULTS OF RESEARCH

Introduction

The purpose of this chapter is to bring together the multiple aspects of this study of teacher stress levels, to summarize the results from different viewpoints, to make recommendations for further research, and to reflect on the research experience. After a brief review of the research design, the results of the study will be viewed from two different perspectives: (a) a further discussion of the six major results drawn from the original research questions and (b) other research outcomes not directly related to the research questions or the research results but which are relevant. These will be followed by a formal list of suggested topics for further research and will include some suggestions for immediate application of research results. The chapter will close with a section reflecting upon the research experience itself.

Research Design Revisited

The intent of this study was to collect data on teacher stress for a school year and to analyze those data for clues to the levels of stress experienced by the participants in their personal and professional lives. It was hoped that the data resulting from the study might provide clues to the potential times and areas of the teachers' lives during which they might be vulnerable to stress overload. Additionally, it was hoped the results would also provide data concerning the totality of the teaching experience. From the beginning, it was recognized that the undertaking would raise more questions than answers since

the purpose of the research was to assess the "whole" of the lives of the volunteers. Instead of focusing on a discrete facet of a life experience, an effort was made to assess multiple facets of the lives of the participants and to make a preliminary assessment of these data. No model for such research could be found. Teachers are "whole" people and function in the classroom as "whole" people, and to attempt to assess one factor of their lives without allowing for the events occurring in other parts of their lives would distort the outcomes no less than attempting to mesh a multiple-factored situation.

Middle school teachers in a Midwestern suburban school district were recruited to provide weekly summaries of their personal and professional lives for an academic year. In addition to completing several baseline questionnaires designed to provide background information on the participants, the teachers completed Weekly Reports for each week school was in session from September to June. Each week, on the Weekly Reports, the teachers indicated on Likert scales the levels of Energy Expended, Pressure, and Satisfaction that they felt/experienced for selected aspects of their Professional Tasks and their Personal Lives. In addition, they responded to two conflict questions indicating the amount of felt conflict between their personal and professional lives and between their duties and desires. Finally, they were asked to answer a number of personal questions about their daily lives, i.e., their caffeine and alcohol consumption, medications, or physical symptoms.

These data were sought in order to answer the following research questions.

1. Do middle school teachers' reports of Energy Expended, levels of Satisfaction, and Pressure on selected subsets of the **professional** teaching task (Professional Tasks) change over an academic year? If so, how?

2. Do the teacher participants suggest times/periods of potential stress overload vulnerability by the patterns of their responses to the **professional** subsets (Professional Tasks) of the Weekly Reports? If so, how and in what way(s)?
3. Do the teacher participants suggest areas of potential stress overload vulnerability by the patterns of their responses to the **professional** subsets (Professional Tasks) of the Weekly Reports? If so, how and in what way(s)?
4. Do middle school teachers' reports of Energy Expended, levels of Satisfaction, and Pressure on selected subsets of their **personal** life (Personal Life) change over an academic year? If so, how?
5. Do the teacher participants suggest times/periods of potential stress overload vulnerability by the patterns of their responses to the **personal** life subsets (Personal Life) of the Weekly Reports? If so, how and in what way(s)?
6. Do the teacher participants suggest areas of potential stress overload vulnerability by the patterns of their responses to the **personal** life subsets (Personal Life) of the Weekly Reports? If so, how and in what way(s)?
7. How do changes in the reports of exercise, alone time, alcoholic beverage intake, medication and drug use, and significant life events compare with changes in the reports of Energy Expended, Pressure, and Satisfaction for Professional Tasks and Personal Life?

Summary of Research Results

Introduction

Detailed reports of the results of the school-year study of levels of stress experienced by teachers have been reported in Chapter IV. Only the outcomes that may be significant, either in and of themselves, or as a basis for further study, will be represented again. For the purposes of this study, stress was defined as an individual's adaptive response to internal or external stimuli, either physical, psychological, social, or environmental, or any combination of these. Stress was viewed as a "whole-person" phenomenon (Pelletier, 1977; Schneider, 1984), and an attempt was made to sample multiple facets of the participants' lives. Similarly, the concept of the feedback loop (Pelletier) in which any one or

a number of events may trigger responses within the organism seemed more appropriate to this research than the more common cause and effect model. One of the motivating factors impelling this research was the desire to collect data that might help highlight the levels and multiple demands of teaching, the levels of stress that teachers report, and, perhaps, to begin to change in a small way the current understanding of the experiences of teachers and teaching. Teachers function in their classrooms as whole persons; they are not simply purveyors of knowledge. Whatever they do in their daily interactions with students is affected by the quality of their characters as well as the quality of their physical, mental, and emotional health. The health of all workers is important to the carrying out of any job, but the role of the teacher directly impacts pupils. Each day, what teachers are, what they live, and how they feel makes a difference in the classroom and in the daily lives of their students. It was hoped that this study might begin to focus attention on the lives of teachers, both professional and personal, to raise some questions about the level of demands made upon teachers and to generate some concern about their physical, emotional, and mental health.

Completeness of Data and Weekly Reports

Because of the personal commitment made by the 24 teacher participants, it was possible to collect data for an academic year, weekly, on their personal and professional lives. During the year, as data were collected weekly, it became clear that it would be almost impossible to have 100% participation for each week and for each element of the study. There were several reasons for this. First, each teacher did not experience or participate in all the activities listed on the Weekly Reports during any one week. For example, a teacher might not have had any interactions with parents or any evening meetings during one

seven-day period. Also, teachers would miss a week now and then which would be hard to recall. For example, teachers were absent for illness and death situations or attended conferences or were at school camp. Each week missed was unique in itself and may represent a week involving stress overload, but that cannot be confirmed.

In rethinking the process used for this study, it seems that expecting 100% participation on a weekly basis for a school year was probably very unrealistic. If it could be done, it would probably require the expenditure of a great deal of money, either to pay for substitute teachers to cover classes while teachers completed the forms or to pay the participants for their time and involvement. Would teachers be as candid and honest for pay as they were as volunteers? The responses of the teachers in this study far exceeded what one might have expected at the onset of the study. And it is the quality of these responses that adds to its usefulness in providing clues for further study of the personal experiences of teachers.

Variable N

As explained in the previous section, the number of participants completing Weekly Reports, or portions of the Weekly Reports, varied from week to week. But when attempting to collect information on the real lives of people as they experience it, yet to be as uninteruptive of each life as possible, it readily becomes clear that ideal reporting over such a long period of time may never be accomplished. In fact, it is amazing that so many of the volunteers continued the study for a whole year. Nevertheless, the variation in the number of Weekly Reports for each week or for portions of the Weekly Reports needs to be kept in mind as the summaries of the research are presented.

Issues of Reliability and Validity

Reliability

In this type of original research, there is a question of reliability of the instrumentation. During the course of the study, the Weekly Report was completed, unchanged, for over nine months by over 25 teachers which meant it was used in a standard form over 700 times. A sampling of standard deviations for selected subsets and measures supports this claim for reliability.

Construct Validity

A similar concern centers around the issue of construct validity. Care was taken to create the research design, especially the Weekly Report, to fit the concepts basic to the research: definition of stress, levels as adaptation and/or change, the "whole person" phenomenon, and the feedback loop model. Known components of individual stress were included among the samples of data requested.

Concurrent Validity

The simultaneous collection of the subsets of the data for professional and personal life as well as life style and health information may constitute a form of concurrent validity. This could be checked by making internal correlations of subsets of the Weekly Report.

Face Validity

The candor with which the teacher participants responded to the Weekly Reports is remarkable; perhaps, it is the outstanding result of this study. The honesty with which the Weekly Reports were completed resulted in unanticipated findings. Almost all the outcomes as reflected in the means presented in Chapter IV fit the commonly accepted norms of teachers or accepted "teacher

folk wisdom." For example, the fact that during the week before Christmas vacation the events in the classroom are impacted by the upcoming holidays with their excitement, parties and gift sharing, anticipation of vacation, and similar events and feelings is reflected in the means reported in this study. The fact that teachers, like students, anticipate vacations and are inclined, in many instances, to postpone work until after vacation, for the reasons given above and others, also appear to be reflected in the means. (See the data for Energy Expended and Pressure for Classroom Instruction and Instructional Planning and Preparation for the weeks before and after Christmas vacation.) This meshing of research results with accepted "teacher folk wisdom" enhances the potential usefulness of other findings and questions found within this study.

Definitions and Directions

As indicated previously, teachers were given no definitions and few special instructions other than those presented in the Weekly Reports. The rationale for this was that it would be unreasonable to expect the participants to maintain a consistent use of definitions not their own. Therefore, individuals determined for themselves the meanings of items on the Weekly Reports. Likewise, it was assumed that individuals would decide what the average for themselves was. It was taken for granted by the researcher that on a scale from 1 to 5, the mid-point of 3 would indicate an ordinary amount of energy or pressure or satisfaction. In other words, a 3 would represent an average week.

Discussion of Research Results

Introduction

Six important results of this study were identified on the basis of and within the limits of the original research questions. While care must be taken in interpreting and generalizing from the results, there are important areas that

warrant further discussion and research. More understanding of these problems or issues may assist in the present attempt to improve education and would certainly provide insight into the occupational experiences of teachers. Further study has the potential, over time, of beginning to assist the public and those directly responsible for the working conditions of teachers to make better informed decisions. It would be reasonable to assume that if the conditions under which that teachers work were to be upgraded, then the school experiences of students would be enhanced--both academically and personally.

Several key ideas provided the basic structure for this study. First, people function as whole persons. What happens in any aspect of life potentially impacts other facets of life. Therefore, it was necessary to sample the different areas of the teachers' lives. Also, a belief in the concept of the feedback loop required taking data from multiple aspects of the participants' lives. And accepting the definitions of stress as adaptation requiring change necessitated a research instrument that would monitor the changes (adaptations) in multiple dimensions. Within the framework provided by these concepts, the research was designed and carried to completion.

It would be impossible to prove stress overload indisputably for individuals or a group without the confirming data from physiological and/or psychological evaluations. Physical tests which have proved useful in the past have been several types of blood and urine tests. Both physical and psychological measures are expensive and need to be administered and interpreted by acknowledged experts: doctors, psychiatrists, and psychologists. For this reason the outcomes that might indicate physiological levels of stress which have the potential to make the individual or group vulnerable to harmful levels of stress overload cannot be confirmed.

Each individual is unique in his/her responses to the stresses in his/her life. Many factors play into this situation: genetic inheritance, physical condition, life style, previous life experiences and their meanings, and the timing of "events" or combination of "events" as well as the conditioned reactions of each person. As previously mentioned, what is one person's challenge is another person's stress overload. (One example of this is one individual's set of negative correlations between independent and dependent variables.) However, on the basis of the self-reports of the teachers in this research, it is possible to identify those elements of the study and of the teachers' experiences, either singly or in combination, that might predispose individuals to experience stress overload.

Research Result #1

Changes were regularly reported by the teachers for multiple aspects of their professional and personal lives for all subsets for Energy Expended, Pressure, and Satisfaction.

Change is a constant; few things in life are as definite or as guaranteed as change. Change is a major component in any definition of stress or of levels of stress. The real issue is how much change is optimal and growth-producing and when does change become too great and lead to diminished performance and/or stress overload. The point at which change moves from a positive influence to a negative one is highly dependent upon the whole of an individual's present and past experiences. Is it possible that a group, too, may be vulnerable to too much change?

Teaching is an occupation innately filled with constant changes. Much of that change cannot be controlled and/or anticipated for it is the constant interaction between teacher and student, student and student, and student and the day's lesson for five or six hours a day. There is no way for the teacher to plan for, standardize, and/or totally anticipate the responses and actions and

reactions of 25 or 30 active young people. (And there may be a new group each hour!) Dealing with the unexpected, the changes in the classroom is an on-going given for any teacher. But while teachers guide these multiple interactions within their classrooms each hour, they must also juggle the other unexpected daily demands or changes: a health crisis, an accident, a fight or dispute between students, interruptions from the office by intercom or messenger, an unexpected parent at the door with a lunch or wanting an ill child's lesson, or problems of the environment (heat, light, or a balky filmstrip projector). But what is the significance of the other changes reported by the teachers in this study when viewed against the backdrop of daily classroom demands?

At the onset of this investigation, it was hoped that the results of the teachers' responses would show change. What was not anticipated was (a) the amount of change reflected in the means or the number of those changes, (b) the constant nature of these changes, and (c) the extent of the fluctuation in the multiple aspect of the teachers' professional and personal lives, especially in their reports for Professional Tasks. The teachers individually defined the mid-point or average level for themselves, and it was assumed that the means of the reports would cluster about this mid-point. But that did not happen in a number of instances. Multiple aspects of the reports consistently received means above the mid-point while many others fluctuated widely.

No week seemed average. There were few weeks when teachers might have taken a deep breath, caught up on their work, recharged their energies, or built reserves for the times of peak demands or unexpected crises. Each week, in addition to constant adaptation to the needs of the regular classroom, there was at least one additional activity that required attention. No sooner had one task been completed than another was expected. It was surprising that there was

so much activity or change within weeks and among weeks and across the school year--almost without a rest or break.

This situation raises many questions. How much constant change can individuals or groups tolerate before experiencing stress overload, before beginning to burn out, before retrenching in an attempt to survive? With the day-to-day routine so filled with continuous changes, planning, teaching, working with the personal needs of students, and evaluating in a never-ending overlapping pattern and with constant interactions and demands from students and others, when do teachers reflect, regroup, and renew themselves? What is the long-term impact of this continuous high level of adaptation upon the physical, mental, and emotional health of the teachers? and ultimately upon their students? and indirectly upon students' families? Change, adaptation, is a necessity for life, but when does the change or adaptation become counter-productive?

If further knowledge based on careful research confirms these findings, some significant changes in the occupational expectations of teachers might be indicated.*

*An article in the Toronto Star (December 9, 1980) reported on the studies of Stephen Truch, Canadian psychologist, who claimed that teachers die four years younger than the average, rank third (after air traffic controllers and surgeons) in levels of stress, and experience faster rates of burnout than any other group of workers.

By burnout we mean attitudinal, emotional, and physical exhaustion to the point where the person can no longer function properly in a certain capacity. Every profession experiences it, but not at the rate teaching does. What we are seeing in the profession today is far more people retiring early, switching jobs, or simply giving up. A burned-out teacher hates going to work, cannot see himself accomplishing anything, is highly intolerant of childish behavior and feels like a robot. If this goes unchecked, it can result in a total emotional breakdown. (p. C5)

Dr. Truch pessimistically estimated that it will take 50 years before the system can be changed to reduce the fatigue of teaching and improve teachers' social status.

Research Result #2

Both key Professional Tasks and Family Life (a subset of Personal Life) received **continuous** reports above the mid-point for the major portion of the year for all three measures: Energy Expended, Pressure, and Satisfaction. Among these were Classroom Instruction, Instructional Planning and Preparation, Personal-Social Needs of Students, Paper Work--Grading and Recording Keeping, and Personal Family Life.

This finding deals with the continuous high reports of commitment of energy and feelings of pressure for the whole school year for multiple facets of the teachers' work and personal lives. To the credit of the teachers in this study, their priorities were on the classroom and students.

At the same time that the teachers reported experiencing continuous high commitment of energy and feelings of pressure for their families as well as for Classroom Instruction, Instructional Planning and Preparation, Personal-Social Needs of Students, Paper Work--Grading and Record Keeping, they were simultaneously reporting continuous changes in the other aspects of their lives (Research Result #3). The unrelenting feelings of high energy output and pressure, in effect, form a backdrop for the continuous oscillations of the other portions of their lives.

This situation gives rise to a number of questions. Do such conditions leave teachers time for relaxation, recreation, and involvement with family and friends which is so necessary to sustained health? How might such a situation impact the day-to-day decisions and actions of a teacher in a classroom--both in interactions with students on a personal level and in the delivery of quality instruction? How many on-going tasks can one maintain or sustain at high levels of input over a school year?--several years?--decades?--without damaging the quality of instruction and/or diminishing the teachers' commitment to their work and/or the conditions of the mental, physical, and emotional health? In what ways might such high levels of commitments of energy and feelings of pressure

influence the other aspects of their jobs and/or personal lives? Given the other pressures on their work such as the public attitude, the increasing demands for better instruction, and financial issues, both personal and professional, what may be the consequences?

Research Result #3

The teachers **seldom** reported weeks when they felt life was average. **Few** weeks of the school year did not have high or low significant means for Energy Expended, Pressure, and/or Satisfaction in addition to those subsets that regularly received reports with high means (Research Result #2).

The means of the responses of the teachers indicated very few weeks when their reports did not indicate high values for Energy Expended and/or Pressure and/or high or low feelings of Satisfaction. The perceptions of these teachers were that almost every week necessitated above average demands of one type or another. This oscillating pattern of ever-changing demands occurred simultaneously with several tasks that received continuous reports of high demands (see Research Result #2).

Again one has to ask how healthy is such a situation? People need "down" time, average undemanding periods to renew and gather strength for the more demanding episodes in their lives both at work and at home. Over time, be it a year, several years, or several decades, what are the consequences of such highly perceived job demands.*

If teachers are caught in a never-ending set of ever-changing and oscillating demands and deadlines, when can they afford to be ill? Teachers in

*In the interval since these data were collected, over 40% of the teachers who participated in this study have left middle school teaching. Three are now in a high school, one is teaching part-time at the elementary level, two have retired, two moved out of state, one has become an administrator, and this year one is on sabbatical leave (burn-out?).

this study often reported multiple physical health symptoms for several weeks, but took no sick leave. Can teachers deliver quality instruction if they do not feel well?

The reported high levels of Energy Expended and Pressure felt by the teachers may reasonably be expected to be reflected in their teaching. Quality education is a fine balance between high, but not unrealistic, expectations and a healthy classroom climate.

Research Result #4

Multiple reports of high expenditure of Energy Expended and/or feelings of high Pressure and/or feelings of high or low Satisfaction generally coincide with identifiable times of the school year:

Beginning of school

Meetings with parents (open house and parent conference)

End of marking periods and preparation of reports cards

Weeks before vacations--Christmas, spring break, and summer vacation

MAMSE conference

February (mid-winter)

Most educators could have predicted the times of the school year that received the most responses indicating high energy demands and/or high pressure reports and/or high or low ratings for satisfaction for Professional Tasks. At the beginning of the year, a great deal of work is needed to get off to a good start: establishing routines and standards, learning to know students as individuals and assessing the levels of their work, and other activities associated with the beginning of a class, term, or year, all of which require added energy and produce pressure. Likewise, the end of marking periods are times when teacher activities peak: tests are given, grades are evaluated, and often, student concerns and needs are high. Meetings with parents, open houses, parent

conferences, and working with students who need extra help after school, when occurring in addition to a full day's teaching, involve extra amounts of energy and contribute to feelings of pressure. Not only must the needs of the parents and students be met in a professional manner, but classes must continue without the usual evening hours to rest and prepare.

Somewhat unexpected by the researcher was the identification of the weeks before vacations as being times of unusual responses on the part of the teachers. As indicated elsewhere, the weeks before Christmas vacation are the times when elements in the personal lives of both students and teachers change dramatically and school activities also change in keeping with the season and the need for a vacation. This was indicated by the changing means for several elements of Professional Tasks and Personal Life. Lower amounts of energy and pressure were indicated for Classroom Instruction and Instructional Planning and Preparation, but for the weeks after the vacation the means of the reports for these items were higher.

The patterns in the teachers' reports changed before spring break and summer vacation, too. Because the MAMSE conference was hosted by the two middle schools the week before spring vacation, it would be impossible to separate out the normal effects of a week before spring break and those attributable to the hosting of the conference. Changes were also apparent in the means of the teacher responses for the weeks preceding summer vacation. These weeks received lower indices of major change than did those before Christmas and spring break. This may, in fact, be the true situation. Or it may have been a function of the fact that for all intents and purposes the teachers considered the year over, and their personal expectations for their work were lower than at other times. Also, several of the sixth grade teams went to camp for a week during the last few weeks of school. This may have been reflected in the

lowered means for Classroom Instruction and Instructional Planning and Preparation as well as other responses. These weeks, too, are when teams have end-of-year outings, e.g., picnics or trips. Or this may be a function of the fact that teachers were tired--not only of school but, perhaps, of this study!

Hosting a state-wide conference (MAMSE) is a major undertaking at any time. The teachers in the district carried the major portion of the responsibility for planning and seeing to the details of the functioning of the two-day event. Parent volunteers and students had an active part in the conference, and their involvement may be reflected in some of the high means. The impact of the many committee meetings and responsibilities also seems indicated by some of the patterns of responses.

The means of the teachers' responses were different during February as compared with the rest of the year. For several weeks in February, the summary subset for Satisfaction with Professional Tasks was the lowest of the year. More consistent high feelings of Pressure were reported for Classroom Instruction, Personal-Social Needs of Students, and Responsibilities and Interactions with Parents at this time. In contrast, the reports indicated lower feelings of Pressure for Paper Work--Grading and Record Keeping. The means seem to indicate somewhat lower feelings of Satisfaction concerning Instructional Planning and Preparation, Personal-Social Needs of Students, and Interactions with Fellow Teachers and Parents during this month. The teachers indicated lower amounts of Energy Expended for Paper Work--Grading and Record Keeping and Responsibilities and Interactions with Parents and the least change in Energy Expended for Personal-Social Needs of Students. Reports for individual weeks during February also received individually high or low means. The reason for this pattern is unclear.

During the third term, especially February, several patterns for Personal Life differ from those at other times of the year. Satisfaction with Personal Family Life is high, although for week 24 the teachers also reported high commitments of Energy Expended and high feelings of Pressure. Both high Energy Expended and high Pressure were reported for Personal Economic Situation at this time, while the respondees also indicated the beginning of a period of low Satisfaction with Personal Economic Situation which lasted the remainder of the year. At the same time, there appears to be a low commitment of Energy Expended to Social Life and Activities and feelings of high Pressure and of very low Satisfaction with this segment of their lives.

Research Result #5

Conflict between Personal Life and Professional Life and between duties and desires was high for most of the school year (always above the mid-point).

For the whole school year, the teachers in this study reported feelings above the mid-point for felt conflict between Professional Tasks and Personal Life and also between duties and desires. The implications of this continuous state of high reports of conflict, as reflected in the continuous high means, need further investigation. Conflict is one aspect of life that has the potential to increase levels of stress. And certainly these two reported conflicts were not the only conflicts or difficult decisions that these teachers had to make.

These conflicts, especially those between Personal Life and Professional Tasks, may lead to feelings of resentment, hostility, anger, and other negatively-toned feelings.

At what point does conflict or feelings of conflict become destructive to the quality of life for individuals and for those with whom they interact?

Research Result #6

Pearson correlations between Professional Tasks and Personal Life (independent variables) and caffeine, physical symptoms, and both conflict questions for the sample of teacher participants (five) proved significant in 24 patterns. Alcohol and medical drugs correlated in a few instances, but not for most of the five sets of data examined.

The five sample correlations revealed evidence that is significant and needs further research. First, the fact that physical symptoms show significant relationships with **both** Professional Tasks and Personal Life scales may be interpreted to indicate that the measures in this study do, in fact, have some relationship to levels of stress including stress overload. However, for one teacher, the relationship was negative. The measures of caffeine and the conflict questions appear to have a relationship to levels of stress. If further research proves this to be true, then the questions asked in connection with the other findings become more relevant for the group of teachers studied. Certainly, further research would seem warranted to explore these relationships.

The concepts of measuring energy and pressure, on the basis of these five correlations, are about equally useful in identifying subsets of the professional and personal lives that may indicate levels of stress. Or, perhaps, it is the combination of the two which may eventually be most useful. The role of satisfaction/dissatisfaction is not clearly shown by this limited sample. However, the rescaled product identified slightly more correlations which may suggest that the scale as presented to the teachers in the Weekly Reports should have been quantified differently.

Other Research Outcomes and Issues

Introduction

A number of clues within the results of this study raise questions. While not directly related to the research questions, these topics are based on analysis

of data patterns and thus warrant further research. Some include a healthy dose of intuition in combination with data clues. While these issues have implications for teachers and teaching, they also have application outside education should subsequent research prove their importance.

Finite Energy and/or Energy Limits

Portions of the data may be interpreted to indicate that a finite amount of energy is available for meeting demands and when multiple expectations occur at one time, some expectations take priority over others. For example, while teachers are involved in completing report cards, Classroom Instruction and Instructional Planning and Preparation receive lesser amounts of Energy Expended (see figures in Chapter IV). As a consequence of these patterns, undesirable priorities may be established that replace more desirable priorities. For example, teachers may employ less demanding strategies such as study periods, movies, or reading periods.

If further research should prove that, in fact, there is a limit to the energy resources (and, perhaps, to the pressure that can be absorbed or handled), then steps ought to be taken to alleviate the situation. Especially, if as a consequence of the choices which teachers must make, either the quality of classroom instruction or the quality of interactions with students are diminished (not to mention the effects on the private, personal lives of teachers). If quality of education (and that includes direct involvement with students) is desired, is it not in the best interests of our students to expect quality from teachers? And, in order to deliver that quality, expectations should not exceed those reasonable limits for delivering quality services. This may force a change in the scheduling of school "events," a change in teacher job description, or a shift of some teaching responsibilities to others.

Public officials and some educators are pushing for a longer school year. However, teachers now feel totally exhausted before vacations and at the end of the year. If, in fact, teachers are as tired physically and mentally as they claim, such an extension of the school year may not result in higher achievement, may be counterproductive, may keep talented, potential teachers from entering an exhausting profession, or may have other undesirable effects including not achieving the goal of educational improvement which prompted the recommendations. However, a reasonable job description, which does not exhaust the individuals involved, might be successfully extended over a longer period of time. Too little data exist at this time to make an objective evaluation; but on the basis of this study, it would seem that care should be taken in adding to the expectations for teachers. More or higher expectations may not result in improved outcomes/education, but less!

Time Lag and Professional/Personal Life Interface

Another area needing investigation is the relationship between the professional and personal lives of teachers. The interface between the personal and professional lives of managers has been researched and reported by Cooper and Marshall (1977). The pattern of responses between the Professional responses of the teachers for the first three weeks of school and those given for their Personal Lives may indicate a relationship between events in both areas and/or a time lag between school and home events. The means for Energy Expended, Pressure, and Satisfaction are high for multiple aspects of the Professional Tasks for these first weeks of school. During these same weeks, the means are about average for Energy Expended for Family Life, Personal Economic Situation, and Interpersonal Conflict in the Personal Life subsets. However, for weeks 4 and 5, the Personal Life means were high for Energy Expended for Interpersonal

Conflict, high for Pressure for Family Life, and low for Satisfaction for Family Life. Is there a relationship between these two aspects of the participants' lives as reflected in the patterns of the means?

Another time when it is logical to expect strong interactions between personal and professional lives is at holiday times. The changes at the Christmas season for Professional Tasks have been noted elsewhere. At the same time, teachers' responses as reflected in means indicated high levels of Energy Expended for Family Life and for Social Life and activities for week 14, two weeks before Christmas vacation. For week 15, the reports indicated high Pressure for Family Life and high Pressure and high Satisfaction for Social Life and Activities.

Cumulative Load/Long-Term Effects

At the beginning of this study, no method was planned for assessing the effect of the cumulative "load" of teaching over the school year. While the composite description of the peaks, valleys, and changes occurring over the year provide some clues as to the possible effect of the year-long teaching experience, no definitive outcomes are forthcoming. Yet the impact of the teaching experience is viewed from opposite ends of the binoculars by teachers and the non-teaching public.

Cumulative load is an inherent component of teaching, for the teacher must constantly juggle classroom climate or environment, the day's instruction, the limitations of a schedule, the individualistic nature of each class; must grade papers and plan lessons; and, hopefully, must relate in some positive way with each student each day. And this unique set of demands changes at least five to eight times a day. Add to this the multiple other demands made during the day (parent phone calls, administrative expectations, student crises of one kind or

another, etc., etc.), and the task is like experiencing a five-hour session with a trip hammer. Each day contains an infinite number of people interactions for each teacher, probably more each school day for the teacher than for any other profession or occupation. And this goes on week in, week out, month upon month, for ten months a year! How do the number, quality, and types of expectations, responsibilities, and interactions compare to recognized norms such as span of control (Dole, 1973; Drucker, 1974)?

The concern of this researcher is for the long-range effects of this high level of demand. The responses of the teachers in this study indicated almost continuous high expenditures of energy, feelings of pressure, and varying levels of satisfaction for multiple aspects of the job. How long can teachers sustain their optimum performances given the day in, day out, month in, month out, year in, year out demands for such high level performance? This continuous wear and tear may diminish performance, lead to job burn-out, and physical, mental, or emotional health problems. Many of the best choose to leave the profession rather than submit to these working conditions!

In-depth studies need to be made into the experiences of veteran teachers, both those remaining in the profession and those who've chosen to leave. Research, especially longitudinal studies, needs to be made investigating the effects of teaching after 5, 10, 15, and 20 years. It is discouraging to hear teachers in their 30s and early 40s, at the peak of their teaching skills, talk of health problems and/or plans to leave the profession--or to hear them or see them lose their enthusiasm, become pessimistic, and commit less to their students and teaching. If, in fact, a serious problem of burnout, stress overload with health problems, and/or other reasons for diminished teaching performance or leaving the profession can be documented, then preventive steps should be taken. Perhaps there needs to be a major change in the job description;

supportive services might be provided, especially at high demand times; or sabbatical leaves could be given every seven or ten years. The list of possibilities will, of course, be determined by the results of further study.

Physical Health Issues

Further investigations should be made into the relationship between the teachers' use of sick days, their health symptoms, and use of medications and drugs, both prescription and non-prescription. While the teachers in this study reported using very few sick days, their Weekly Reports included other indications of health problems. Weekly, the reports of medications and drugs, both prescription and non-prescription, varied from 15 to 36 listings for the group of 24 teachers. Analgesics and antihistamines were the most frequently reported medications and drugs among over 75 different names or labels reported during the school year, one or more times. As recommended elsewhere, investigations into this type of information need to be made concerning the health and health conditions of teachers.

Integration and Synthesis Dilemmas

An oversight in the planning for data analysis was in not anticipating the need to integrate and synthesize the various components of the study. Clues to the potential value of this meshing of data are indicated by the following three charts illustrating three subsets of the Professional Tasks: Classroom Instruction (Figure 48), Instructional Planning and Preparation (Figure 49), and Paper Work--Grading and Record Keeping (Figure 50). In each of these, the weekly means for Energy Expended, Pressure, and Satisfaction have been plotted on a chart of the school year. Such a visual synthesis shows a clearer picture than the individual charts in this study and emphasizes the high levels reported.

Figure 48
Professional Tasks: Classroom Instruction--Weekly Means for Energy Expended, Pressure, and Satisfaction

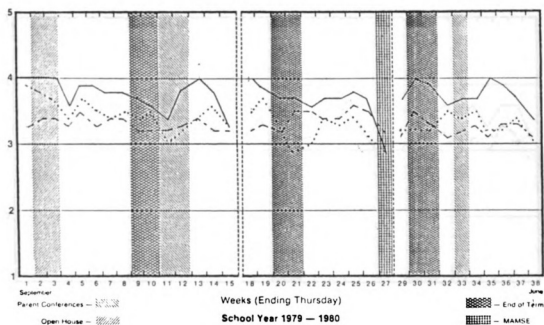


Figure 49
Professional Tasks: Instructional Planning and Preparation--Weekly Means
for Energy Expended, Pressure, and Satisfaction

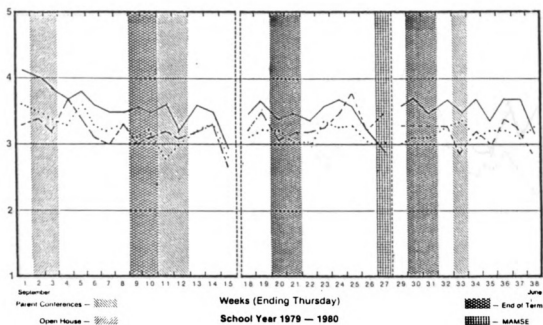
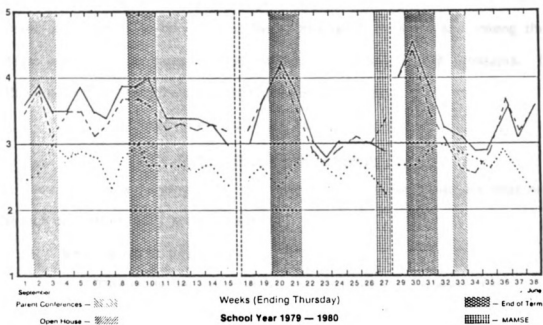


Figure 50
Professional Tasks: Paper Work: Grading and Record Keeping--Weekly Means
for Energy Expended, Pressure, and Satisfaction



Researchers need to investigate the power and importance of the multiple dimensions of factors involved: within a subset as illustrated above, for composite values of each subset, and the significance of total values for each of the three measures: Energy Expended, Pressure, and Satisfaction. Obviously, further study needs to be made of the relationships between and among these factors and life style measures and indices of health or health problems. The following sections describe some areas for further study.

Recommendations for Further Research

Educational Research Topics

Some topics emerging from this research concerning teachers that need research or further study are the following.

1. Replication of this study.
 - a. This study design, or an adaptation, needs to be replicated in all types of settings: urban, suburban, and rural as well as in all parts of the country: north, south, east, and west.

Likewise, further study needs to be made of all levels of education and teachers in all grades: elementary, middle school or junior high, and high school (perhaps even junior college and college, although these have received more research attention).

The use of current computer technology could facilitate such a replication and could reduce the tedious work involved. Computer code sheets could be devised for the Weekly Reports and fed directly into a computer which would provide immediate feedback and make analysis infinitely easier.

- b. Replicate the study investigating other measures of levels of stress and/or using a shortened version.
2. Conduct additional longitudinal studies. In addition to following other groups of teachers in other settings for a school year, a group(s) of teachers ought to be followed for a number of years. Perhaps, after establishing a baseline year, additional measures could be taken after 5, 10, or 15 years of teaching to ascertain teachers' attitudes and the status of their holistic mental and physical health as well as a determination of the status of those still teaching.
3. Similarly, a series of exit interviews should be designed to elicit teachers' real reasons for leaving the profession. The reasons cannot be based on those given in letters of resignation, based on data from death certificates, or gathered from records of public mental institutions or facilities. These do not give true pictures of the situation. Such a study needs to be carefully conceived and administered by individuals not related to the teachers' home districts.
4. On-the-job assessments of teacher health should be done.
 - a. Monitor changes in teachers' blood pressure by having them wear portable blood pressure monitors for an extended period of time. In this study (not used for the dissertation) the school nurse and a medical student found astounding differences in blood pressure readings between those times when the pressure was taken in the classroom and when it was taken during a planning period.

- b. Make extensive and expensive bio-medical studies, such as urine and blood tests. Compare these results with other measures of levels of teacher stress.
 - c. Study the medical symptoms exhibited and/or reported by teachers such as the medications they use, their reasons for taking each, and/or their physical symptoms. While the physical symptoms in this study do not seem to have any relationship to use of sick leave, there were intriguing clues that the physical symptoms, as reported, were the only measures that correlated with reports of both the personal and professional aspects of teachers' lives.
 - d. Compare the results of medical measures such as those suggested above with other indices of teacher stress.
5. Investigate the relative value of Energy Expended, Pressure, and Satisfaction as measures of levels of stress. The correlations made in this study present indecisive, inconclusive results and fail to indicate one measure or one combination of measures as being most useful. Obviously, other measures of stress, in addition to those used herein, need investigation.
6. Study the value of the subsets of the Professional Tasks. Inasmuch as no model existed when this study was conceived, the list of subsets for Professional Tasks is unique to this study and certainly needs further research. An "omission," in keeping with the researchers' belief system, was discipline. Discipline was believed to have been subsumed under other headings. However, in questionnaires on teacher stress used by other researchers,

discipline ranks high among the reasons teachers give for high levels of stress.

7. Compare stress to teaching styles. If useful methods of identifying levels of stress can be confirmed, then those results need to be compared with teaching styles and types of schools. Is there a difference between the reports or measures of stress among those teachers using the lecture method (one-way) versus those using an interactive method (two-way communication)? Is there a difference in the reports of teachers administering the textbook, worksheets, etc., and those using a much more interactive model?
8. Following are two other types of useful research.
 - a. Investigate the relationship between levels of stress and patterns or models used by teachers and/or schools such as models of decision-making, type and amount of support systems, or types of grades and report cards used. (The literature abounds with references to the loneliness of teaching as a career, and aloneness is a factor in stress levels.)
 - b. Investigate ways to lighten the load/demands/stress of the teaching experience. For example, provide aides to assist with paper work and/or make computers available to assist in teacher record keeping. Hardware and software are available but not widely used in schools by teachers. Based on the results of this study, this would be one of the best ways to lighten levels of teacher stress.

9. Compare the results of this study with studies made on levels of stress experienced/reported by students. And/or replicate the study using both students and teachers to investigate the relationships, if any, among the results of the studies of the two groups. Do students reflect the stress of their teachers as well as that of parents? Is there any relationship between levels of stress of the two groups? (Studies of student stress have generally ignored the role of the individual teacher in student stress.)
10. A systematic attempt should be made to assess the cumulative impact/load that teachers are expected to fulfill and carry out: babysitting, teaching content, teaching skills and democratic attitudes, counseling, etc. Or make a systematic attempt to enter the "loop" of teaching seeking to make positive alterations in teachers' levels of stress.
11. Uncover evidence of levels of teacher stress by using other criteria such as the number of teacher referrals to the office over a school year, referrals to counselors, use of sick days, objective measures of classroom climate, etc. Compare results with other measures of levels of stress.

General and/or Non-Educational Topics for Research

This teacher stress study has not followed the general thrust of stress investigations, but some part or parts of it may provide a basis for further research, rethinking, and/or redefining facets of stress research. Specifically, Pelletier's concept of the feedback loop deserves more thorough investigation as it applies to stress. However, in the intervening years, since the initiation of the

current study and its completion, the mind-body link which Pelletier explained so well in Mind as Healer: Mind as Slayer (1977) seems to have received more widespread acceptance. Additional research using multiple discipline approaches needs to be encouraged and continued and, in the process, concepts refined and refocused. However, the following suggestions will be limited to those more closely related to this study of teachers' levels of stress and its outcomes.

1. Replicate the study using other work groups, especially professions. Analyze the usefulness of components of the study as well as comparing the results with studies of teacher stress seeking to identify the common elements and those that are unique to each work group.
2. Create and test a method for measuring the impact of the cumulative load of the expectations of a career and/or professional group.
3. Compare other multidisciplinary occupational studies, with studies of levels of teacher stress.
4. Investigate the use of portions of this study and/or the Weekly Report in business and industry health programs. Business and industry are increasingly becoming concerned about the costs of employee health--physical, mental, and emotional. Many industries are initiating programs to improve and maintain employee health. Are there aspects of this study that might supplement those programs and/or the parts of business and industry programs that might be practical to apply to educators?
5. Incorporate stress monitoring as a regular part of public, employee, and/or student health education. Awareness and prevention of stress overload, along with other components of

health education, has the potential to lessen medical costs and improve health, especially on a long-term basis. The use of a form such as the Weekly Report may be a valuable tool in such a program.

Suggestions and Recommendations for Immediate Application of Selected Research Results

While acknowledging the uniqueness of each school situation, several recommendations based on the outcomes of this research would seem appropriate for any school setting.

1. Teachers

- a. Plan for and anticipate times of high demand/high pressure/high stress.
- b. Be aware of impact of high demand/high pressure/high stress on students.
- c. Learn to assess own stress levels and adjust self and/or situations to cope.

2. Administrators

- a. Acknowledge and collaborate with teachers in planning for and anticipating times of unusual demands/stress/pressure, e.g., end of marking periods and report cards or mid-winter.
- b. Schedule events, meetings, special paper work, etc., to avoid creating periods of high demand/high pressure/high stress or to alleviate existing situations.
- c. Be cognizant of the impact of high demands/high pressure/high stress on discipline problems, reports to school nurse or clinic, and other reactions of students.

- d. Seek ways to help teachers manage their paper work, especially grading and record keeping (area of least Satisfaction and high Energy Expended and Pressure in this study).
- e. Cut down as much as possible on paper work and/or use computer technology for record keeping.

3. Parents

Share with parents information concerning the potential impact on their children of high demand/high pressure/high stress times at school.

Reflections

At the beginning of this research experience, the initial topic choices concerned the quality of the educational environment in which today's (and tomorrow's) students live for over 180 days a year. A major concern was for the experiences of the students, their self-concepts, and their feelings. In the search for quick answers for excellence in schools, somehow we have lost sight of the crucial role that the classroom milieu plays in education. Attention has been devoted to lack of finances, changing cultural patterns, quality of instruction, supposed incompetence of teachers, and, to a lesser degree, the function of administrators, physical environment, and quality of teaching materials. A few pieces of research have focused on the experience from the student's point of view. All the forces that impinge on events in a classroom are in and of themselves very important, and much needs to be changed and/or improved in many ways. But as the search for a topic continued, it soon became evident that not much improvement in the classroom environment could be made without the

cooperation of the teacher for, ultimately, it is the teacher who controls what happens in each classroom when the door closes and class begins.

Before much can be done to change events in the classroom, it would be necessary to understand the experiences of teachers and to use that knowledge to help them improve the totality of what students experience in school. But what does research say about teachers and how they view their jobs? Research has revealed a great deal about time on task, quality of interaction (especially talk) between teacher and student, instructional methods, planning patterns, and similar analysis of "pieces" of the classroom. But the quality of what happens in each classroom is not only a function of teachers' academic experiences, their teaching methods, and the interactions and relationships between the teacher and students, but also, and more importantly, of teachers' inner states of well-being and self-esteem. The teacher is the catalyst for all important elements in the classroom learning experience.

But what is truly known, documented, about the totality of the teaching experience from a teacher's point of view? A great deal is known about the academic, curricular components of the classroom; but it seems that data, based on research, concerning teachers and their experiences and mental, emotional, and physical health are scarce. This void is what this study was designed to explore.

No model for this type of research could be found. Most researchers limit themselves to discrete segments of a problem or issue. That pattern would not fit the need to gather data on teachers as fully functioning people in a classroom. Following the advice on her committee chair's wall, "Do not follow where the path leads. Rather, go where there is no path and leave a trail," this researcher attempted to make a dream a reality. This was an attempt to collect data on and to assess the experiences of teachers both in their personal and

professional lives and the interface between the two. And with the help of 24 teachers who sustained a commitment for an entire school year, the dream was fulfilled.

The results of collecting the responses of 24 teachers for a school year yield a picture of high commitment and very high demands in terms of energy, pressure, and varying levels of feelings of satisfaction. One can only surmise what such a study done in other settings would reveal, but it is realistic to assume that, while details would vary, an over-all pattern of high demands would be reported.

If this were true, how must America's teachers be perceiving the present situation in education as viewed by the public and the media? Certainly, they applaud the increased concern for excellence in education and the positive outcomes that might increase ability to deliver quality schooling. But they may feel overwhelmed by the increasing demands and expectations piled upon already demanding work experiences.

Perhaps, instead of automatically expecting teachers to be the main remediators of the problems in America's schools, the public should be taking an objective, unbiased look at what is currently being demanded of its teaching professionals. Many of the questions that need research and candid answers relate in some way to the issue of whether or not the teaching job as presently defined is actually do-able at the level of excellence expected by the public, school boards, and administrators. Most easily recognized are questions concerning funding and finance, curricular expectations, quality of teacher education, levels of achievement desired, and overall quality of the school experience. Several of the questions that need to be addressed are directly and indirectly related to this research study.

1. Will the public attitudes which place blame on our teachers achieve what we want to accomplish in improving our schools? Is it realistic to expect teachers to shoulder the censure while, at the same time, enthusiastically working for excellence?
2. Is excellence in teaching/learning partially the function of the interactions between students and teachers (as well as the quality of content and methods of instruction)? If so, then concern needs to be directed toward the quality of life of individual teachers in classrooms. Such a concern necessitates that real life experiences in a classroom be understood and kept at an optimum level. Teachers experiencing too much pressure, too many demands, and stress overload cannot deliver on a regular basis the educational quality most desired.
3. Are there too many students per classroom to enable the teacher to give the kind of instructional and personal assistance that is a significant factor in learning? With 30 students per class and class periods of 40-45 minutes, there is only a minute or a minute and one-half per student--if the teacher does nothing else but see students! Perhaps the structure and/or delivery of education needs to take into consideration, in some constructive way, the personal, tutorial, remedial needs of students. Shouldn't there also be time to deal with students' personal needs for interaction, reinforcement, and acceptance?
4. Are there too many special needs' students per classroom? Can teachers effectively work with a slow learner, a learning disabled student, an emotionally disturbed student, a disciplinary problem, and a gifted student in the same classroom at the same

time? Do researchers really know the impact on a classroom of the combinations of students that many teachers must handle on a regular basis?

What differences do the wide variations in learning skills of students make in the methods, approaches, and ultimate learning of students? The researcher has a bias against homogeneous grouping of students, but there does appear to be a need for monitoring the mix of students assigned to class groups. How much diversity is too much? The answer to this question depends, in part, on types of expectations.

At the present there are often no solutions to the problems of the disciplinary student and/or the truant. In some schools it is not good politics to let the administration know one is experiencing problems, so teachers and students endure as best they can. In other settings, temporary assistance is available, but in the long-term the difficult student is returned to the classroom. Truant students and their parents may be taken to court for poor attendance (if a school wants to bother), but most ultimately land back in the classroom because society has not provided other alternatives. Education is required of all young people until age 16!

But where do individual rights of students end and those of the majority of a class and the teacher begin? To expect teachers to handle the incredible variety of individual needs in some classrooms and still accomplish high educational goals may be more than is realistic.

5. Is it realistic to continue to demand more and more from teachers in our schools? Do present demands allow teachers the time and energy to maintain healthy private lives and emotional, mental, and physical good health? The results of this study may be interpreted to suggest that teachers are already at or near the point of stress overload. The public criticizes educators for having eight to ten weeks off during the summer, but perhaps this is the only way teachers can minimally maintain health and energy.
6. What concern does the public demonstrate for the continued good health of its teachers? What provisions are made within teacher contracts and/or school districts for the nurturance of good health? Many districts severely limit sick leave, criticize teacher use of sick time, and/or expect full-time teachers to fill in for teachers who are ill. Forcing sick people to report to work, whatever the source of the coercion, cannot be good for the teachers and ultimately for the quality of their instruction in the classroom. At the present, business and industry are showing increasing concern for the health of their employees. What is being done in education? Quality of work is influenced by the quality of health—be it physical, mental, or emotional—of employees and that includes teachers.
7. What is the cumulative impact of continuous high demand and input on the lives of teachers and the quality of instruction? Are the increasing demands forcing teachers to find ways to limit their involvement in desperate attempts to maintain balance in their lives? Or are these demands forcing many into burn-out,

and/or health problems of all types and/or early retirement or job change?

8. What impact does the pattern of scheduling have on teachers (and ultimately on students)? In many states the law requires morning and afternoon rest period as well as a specified lunch time. But, apparently, these laws do not apply to teachers. It is not uncommon to find both elementary and secondary teachers expected to work for full half days with no legal time off for their own needs. Teachers' handbooks insist that teachers are responsible for the students when students are assigned to them (state law in some cases). This includes supervision of recess, passing time, etc. When do teachers attend to their own personal needs? Teacher are left with the choice of breaking the rules to serve their personal needs or of neglecting those needs, often with unhealthy results.

To make the situation even more complicated, many school districts require that teachers eat with students in order to monitor the lunchroom. In a few situations there is no time for teachers either to rest and/or tend to their personal needs.

10. Has American education and/or states or school districts carefully defined their priorities in terms of the type of education they want delivered? It would seem that academic factual content has first priority, for much of the evaluation of excellence depends upon the results of academic tests. To what degree do these tests focus on factual recall, skills, and/or thinking processes? But there is more to education than the learning of facts and/or skills. Clearly, during the last decade

Americans have been concerned with the three Rs, but exactly what is meant by that has never been clear. It usually means reading, writing, and arithmetic. But what of the other skills of learning? of knowing how to learn? evaluating materials? reasoning and thinking? and decision-making? Ought there to be a place for assisting students in gaining in self-knowledge? exploring their talents and limitations? developing their interests and broadening their awareness of the real world (not the textbook world)? making decisions for oneself within that real world? having realistic awareness and expectations for oneself in that world (all kids can't grow up to be doctors)? learning how to work in democratic groups? getting along with others and making group decisions? functioning effectively and successfully within society, both in the school and later in the adult world?

Conclusion

This research experience ends as it began, with a concern for the experiences of students. The school is an amalgam of the many influences in society and, as such, reflects that society. Yet schools should be a bit more than the totality of all that influences them. Schools should be a healthy place for teachers and young people. Schools must teach academic content, but only in conjunction with other types of learning. Schools should be places where students learn how to learn and to think, to make decisions, to share experiences with students and adults, to improve skills in relating with others, to see and experience different models of adult behavior, to cope with success and failure, and, ultimately, to learn how to be well-educated persons possessing all the skills

necessary to function in society. Life in school should allow for growth for each person, and this is far more than just academic content. In the words of a mother who had just lost her son by suicide, "School should take more time to teach kids how to cope with stress because it's thrown at them all the time." But before teachers can assist students in recognizing and handling their stress levels, the teachers must first operate in a realistic environment with realistic expectations and know how to recognize and handle their own stress levels.

As a part of the task of improving the quality of American education, not only does more need to be known about the actual experiences of teachers, but, more crucially, that knowledge needs to be employed in redefining the goals of American schools. To build or restructure the job descriptions of teaching without having first analyzed the strengths and weaknesses of the present structure may doom all future efforts to failure or collapse. It is hoped that this study of levels of teacher stress and of teaching experiences may contribute in some way to the understanding of the role and experience of classroom teachers.

APPENDICES

APPENDIX A

**CONSENT FORM FROM
RESEARCH ON HUMAN SUBJECTS' COMMITTEE**

MICHIGAN STATE UNIVERSITY

UNIVERSITY COMMITTEE ON RESEARCH INVOLVING
HUMAN SUBJECTS (UCRIHS)
238 ADMINISTRATION BUILDING
(517) 355-2186

EAST LANSING • MICHIGAN • 48824

September 11, 1979

Dr. Charles A. Blackman
Erickson Hall
Department of Secondary Education
and Curriculum

Subject: Proposal entitled "Ten Month Study of Middle School Teacher
Stress"

Dear Dr. Blackman:

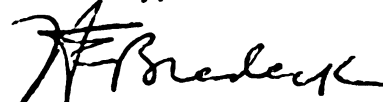
The above referenced project was recently submitted for review to the UCRIHS.

We are pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and the Committee, therefore, approved this project at its meeting on September 10, 1979.

Projects involving the use of human subjects must be reviewed at least annually. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval prior to the anniversary date noted above.

Thank you for bringing this project to our attention. If we can be of any future help, please do not hesitate to let us know.

Sincerely,



Henry E. Bredeck
Chairman, UCRIHS

HEB/jms

✓ cc: Ms. Virginia Brown

APPENDIX B

PARTICIPANT CONSENT FORM

TEN MONTH STUDY OF MIDDLE SCHOOL TEACHER STRESS

Name:

Date:

I have consented to participate in a year-long study of teacher stress being conducted by Virginia Brown, East Lansing teacher and Ph. D. candidate. I understand that I will be expected to 1) complete questionnaires at the beginning of the 1979-80 academic year (including several personal data forms and personality inventories), 2) visit the Michigan State University Clinical Center for standard laboratory tests four or more times during the year, and 3) complete brief weekly reports during the weeks that school is in session. I also understand that there is a possibility that several other small questionnaires and/or interviews may be requested during the year. I have been informed of the purposes and procedures to be used and have been advised that as concerns arise, I may contact the researcher or her consultants.

I have been advised that the medical aspects of the study will be carefully supervised by Dr. Robert Ward, Michigan State University College of Osteopathic Medicine faculty member. I understand that blood for the renin test will be drawn at the MSU Clinical Center by certified laboratory technicians and that up to 14 milliliter will be drawn each time. I have been advised that no more than five lab tests will be taken, spaced out over the school year. I have been promised that I will be advised by Dr. Ward or Dr. C. Wayne Smith of any laboratory findings that indicate a need for medical attention. I understand that the medical tests will not involve any personal expense to me other than providing transportation to and from the clinic. I am aware that there are some slight risks involved in the routine venapuncture procedure.

I understand that in the unlikely event of physical injury resulting from research procedures, Michigan State University, its agents, and employees will assume that responsibility as required by law. Emergency medical treatment for injuries or illness is available where the injury or illness is incurred in the course of an experiment. I have been advised that I should look toward my own health insurance program for payment of said medical expenses.

I have been assured that all information about myself will remain confidential and I understand the methods which will be used to insure my privacy. I understand that the information collected will be available for research and that the researchers may use the data in scientific and educational publications. I have been promised that any publication of data from this study will not compromise the assured maintenance of privacy and confidentiality.

I understand that upon completion of the research, at my request, copies of the original questionnaires, results of the medical tests, and copies of the personality test profiles will be provided to me along with an explanation of their meaning. I also understand that, if I so desire, I will be given a summary of the results of this study upon its completion. I am aware that the experiment may not produce results which are to my direct benefit.

I have not been coerced in any way to participate in this study, and I freely consent to participate. Furthermore, I understand that I may withdraw from this study at any time and for any reason of my choice.

Subject's signature

Subject's address

Witness

Date

APPENDIX C

BASELINE QUESTIONNAIRE

DEMOGRAPHIC DATA

PLEASE complete the following questionnaire as completely as possible.

1. Age (in years) _____
2. Years of teaching experience as of June 1979:
 _____ total years in East Lansing
 _____ total years - all school systems
3. Has there been a break of a semester or more in your teaching career?
 yes no
 If yes, how many years had you taught before leaving? _____ years
 If yes, how many years have you taught since returning _____ years
 If yes, what was your reason for leaving?
 _____ sabbatical leave
 _____ leave of absence
 _____ change of jobs (to non-teaching jobs)
 _____ full time homemaking
 _____ other (Please explain briefly.)

If there has been more than one break, please explain each briefly.

4. Education:

- | | |
|--------------------|--|
| _____ B.A. or B.S. | _____ number of term hours beyond B.A. or B.S. |
| _____ M.S. or M.A. | _____ number of term hours beyond M.S. or M.A. |
| _____ Specialist | |
| _____ Ph. D. | |

(NOTE: If you have more than one degree of a type, please indicate number instead of checking the item in the above list.)

Field(s) of study for specialist or Ph.D.:

Certificated teaching minor(s):

other (Please indicate institution.)

9. Do you have a regular full time or part time job in addition to your teaching?

yes

no

If yes, please indicate type and the average amount of time you work on this job each week.

typenumber of hours per week

10. Other than teaching, have you had another career lasting a year or longer?

yes

no

If yes, indicate type of work and how long you worked?

typeyears at this job

11. How many leadership responsibilities do you have in school and in the community, e.g. officer, chairperson, director, etc.?

School/public educationCommunity-at-largenumbernumber

- _____ Department chairperson
 _____ Advisory Council (all members)
 _____ Building committee chairperson
 (e.g. human relations, etc.)
 _____ System-wide leadership (councils,
 curriculum, committees, ELEA, etc.)
 _____ MEA leadership
 _____ MAMSE Conference Steering Committee
 _____ County, state, and/or national
 leadership (e.g. chairperson of
 an Ingham Intermediate School District
 Committee)
 _____ Other (Specify.)

- _____ Church leader including
 committee chairperson, etc.
 _____ Community-at-large leader-
 ship responsibility (e.g.
 E. L. Planning Commission)
 _____ State, regional, and/or
 national leadership (e.g.
 leadership in political
 parties, sorority, or fra-
 ternity, etc.)
 _____ Other (Identify.)

12. How many committees or groups within the schools and the larger community do you actively participate in? Do NOT include leadership roles listed for #11.

<u>School/public education</u>	<u>Community-at-large</u>
<u>number</u>	<u>number</u>
_____ Building level committee membership/participation	_____ Church committees, councils, etc.
_____ System-wide committees, councils, etc. (Including ELEA)	_____ Community committee, council membership
_____ County, regional, or state committees (Including MEA)	_____ State, regional, and/or national committees, councils, boards, etc.
_____ National committees, etc.	_____ Other (Identify.)
_____ Other (Identify.)	

13. As you anticipate the future, which of the following sentences best reflects your present thinking?

_____ I will teach until I retire.

_____ I will probably teach until I retire but I often think about changing occupations.

_____ I feel it's about a 50-50 chance that I'll continue teaching until retirement.

_____ If the right opportunity presented itself, I'd change jobs as soon as possible.

_____ I plan to change occupations as soon as feasible for me to do so.

Comments:

APPENDIX D

LIFE STYLE INVENTORY

One's life style determines, in significant ways, how one responds to life's experiences. All aspects of one's life style may be related to one's response to stress; several may have a direct relationship to various physiological data being collected. The information requested in this questionnaire is necessary for more accurate assessment of the medical tests. Some of this information will be monitored throughout the year on the Weekly Reports. All of it will assist us in establishing the basis for test interpretation.

_____ single _____ mated _____ divorced
 married separated widowed

_____ total related to you (by blood)
 _____ your own children not living in your household
 _____ children living in your home and related to you
 _____ children living in your home and not related to you
 (step-children)
 _____ others

- ☐ live alone
- ☐ live with spouse or partner
- ☐ live with spouse and children (details in #2)
- ☐ live only with children (single parent)
- ☐ older relative(s) live in home (e.g. parents, grandparents, etc.)
- ☐ other (Identify.)

_____ walk _____ bicycle _____ bus _____ car
 _____ other (Please specify.)

How long does it take (travel time)? minutes

5. List all the foods and beverages you've eaten or drunk either yesterday or during a recent day you feel was typical for you. Please be as specific as possible as to type and quantity. Give brand name and indicate whether frozen, canned, or fresh, if appropriate and known.

<u>Breakfast</u>		<u>Lunch</u>		<u>Dinner</u>		<u>Snacks</u>	
<u>Food</u>	<u>Amount</u>	<u>Food</u>	<u>Amount</u>	<u>Food</u>	<u>Amount</u>	<u>Food</u>	<u>Amount</u>

6. On an average, how much of each of the following beverages do you consume each day? If you drink less than one per day, indicate how many you drink in an average week in the right hand column.

	<u>Average per day</u>	<u>If less than one per day - average per week</u>
coffee	_____ cups (appx. 8 oz.)	_____ cups (appx. 8 oz.)
tea	_____ cups (appx. 8 oz.)	_____ cups (appx. 8 oz.)
soft drinks:		
diet	_____ units of _____ (Give size or ounces.)	_____ units of _____
regular	_____ units of _____ (Give size or ounces.)	_____ units of _____

List brand names of soft drinks most frequently consumed:

alcoholic drinks:

wine	_____ glasses (appx. size _____)	_____ glasses
beer	_____ units of _____ (Give size or ounces.)	_____ units of _____
cocktails	_____ glasses (appx. size _____)	_____ glasses (size _____)
liquor	_____ glasses (appx. size _____)	_____ glasses (size _____)

7. How many units (whole ones) of doughnuts, sweet rolls, and/or candy do you eat each day, on an average?

_____ units per day

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8. Each week how much time do you have to spend alone or with others. Count only the time you are free to choose for yourself what you want to do.

_____ hours each week

9. How much private/personal time do you have which is all yours and which you spend alone? Please do not include sleeping at night.

_____ hours each day - regularly

_____ hours per week - if irregular

How do you usually spend this private/personal/alone time? Check those which apply.

_____ reading

_____ meditation

_____ hobbies and handcrafts (details elsewhere)

_____ watching TV

_____ music (playing and singing)

_____ listening to radio or stereo

_____ exercise (details elsewhere)

_____ napping

_____ bathing

_____ other (Briefly identify.)

10. As you reflect on your personal, private life, which of the following sentences best reflects your social preferences? Please do not include spouses or relatives in your decision.)

_____ Most of my friends and associates are educators.

_____ Some of my friends and associates are educators.

_____ Only a few of my friends and associates are educators.

_____ I consciously try to spend my time with people who are not educators.

11. What are your regular physical, sports activities?

Complete the columns which best reflect your physical activities during a year. Leave lines blank which do not apply to you.

	<u>Months per year</u>	<u>Hours per session (average)</u>	<u>If weekly, times per week</u>	<u>If NOT weekly, times per month</u>
basketball	_____	_____	_____	_____
badminton	_____	_____	_____	_____
soccer	_____	_____	_____	_____
tennis -.singles	_____	_____	_____	_____
racquet ball	_____	_____	_____	_____
paddle ball	_____	_____	_____	_____
handball	_____	_____	_____	_____
calisthenics	_____	_____	_____	_____
jogging	_____	_____	_____	_____
distance running	_____	_____	_____	_____
cross country skiing	_____	_____	_____	_____
swimming	_____	_____	_____	_____
weight lifting	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
baseball	_____	_____	_____	_____
softball	_____	_____	_____	_____
volleyball	_____	_____	_____	_____
table tennis	_____	_____	_____	_____
tennis - doubles	_____	_____	_____	_____
bowling	_____	_____	_____	_____
dancing	_____	_____	_____	_____
golf	_____	_____	_____	_____
canoeing	_____	_____	_____	_____
bicycling	_____	_____	_____	_____
walking	_____	_____	_____	_____
ice skating	_____	_____	_____	_____
snow skiing	_____	_____	_____	_____
water skiing	_____	_____	_____	_____
roller skating	_____	_____	_____	_____
_____	_____	_____	_____	_____

12. List your regular hobbies (all except sports activities) in order of interest and importance to you.

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13. Spiritual/religious activities. (Check those which apply.)

- ☐ regularly attend church, synagogue, or other religious service
☐ attend religious services irregularly
☐ rarely or never attend religious services
☐ actively participate in religious leadership such as singing in choir, teaching classes, leading groups, serving on boards, etc.
☐ participate in church/religious social life
☐ meditation
☐ religious life is not shared with a group
☐ other (Specify type.)

14. Indicate your interest and participation in the fine arts by checking the appropriate items below.

- | | |
|--|--|
| <input type="checkbox"/> painting, drawing, etc. | <input type="checkbox"/> theatre, drama, etc. |
| <input type="checkbox"/> sculpture | <input type="checkbox"/> concerts |
| <input type="checkbox"/> ceramics | <input type="checkbox"/> vocal music (active) |
| <input type="checkbox"/> creative crafts | <input type="checkbox"/> instrumental music (active) |
| <input type="checkbox"/> dance | <input type="checkbox"/> other (Specify) |

15. List your social and recreational activities not listed elsewhere:
Check those which apply and add others which you do regularly.

- ☐ clubs
☐ bridge and other games
☐ fraternities or sororities
☐ parties - entertainment at home or with friends
☐ other (Give type, please.)

16. Please list your regular week-end activities not given elsewhere (e.g. spectator sports, gardening, movies, etc.).

1.

2.

3.

4.

5.

17. Reflecting on your recreational, sports, and work related activities, which of the following sentences seems to fit your attitude best?

_____ I'm a highly competitive person in most things.

_____ I like to compete but losing isn't too upsetting to me.

_____ It depends on the situation whether I'm competitive or not.

_____ I'm usually non-competitive with others.

18. Do you anticipate taking or participating in personal enrichment courses such as classes and workshops this year (e.g. gourmet cooking, yoga, guitar lessons, tennis lessons, etc.)?

yes

no

If yes, please list general type(s) of activities you'll probably chose.

19. When you want to talk with someone about problems, share ideas, or discuss special topics, either personal and/or professional, whom do you usually turn to? DO NOT give names but indicate general category such as mate, relatives, close personal friend(s), social group(s), church, etc. Please be as complete as possible.

20. How do you know when you're under HIGH STRESS? Be as specific as possible.

21. What do you do, if anything, to lessen your personal stress?

Generally?

At work?

Out-of-school?

22. What do you do, if anything, on a regular basis to avoid or prevent stress?

Generally?

At work?

Out-of-school?

23. Do HIGH STRESS times affect your family and other close relationships?

yes

no

If yes, briefly explain.

APPENDIX E

MEANS FOR THE YEAR

Professional

ENERGY

Weeks	Clstrm Inst	Inst P&P	Per-Soc Needs	Grdng&Rcrd	Other Work
1	4.043	4.174	3.435	3.565	3.500
2	3.958	3.958	3.667	3.870	3.167
3	3.952	3.810	3.429	3.524	3.200
4	3.636	3.682	3.545	3.500	3.000
5	3.870	3.826	3.783	3.773	2.200
6	3.864	3.636	3.364	3.455	3.400
7	3.818	3.545	3.524	3.364	2.500
8	3.810	3.524	3.524	3.905	3.167
9	3.667	3.571	3.524	3.900	3.300
10	3.591	3.500	3.091	3.955	2.625
11	3.364	3.591	3.455	3.364	2.000
12	3.750	3.217	3.125	3.375	2.200
13	3.957	3.583	3.292	3.417	2.636
14	3.750	3.500	3.500	3.250	2.000
15	3.333	2.933	3.600	3.000	1.286
Christmas Break					
18	4.045	3.476	3.273	2.955	1.125
19	3.826	3.696	3.261	3.652	2.667
20	3.667	3.417	3.435	4.333	3.000
21	3.727	3.500	3.591	3.818	3.667
22	3.609	3.409	3.565	2.955	2.625
23	3.650	3.550	3.632	2.789	2.625
24	3.682	2.682	3.455	2.955	2.727
25	3.792	3.625	3.393	3.000	2.700
26	3.714	3.286	3.429	3.048	3.100
27	2.923	2.923	3.385	2.846	3.429
Spring Vacation					
29	3.714	3.619	3.350	4.000	1.200
30	4.000	3.714	3.591	4.455	2.273
31	3.909	3.455	3.818	3.909	2.444
32	3.609	3.652	3.682	3.261	1.778
33	3.70	3.474	3.60	3.050	2.273

Professional		ENERGY			(continued)
Weeks	Clstrm Inst	Inst P&P	Per-Soc Needs	Grdng&Rcrd	Other Work
34	3.650	3.700	3.550	2.900	1.800
35	3.952	3.429	3.762	2.905	1.909
36	3.905	3.714	3.524	3.600	2.167
37	3.696	3.739	3.826	3.087	3.125
38	3.438	3.188	3.438	3.625	2.600

Professional		ENERGY		
Weeks	R&I-Admin	R&I-Parents	R&I-Teachers	R&I-Others
1	2.609	2.391	3.435	2.333
2	2.792	2.208	3.304	1.000
3	2.905	3.381	3.524	1.000
4	2.773	3.045	3.000	1.000
5	2.591	2.727	2.955	1.000
6	2.773	2.714	3.091	1.000
7	2.409	2.773	2.955	1.000
8	2.476	2.429	2.905	1.800
9	2.667	2.100	2.857	2.000
10	2.545	1.955	2.810	1.667
11	2.524	3.045	3.182	1.143
12	2.583	4.000	3.042	1.000
13	2.783	3.333	3.042	1.400
14	2.700	2.600	2.263	1.000
15	2.133	2.600	3.143	1.000
Christmas Break				
18	2.318	1.773	2.955	1.556
19	2.391	2.043	2.864	1.667
20	2.583	2.250	3.087	1.375
21	3.000	2.500	3.000	2.000
22	3.045	2.955	3.045	1.556
23	2.684	2.579	2.737	2.000
24	2.636	2.364	3.136	2.111
25	2.917	2.435	3.125	1.667
26	3.048	2.524	3.429	2.000
27	2.538	2.615	3.308	3.750
Spring Vacation				
29	2.429	2.333	2.952	2.000
30	2.682	2.455	2.818	1.000
31	2.636	2.318	2.000	2.125
32	2.870	3.522	3.130	1.429
33	2.750	3.450	3.150	1.000

Professional		ENERGY			(continued)
Weeks	R&I-Admin	R&I-Parents	R&I-Teachers	R&I-Others	
34	2.650	2.750	3.105	1.750	
35	2.750	2.500	3.350	1.500	
36	2.905	2.905	3.000	1.600	
37	2.739	2.773	3.143	1.333	
38	3.000	2.772	3.143	1.375	

Professional		ENERGY		
Weeks	MTG-Day	MTG Before&After	MTG-pm	Intrpsn Conflict
1	3.300	3.136	2.000	1.909
2	2.826	2.792	1.333	1.700
3	2.842	3.000	2.353	1.789
4	2.273	3.227	1.950	1.588
5	2.636	3.091	1.450	1.762
6	2.381	2.909	1.524	1.650
7	3.045	2.750	1.421	1.800
8	2.476	2.050	1.350	1.611
9	2.278	2.476	1.158	1.813
10	2.591	2.714	1.316	1.800
11	2.318	2.909	1.952	2.429
12	2.476	3.000	3.048	1.850
13	2.913	2.833	1.762	1.737
14	2.550	2.650	1.750	1.444
15	2.667	2.333	1.538	1.769
Christmas Break				
18	2.500	2.227	1.818	1.211
19	2.609	3.000	1.739	1.368
20	2.458	2.792	1.238	1.333
21	2.727	3.283	1.238	1.333
22	2.476	3.000	1.800	1.944
23	2.368	2.789	1.800	1.563
24	2.545	3.000	2.400	1.333
25	3.000	3.458	1.542	2.000
26	3.333	3.333	1.600	1.579
27	3.154	2.917	2.182	1.818
Spring Vacation				
29	2.048	1.952	1.667	1.176
30	2.714	2.727	1.250	1.471
31	2.364	2.364	1.286	1.526
32	2.545	3.304	2.818	1.368
33	2.700	3.050	2.850	1.529

Professional		ENERGY		(continued)
Weeks	MTG-Day	MTG Before&After	MTG-pm	Intrpsn Conflict
34	2.650	2.850	1.789	2.000
35	2.810	2.810	1.421	1.579
36	2.842	3.286	1.500	1.611
37	2.435	2.318	1.333	1.684
38	2.500	2.667	1.667	1.583

Professional

ENERGY

Weeks	Wk/Sum
1	4.000
2	3.952
3	3.895
4	3.773
5	3.800
6	3.842
7	3.500
8	3.500
9	3.421
10	3.737
11	3.727
12	3.810
13	3.636
14	3.389
15	3.462
Christmas Break	
18	3.600
19	3.619
20	3.682
21	3.850
22	3.333
23	3.529
24	3.750
25	3.650
26	3.842
27	3.700
Spring Vacation	
29	3.350
30	3.789
31	3.579
32	3.579
33	3.421

Professional	ENERGY	(continued)
	Weeks	Wk/Sum
	34	3.500
	35	3.421
	36	3.650
	37	3.727
	38	3.467

Professional

PRESSURE

Weeks	Clstrm Inst	Inst P&P	Per-Soc Needs	Grdng&Rcrd	Other Work
1	3.304	3.273	2.636	3.500	4.200
2	3.375	3.417	2.958	3.773	4.500
3	3.381	3,190	2.895	3.105	3.750
4	3.286	3.667	3.050	3.476	3.333
5	3.522	3.348	3.261	3.524	2.667
6	3,381	3.091	3.000	3.095	4.333
7	3.381	3.048	3.105	3.300	3.333
8	3.381	3.286	3.300	3.714	3.800
9	3.190	3.048	2.905	3.700	4.286
10	3.238	3.095	2.700	3.619	4.250
11	3,190	3.200	3.350	3.222	3.000
12	3.304	3.136	3.136	3.261	3.500
13	3.453	3.127	2.955	3.217	4.000
14	3.200	3.300	3,150	3.278	3.000
15	3.214	2.692	3.200	3.200	3.000
Christmas Break					
18	3.227	3.238	2.889	3,167	--
19	3.304	3.478	3.043	3.667	4.333
20	3.167	3.143	3.087	4.217	4.000
21	3.500	3.227	3.381	3.619	3.750
22	3.478	3,174	3.174	2.909	3.600
23	3.350	3.300	3.211	2.677	4.000
24	3.364	3.455	3.333	2.900	3.714
25	3.583	3.773	3.087	3.091	4.200
26	3.524	3.143	3.190	2.950	3.571
27	3,167	3.455	3.667	3.364	4.400
Spring Vacation					
29	3.143	3.263	3.000	4.000	3.000
30	3.455	3.286	3.333	4.364	4.200
31	3.318	3.273	3.318	3.545	4.250
32	3.087	3.304	3.227	2.995	2.667
33	3,150	2.947	3.105	2.684	3.800

Professional PRESSURE (continued)

Weeks	Clstrm Inst	Inst P&P	Per-Soc Needs	Grdng&Rcrd	Other Work
34	3.316	2.947	3.105	2.684	3.800
35	3.095	3.048	3.286	2.944	4.000
36	3.286	3.381	3.000	3.667	3.667
37	3.261	3.348	3.304	3.200	3.600
38	3.063	2.938	3.063	3.600	4.000

Professional		PRESSURE		
Weeks	R&I-Admin	R&I-Parents	R&I-Teachers	R&I-Others
1	2.316	2.643	2.591	5.000
2	2.591	1.778	2.773	--
3	2.450	3.529	2.857	--
4	2.611	2.800	2.300	--
5	2.444	2.778	2.429	--
6	2.789	2.684	2.429	--
7	2.500	2.706	2.238	--
8	3.000	2.375	2.235	5.000
9	2.588	2.200	2.200	4.000
10	2.588	2.250	2.529	4.000
11	2.467	3.500	2.750	--
12	2.471	3.318	2.364	--
13	2.500	3.000	2.333	3.000
14	2.333	2.563	2.444	--
15	2.556	2.545	2.769	--
Christmas Break				
18	2.154	2.000	2.286	4.000
19	2.647	1.867	2.474	3.000
20	2.722	2.733	2.522	4.000
21	2.800	2.833	2.429	4.333
22	2.476	2.895	2.762	3.000
23	2.250	2.923	2.176	2.750
24	2.765	3.000	2.800	3.333
25	2.500	2.625	2.870	3.333
26	2.550	3.000	2.650	4.667
27	2.364	3.286	2.750	3.333
Spring Vacation				
29	2.438	2.429	2.150	--
30	2.368	2.733	2.150	--
31	2.368	2.588	2.381	3.000
32	2.364	3.050	2.261	3.500
33	2.611	3.118	2.550	--

Professional		PRESSURE			(continued)
Weeks	R&I-Admin	R&I-Parents	R&I-Teachers	R&I-Others	
34	2.500	2.688	2.471	2.000	
35	2.733	2.667	2.650	3.500	
36	2.611	2.824	2.238	2.500	
37	2.611	2.556	2.238	4.000	
38	2.857	2.462	2.500	4.000	

Professional		PRESSURE		
Weeks	MTG-Day	MTG am/pm	MTG-Evenings	Intrpsn Conflicts
1	3.000	2.556	3.286	3.200
2	3.000	2.778	2.000	3.200
3	2.938	3.267	3.375	4.600
4	2.200	2.947	3.000	3.400
5	2.563	3.333	2.000	3.556
6	2.538	2.765	2.600	2.857
7	2.895	3.000	2.250	3.571
8	2.438	2.500	3.000	2.714
9	2.667	2.533	3.000	3.000
10	2.471	2.588	2.000	4.000
11	2.923	3.235	3.143	4.000
12	2.846	3.600	3.154	3.429
13	3.000	3.071	2.833	3.167
14	2.063	2.571	3.167	2.400
15	2.417	3.000	2.667	3.167
Christmas Break				
18	2.333	2.692	2.571	2.333
19	2.706	2.450	2.500	2.500
20	2.688	2.526	2.667	3.000
21	2.667	2.909	2.600	3.333
22	2.400	2.824	2.143	2.875
23	2.385	2.400	2.833	3.200
24	2.867	2.889	3.500	2.750
25	2.810	3.130	3.167	3.778
26	3.158	3.278	2.750	3.333
27	3.167	2.667	3.400	3.720
Spring Vacation				
29	2.500	2.091	2.500	2.000
30	2.353	2.235	3.333	3.250
31	2.733	2.786	2.750	3.000
32	2.688	2.455	3.000	2.000
33	2.571	2.800	3.231	2.833

Professional		PRESSURE		(continued)
Weeks	MTG-Day	MTG am/pm	MTG-Evenings	Intrpsn Conflicts
34	3.000	2.875	2.833	3.833
35	3.125	3.200	2.333	3.000
36	3.000	2.722	4.000	3.000
37	2.467	2.385	2.500	3.500
38	2.667	3.000	3.200	3.333

Professional	PRESSURE
Weeks	Wk/Sum
1	3.727
2	3.476
3	3.737
4	3.429
5	3.400
6	3.474
7	3.200
8	3.400
9	3.263
10	3.444
11	3.619
12	3.500
13	3.333
14	2.944
15	3.231
Christmas Break	
18	3.211
19	3.333
20	3.500
21	3.842
22	3.143
23	2.059
24	3.500
25	3.500
26	3.684
27	2.600
Spring Vacation	
29	3.300
30	3.526
31	3.421
32	3.091
33	3.105

Professional PRESSURE (continued)

Weeks	Wk/Sum
34	2.875
35	3.200
36	3.350
37	3.143
38	3.333

Professional

SATISFACTION

Weeks	Clstrm Inst	Inst P&P	Per-Soc Needs	Grdng&Rcrd	Other Work
1	3.876	3.591	3.500	2.500	3.200
2	3.833	3.500	3.391	2.636	3.250
3	3.667	3.429	3.222	3.000	3.000
4	3.381	3.273	2.800	2.762	2.667
5	3.652	3.565	3.217	2.857	2.667
6	3.500	3.273	3.318	2.810	4.000
7	3.381	3.238	2.895	2.421	2.750
8	3.476	3.286	3.200	2.800	3.000
9	3.381	3.143	3.000	2.950	3.000
10	3.524	3,190	3.238	2.714	3.500
11	3.000	2.800	3.050	2.667	2.667
12	3.174	2.955	3.091	2.652	3.500
13	3.391	3.174	3.095	2.609	4.000
14	3.550	3.250	3.450	2.667	2.333
15	3.286	2.769	2.933	2.400	3.000
Christmas Break					
18	3.500	3.095	2.778	2.500	1.000
19	3.652	3.174	2.783	2.727	4.000
20	3.208	3.182	3.000	2.391	3.600
21	2.864	3.045	2.762	2.667	3.375
22	2.957	2.957	2.696	2.864	3.000
23	3.350	3.400	2.895	2.706	3.500
24	3.318	3.318	3.143	2.500	3.429
25	3.375	3.304	3.000	2.818	3.600
26	3.143	3.048	2.810	2.600	3.143
27	2.750	3.000	2.333	2.545	3.600
Spring Vacation					
29	3.190	2.950	2.850	2.650	3.000
30	3.227	3.095	3.000	2.727	3.200
31	3.182	3.091	3.000	2.864	3.000
32	3.522	3.261	3.136	2.955	3.333
33	3.350	3,368	3.368	2.895	3.000

Professional		SATISFACTION				(continued)
Weeks	Clstrm Inst	Inst P&P	Per-Soc Needs	Grdng&Rcrd	Other Work	
34	3.474	3.100	3.400	2.833	3.333	
35	3.238	3.238	3.095	2.667	3.000	
36	3,190	3.238	3.000	2.882	3.500	
37	3.435	3.139	3.261	2.600	4.200	
38	3.000	3.313	2.938	2.333	3.000	

Professional		SATISFACTION		
Weeks	R&I-Admin	R&I-Parents	R&I-Teachers	R&I-Others
1	3.333	3.692	3.619	3.000
2	3.045	2.889	3.273	--
3	3.211	3.647	3.190	--
4	3.167	2.816	3.333	--
5	2.667	2.994	3.455	--
6	3.316	3.053	3.429	--
7	3.313	2.941	3.048	--
8	3.267	3.063	3.353	4.000
9	3.000	3.200	3.250	5.000
10	2.882	2.917	3.176	2.500
11	2.933	3.563	3.100	--
12	3.176	3.545	3.273	--
13	2.750	3.250	3.182	4.000
14	2.833	2.875	3.389	--
15	3.111	3.091	3.154	--
Christmas Break				
18	3.583	3.000	3.286	4.000
19	3.000	2.857	3.053	4.000
20	3.000	2.800	2.870	4.000
21	3.050	2.889	3.150	3.000
22	2.857	2.842	3.095	3.500
23	3.133	2.667	2.875	3.667
24	3.118	2.929	3.050	3.667
25	3.987	3.000	3.043	3.000
26	2.900	3.000	3.333	4.000
27	3.182	2.778	2.769	3.667
Spring Vacation				
29	3.188	3.000	3.300	--
30	3.105	2.867	3.150	--
31	3.263	2.688	3.300	4.000
32	3.333	3.143	3.348	2.500
33	3.294	3.375	3.100	--

Professional		SATISFACTION			(continued)
Weeks	R&I-Admin	R&I-Parents	R&I-Teachers	R&I-Others	
34	2.944	3.063	3.294	3.500	
35	2.600	2.800	3.150	3.000	
36	3.167	2.765	3.000	3.000	
37	3.167	2.778	3.381	5.000	
38	3.000	3.167	3.071	4.000	

Professional		SATISFACTION		
Weeks	MTG-Day	MTG Before&After	MTG-pm	Intrpsn Conflict
1	2.941	2.632	3.000	2.300
2	2.706	2.500	2.000	2.800
3	2.813	2.600	4.125	2.200
4	2.800	2.474	3.250	1.800
5	2.875	2.556	3.333	2.111
6	3.007	3.176	2.600	2.571
7	2.368	2.429	3.000	2.143
8	3.063	2.700	3.500	2.833
9	2.833	2.800	2.300	2.625
10	2.529	2.471	2.750	1.857
11	2.615	2.500	4.000	2.444
12	2.923	3.200	4.321	2.143
13	2.889	2.800	3.333	2.000
14	2.765	2.571	3.333	2.750
15	2.667	2.714	3.333	1.833
Christmas Break				
18	2.625	2.846	3.571	2.000
19	2.706	2.800	3.500	2.500
20	2.625	2.632	3.000	2.000
21	2.778	2.818	3.200	1.889
22	2.600	3.118	2.857	2.250
23	2.308	2.800	3.333	2.600
24	2.667	2.667	2.900	2.250
25	2.952	2.913	2.667	2.222
26	3.052	3.333	3.200	1.833
27	2.750	2.778	3.400	2.750
Spring Vacation				
29	3.000	2.545	3.000	2.000
30	2.765	2.412	2.000	1.667
31	2.600	2.643	2.250	2.000
32	3.000	2.773	3.286	2.000
33	2.643	2.667	3.308	2.833

Professional		SATISFACTION		
Weeks	MTG-Day	MTG Before&After	MTG-pm	Intrpsn Conflict
34	2.600	2.625	2.500	2.667
35	2.563	2.800	2.667	2.429
36	2.077	2.889	3.333	1.667
37	2.667	2.538	2.750	2.833
38	2.917	3.100	3.200	2.000

Professional

SATISFACTION

Weeks	Wk/Sum
1	3.364
2	3.333
3	3.263
4	2.905
5	3.350
6	3.526
7	2.900
8	3.450
9	3.316
10	3.000
11	3.048
12	3.050
13	3.190
14	3.222
15	3.308
Christmas Break	
18	3.000
19	3.095
20	3.045
21	2.789
22	2.714
23	2.941
24	3.200
25	3.250
26	3.211
27	3.300
Spring Vacation	
29	2.800
30	2.947
31	3.105
32	3.273
33	3.053

Professional SATISFACTION (continued)

Weeks	Wk/Sum
34	3.222
35	3.000
36	3.050
37	3.227
38	2.933

Personal		ENERGY			
Wks	Family	Social	Meetings	Economic St	Conflicts
1	3.870	2.913	1.273	2.609	2.130
2	3.833	2.833	1.478	2.348	1.917
3	3.550	2.842	1.476	2.333	1.895
4	3.545	2.682	1.409	2.273	2.727
5	3.714	2.550	1.700	2.143	2.750
6	3.545	2.909	1.773	2.143	2.750
7	3.810	3.048	1.750	2.364	2.050
8	3.524	2.810	1.762	2.143	2.095
9	3.476	2.857	1.525	2.476	2.200
10	3.773	3.000	1.286	2.272	2.136
11	3.818	2.864	1.545	2.500	1.762
12	3.625	2.750	1.636	2.292	2.125
13	3.304	2.609	1.682	2.217	1.810
14	3.750	3.400	1.474	2.421	2.056
15	3.667	3.467	1.467	2.200	1.929
Christmas Break					
18	3.455	2.273	1.500	2.591	2.045
19	3.696	2.739	1.696	2.348	1.879
20	3.542	2.750	1.333	2.375	2.167
21	3.227	2.762	1.500	2.318	1.909
22	3.565	2.909	1.773	2.783	2.217
23	3.579	2.526	1.421	2.526	2.158
24	4.000	2.500	1.455	2.636	2.286
25	3.625	2.917	1.609	2.292	1.750
27	3.538	2.385	1.823	3.000	2.231
Spring Vacation					
29	3.476	2.850	1.400	2.524	1.526
30	3.545	2.667	1.450	2.286	1.750
31	3.524	2.909	1.182	2.636	1.750
32	3.739	2.870	1.473	2.783	1.900
33	2.850	2.850	1.550	2.850	1.789

Personal		ENERGY			(continued)
Wks	Family	Social	Meetings	Economic St	Conflicts
34	3.650	2.550	1.650	2.421	1.947
35	3.619	2.571	1.700	2.450	1.750
36	3.857	2.762	1.381	2.333	2.000
37	3.696	2.696	1.545	2.182	2.045
38	3.800	3.133	1.333	2.533	2.067

Personal	PRESSURE				(continued)
Wks	Family	Social	Meetings	Economic St	Conflicts
1	2.826	2.000	3.000	2.824	3.091
2	2.864	2.200	2.000	2.714	2.909
3	2.952	2.118	2.167	3.000	3.250
4	3.300	2.056	2.500	2.692	3.429
5	3.350	2.067	2.714	2.385	3.769
6	3.000	1.750	2.333	2.818	3.750
7	3.056	2.500	2.600	2.643	3.556
8	2.750	2.350	2.857	2.615	3.636
9	2.850	2.111	2.600	2.733	3.500
10	3.100	2.158	2.200	2.933	3.182
11	2.762	2.000	2.600	2.929	2.833
12	2.864	2.222	3.167	3.000	3.700
13	2.857	1.947	3.167	2.733	3.125
14	2.900	2.263	2.800	2.833	2.889
15	3.467	2.929	2.750	2.667	3.286
Christmas Break					
18	2.714	2.286	4.250	2.533	3.700
19	3.987	1.700	3.333	3.133	2.900
20	3.130	2.105	2.833	3.400	4.000
21	2.650	2.375	3.000	3.154	2.923
22	2.909	2.421	3.143	3.250	3.083
23	2.824	2.462	3.000	3.083	3.333
24	3.409	2.471	2.800	3.400	3.273
25	2.833	2.450	2.833	3.143	2.667
26	2.850	2.235	4.143	3.143	3.222
27	2.583	2.556	3.200	3.200	2.556
Spring Vacation					
29	2.684	2.471	2.500	2.933	2.500
30	2.650	2.526	3.500	3.000	2.667
31	2.857	2.733	3.667	2.923	3.000
32	2.913	2.238	2.429	3.059	2.875
33	2.700	2.444	3.000	3.313	3.000

Personal		PRESSURE			(continued)
Wks	Family	Social	Meetings	Economic	Conflict
34	2.789	2.125	3.000	3.313	3.286
35	2.857	2.235	2.571	3.077	3.333
36	2.700	2.059	2.750	2.625	2.727
37	2.826	2.211	2.667	2.533	3.100
38	2.933	2.400	3.500	2.600	3.000

Personal		SATISFACTION			
Wks	Family	Social	Meetings	Economic St	Conflicts
1	3.783	3.750	5.000	3.059	2.400
2	3.826	3.619	2.600	3.000	2.273
3	3.550	3.688	3.167	2.800	2.125
4	3.429	3.474	4.000	3.000	2.500
5	3.050	3.533	3.143	3.000	1.615
6	3.333	3.600	4.000	2.727	2.167
7	3.526	3.111	3.600	2.643	2.111
8	3.714	3.200	3.286	2.615	1.909
9	3.659	3.889	3.200	2.933	1.700
10	3.619	3.579	1.800	2.533	2.00
11	3.857	3.647	4.000	2.786	2.333
12	3.682	3.333	2.667	2.933	2.700
13	3.429	3.316	3.333	2.933	2.429
14	3.500	3.750	3.400	3.167	2.222
15	3.400	3.786	3.000	2.600	2.000
Christmas Break					
18	3.400	3.462	3.250	2.600	2.600
19	3.435	3.650	3.500	2.643	2.300
20	3.261	3.368	3.000	2.400	1.900
21	3.750	3.688	3.400	2.385	2.769
22	3.545	3.632	3.714	2.938	2.250
23	3.882	3.154	3.250	2.500	2.556
24	3.591	2.824	3.200	2.400	2.100
25	3.750	3.450	3.167	2.571	2.778
26	3.600	3.647	4.429	2.714	2.667
27	3.154	3.111	3.200	2.800	2.444
Spring Vacation					
29	3.632	3.824	3.000	2.625	2.333
30	3.789	3.400	3.000	2.444	2.111
31	3.333	3.667	4.000	2.538	2.143
32	3.391	3.714	3.286	2.412	2.250
33	3.600	3.529	2.750	2.625	2.143

Personal		SATISFACTION			
Wks	Family	Social	Meetings	Economic St	Conflicts
34	3.421	3.200	3.250	2.500	2.625
35	3.619	3.353	3.286	2.417	2.143
36	3.600	3.529	2.750	2.750	2.626
37	3.435	3.684	3.167	2.667	2.500
38	2.467	3.533	3.500	2.900	2.250

APPENDIX F

CHANGE UNITS

PROFESSIONAL TASKS ENERGY

Summary of Change Units

Wk.	A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.	L.	M.	N.
1.	0	-2	+3	+3	-3	+2	-2	-1		-5	-3	-7	-2	33
2.	0	-2	-3	-4	0	+1	+12	+2		0	+2	+11	+1	38
3.	-4	-1	+1	0	-2	-1	-4	-5		-5	+2	-4	-2	31
4.	+3	+1	3	3	8	-2	-3	0		+3	-1	-5	+2	34
5.	0	-2	4	-3	+12	+2	0	+1		-2	-2	0	-1	29
6.	-1	-1	+1	-1	-9	-4	+1	-1		+6	-1	-1	+1	28
7.	0	0	0	+5	+7	+1	-4	-1		-5	-7	0	-2	32
8.	-1	+1	0	0	+1	+2	3	0		-2	4	-2	+2	18
9.	-1	-1	-4	+1	-7	-2	-1	-1		+3	+2	+1	0	24
10.	-2	+1	+4	-6	-6	0	+10	+3		-3	+2	+7	+6	50
11.	+4	-4	-4	0	+2	+1	+10	-2		2	1	+10	5	45
12.	+2	+4	+2	0	+4	+2	7	0		+4	-2	12	2	41
13.	-2	1			6	-1	-7	+3		-3	'	0	-3	30
14.	-5	-6	+1	-3	-7	-6	0	+2		+1	-4	-3	+4	42
15.														
18.	-2	+2	0	+7	+16	-1	+2	1		1	8	-1	2	43
19.	-1	-3	+1	+6	+3	+2	+3	+2		1	-2	-5	1	30
20.	0	1	2	5	7	+4	2	1		2	5	4	+6	39
21.	-1	-1	0	-8	-11	0	+5	0		-2	-3	+2	0	33
22.	+1	+2	0	-1	0	-3	-4	-3		-1	-2	0	-3	20
23.	0	+1	-1	+2	+1	-1	-2	+4		+1	+2	+6	-3	24
24.	+1	-1	-2	0	0	+3	0	0		+5	+5	-9	+7	33
25.	-1	-3	+1	0	+4	+1	+1	^		+3	2	1	-4	24
26.	-8	-4	0	-2	+3	-5	+1	-1		-1	-4	+6	+3	38
27.														
29.	+3	1	+2	+5	+10	^	^	^		7	+7	-4	3	49
30.	-1	-2	+2	-6	+2	-1	-2	+2		-3	-3	0	0	24
31.	-3	+2	-1	-6	-6	+3	+12	+1		1	^	+15	-1	60
32.	+1	-2	-1	-2	+5		-1	+1		+2	-2	+1	+1	21
33.	0	+2	0	-2	5	-1	-7	-1		0	-2	11	+5	36
34.	+3	-3	+2	0	+1	+1	-3	3		^	-1	-3	-4	25
35.	-1	+3	3	^	+3	1	^	^		0	+5	+1	0	32
36.	-2	0	+3	5	+9	-2	-1	+1		-4	10	-2	+1	40
37.	-3	5	-4	5	5	+3	0	0		+4	4	4	1	35

KEY: A = Classroom Instruction
 B = Instructional Planning & Preparation
 C = Personal-Social Needs of Students
 D = Paper Work - Grading & Record Keeping
 E = Paper Work - Other
 F = Responsibilities to & Interactions with Administrators
 G = Responsibilities to & Interactions with Parents
 H = Responsibilities to & Interactions with Others
 J = Professional Meetings during School Hours
 K = Professional Meetings after 3 p.m. & Before 8 a.m.
 L = Professional Meetings - Evenings (after dinner)
 M = Interpersonal Conflicts
 N = Total Energy Expended

PROFESSIONAL TASKS SATISFACTION

Summary of Change Units

Wk.	A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.	L.	M.	N.
1.	-1	-1	-1	1		-3	-8	-3		-2	-1			21
2.	-1	-1	-2	+4		+2	+7	-1		+1	+1			20
3.	-3	-1	-4	-2		0	-8	-1		0	-1			20
4.	+3	3	4	1		-5	+2	+2		+1	+1			22
5.	-2	-3	+1	-1		+6	+1	-1		+2	+6			23
6.	-1	-1	-4	-4		0	-2	-4		-7	-8			31
7.	+1	1	+3	4		0	2	4		7	3			25
8.	-1	-2	-2	+2		3	1	-1		-3	+1			16
9.	+1	+1	+2	-3		-1	-3	-1		-3	-3			18
10.	-5	-4	-1	0		0	+7	-1		+1	0			19
11.	+2	+2	0	0		+3	-1	+2		3	7			20
12.	+2	+2	0	-1		-4	-2	-1		0	-4			16
13.	+2	+1	+4	+1		0	-4	2		1	-2			17
14.	-3	-5	-6	-3		3	1	-2		1	-1			25
15.														
18.	+2	+1	0	+2		6	-1	-2		+1	0			15
19.	-5	0	+2	-3		0	1	-2		-1	-2			16
20.	-3	2	-2	+3		+1	+1	+3		+2	+2			19
21.	1	0	-1	+2		2	0	-1		-2	+3			12
22.	+4	+4	+2	-2		+2	-1	-2		-3	-3			23
23.	-1	-1	+2	-2		0	2	2		4	-1			15
24.	+1	0	-1	^		0	-1	-1		+3	+2			12
25.	-3	-3	-2	-2		1	0	+3		1	+4			19
26.	-3	0	5	0		+3		5		-3	5			26
27.														
29.	0	+1	+1	0		-1	-1	-1		-2	-1			8
30.	0	0	0	+2		+2	=2	+1		-1	+2			11
31.	+3	+2	+1	+1		0	+4	0		+4	2			17
32.	-1	+2	3				3			4	-1			17
33.	+1	-3	0	-1		-4	-3	+2		0	-1			15
34.	-3	+1	-3	-1		-3	-3	-1		0	2			17
35.	0	0	-1	+2		+6	0	2		5	1			17
36.	+2	-1	+3	-2		0	0	4		4	-4			20
37.	-4	+2	3	-3			4	3		+2	+6			29

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H = Responsibilities to & Interactions with Teachers
I = Responsibilities to & Interactions with Others
J = Professional Meetings during
before 8 a.m.
L = Professional Meetings - Evenings (after dinner)
M = Interpersonal Conflicts
N = Total Energy Expended

PROFESSIONAL TASKS PRESSURE

Summary of Change Units

Wk.	A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.	L.	M.	N.
1.	+1	+1	+4	+3		+3	-8	+2		0	+2			24
2.	0	-2	-7	-7		-1	+17	+1		-1	+5			35
3.	-1	+5	+2	+4		+1	-7	-6		-7	-4			37
4.	+2	4	2	0		2	+2	1		+4	+4			19
5.	-2	-2	-3	-4		4				-1	-5			22
6.	+1	-1	+2	2		3	-1	-2		+4	+2			16
7.	0	3	+2	+4		+5	0	0		-5	-5			27
8.	-2	-3	4	0		-4	+2	0		+3	0			18
9.	0	+1	-2	-1		0	-3	3		2	.			11
10.	0	+1	+7	-4		-1	"	+3		4	.			38
11.	+1	-1	-3	1		0	-1	-4		-1	+4			17
12.	.	+1	-1	-1		+1	-2	1		+2	-5			16
13.	-2	+1	+2	1		-3	-5	+1		-9	+5			28
14.	0	4	0	-1		+3	-2			+3	4			20
15.														
18.	+1	+3	+1	-		4	1	2		+4	-2			23
19.	-1	-4	+1	+5		+1	-1	0		0	0			20
20.	+3	1	-	6		+1	.	-1		0	"			20
21.	0	0	-2	-7		-3	-1	+4		-3	-1			21
22.	-1	+1	0	-2		-2	-1	-7		0	-4			17
23.	0	+2	1	2		.	"	7		5	5			28
24.	+2	"		2		-3	1	.		-1	+2			20
25.	-7	-7	+1	-1		+1	0	-2		+2	+2			23
26.	-3	4	+5	+4		-1	-1	1		0	6			28
27.														
29.	+4	0	+3	+4		0	1	0		-1	+1			16
30.	-2	0	0	-9		0	-1	+2		3	6			23
31.	-2	0	-1	-5		0	+4	-1		0	-3			17
32.	+1	-4	-1	-3		+2	3	3		1	+3			18
33.	+1	+3	-2	-1		-1	-3	-1		+4	+1			18
34.	-2	-2	+4	+3		+2	-1	+2		1	+3			19
35.	+2	+4	3	+8		-1	0	-5		-1	-1			30
36.	0	-1	0	-5		0	0	0		-5	-3			16
37.	-2	-4	+1	+4		+3	+3	+3		+2	6			26
38.														

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APPENDIX G

PEARSON COEFFICIENT DATA FOR FIVE SUBJECTS

CORRELATION DATA

Subject 01

Weeks Missing - 0

	Alcohol	Caffeine	Symptoms	Drugs	Conflict #1	Conflict #2
PROFESSIONAL:						
Energy	.2674 P=.068				.5496 P=.001	.3956 P=.009
Satisfaction			-.4230 P=.006			
Pressure	.3169 P=.032				.5821 P=.001	.4068 P=.008
Energy times Pressure	.3163 .032				.5598 P=.001	.4157 P=.006
Satisfaction times Pressure	.2681 P=.060		-.2998 P=.040		.4232 P=.006	
Energy times Satisfaction	.2525 P=.072		-.3202 P=.030		.4412 P=.004	.2524 P=.072
Energy times Satisfaction times Pressure	.3050 P=.037		-.2648 P=.062		.4788 P=.002	.3132 P=.033
Pressure times Satisfaction times Energy	.3346 P=.025		-.2982 P=.041		.5110 P=.001	.3259 P=.028

CORRELATION DATA

Subject 07

Weeks Missing - 0

	Alcohol	Caffeine	Symptoms	Drugs	Conflict #1	Conflict #2
<u>PROFESSIONAL:</u>						
Energy			.3515 P=.019		.3389 P=.023	
Satisfaction						
Pressure			.4225 P=.006		.2477 P=.076	
Energy times Pressure			.3897 P=.010		.2766 P=.054	
Satisfaction times Pressure						
Energy times Satisfaction					.2415 P =.081	
Energy times Satisfaction times Pressure						
Pressure times Satisfaction times Energy			.4815 P=.002		.3124 P=.034	

CORRELATION DATA

Subject 18

Weeks Missing - 1

	Alcohol	Caffeine	Symptoms	Drugs	Conflict #1	Conflict #2
<u>PROFESSIONAL:</u>						
Energy	.3614 P=.018		.2831 P=.052		.8518 P=.001	.8743 P=.001
Satisfaction		.3864 P=.012	.5021 P=.001	.4433 P=.004	.5113 P=.001	.5762 P=.001
Pressure	.4224 P=.006	.4092 P=.008		.2735 P=.059	.7805 P=.001	.8046 P=.001
Energy times Pressure	.3594 P=.018	.3539 P=.020	.2881 P=.049	.2366 P=.089	.7674 P=.001	.7827 P=.001
Satisfaction times Pressure		.4489 P=.004	.5035 P=.001	.5016 P=.001	.6586 P=.001	.7035 P=.001
Energy times Satisfaction		.2905 P=.048	.4825 P=.002	.3801 P=.013	.6743 P=.001	.7196 P=.001
Energy times Satisfaction times Pressure		.3831 P=.013	.4827 P=.002	.4373 P=.006	.6418 P=.001	.6741 P=.001
Pressure times Satisfaction times Energy	.3260 P=.030	.3612 P=.018	.2858 P=.051	.2554 P=.072	.7777 P=.001	.7639 P=.001

CORRELATION DATA

Subject 22

Weeks Missing - 1

	Alcohol	Caffeine	Symptoms	Drugs	Conflict #1	Conflict #2
<u>PROFESSIONAL:</u>						
Energy					.5655 P=.001	.4517 P=.004
Satisfaction						
Pressure	.2632 P=.066			.2278 P=.098	.5725 P=.001	.4505 P=.004
Energy times Pressure	.2719 P=.060				.5676 P=.001	.4751 P=.002
Satisfaction times Pressure				.3235 .031	.3660 P=.017	.2817 .053
Energy times Satisfaction					.3946 P=.010	.3154 P=.035
Energy times Satisfaction times Pressure	.2425 P=.084			.2634 P=.066	.4811 P=.002	.4166 P=.007
Pressure times Satisfaction times Energy	.2553 P=.073				.5759 P=.001	.4848 P=.002

CORRELATION DATA

Subject 64

Weeks Missing - 1

	Alcohol	Caffeine	Symptoms	Drugs	Conflict #1	Conflict #2
<u>PROFESSIONAL:</u>						
Energy		.5327 P=.001	.5466 P=.001	.2763 P=.060	.5614 P=.001	.4141 P=.008
Satisfaction		.5504 P=.001	.4261 P=.007	.2947 P=.048	.5878 P=.001	.4273 P=.007
Pressure		.3359 P=.028	.3943 .012		.5868 .001	.3540 P=.022
Energy times Pressure		.3741 P=.016	.5427 P=.001		.5306 P=.0001	.3140 P=.038
Satisfaction times Pressure		.3937 P=.012	.4747 P=.0003		.5956 P=.0001	.3504 P=.023
Energy times Satisfaction		.3654 P=.018	.5971 P=.001	.2458 P=.084	.4199 P=.007	.2632 P=.069
Energy times Satisfaction times Pressure		.2658 P=.067	.5834 P=.001		.4184 P=.008	
Pressure times Satisfaction times Energy		.4261 P=.007	.5766 P=.001	.2797 P=.057	.5123 P=.001	.3271 P=.032

APPENDIX H

WEEKLY REPORTS

TEN MONTH TEACHER RESEARCH

Identification Code _____

Weekly Self-Report

Week ending _____

	energy expended					satisfaction					pressure				
	no	in-	very			little	satis-	very		little	very				
	involve-	ment	high			or none	fying			or none	high				
1. PROFESSIONAL:															
1. Classroom instruction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Instructional planning and preparation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Personal/social needs of students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Paper work:															
4. Grading and record keeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Other (specify):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Responsibilities to and interactions with:															
6. Administrators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Parents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. Fellow teachers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. Other (specify):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Professional meetings:															
10. During school hours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
11. After 3 pm or before 8 am	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
12. Evening (after dinner)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
13. Interpersonal conflicts - school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
14. Professionally, I would summarize this week thusly:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
PERSONAL AND MISCELLANEOUS:															
1. Family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Social	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Meetings (non-school)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Personal economic situation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Interpersonal conflicts--home/social/etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
11. OTHER:						not					a great				
Extent to which professional demands on my time conflicted with my personal or family demands/needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	deal	<input type="checkbox"/>	<input type="checkbox"/>		
Extent to which things I thought I should do conflicted with things I wanted to do	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
111. In the next section, please complete each sentence stem with one or more ideas and then rate each one as directed on the instruction page.															

Rating

1. The most satisfying experience(s) of this past week

2. The most frustrating experience(s) of this past week

3. Professionally, this week would have been better if

IV. Anniversaries, celebrations, significant losses, and dramatic changes in my life this week:

V. COMMENTS AND/OR EXPLANATIONS(S) OF ITEMS:

I. WEEKLY LIFE STYLE INVENTORY

1. Average number of hours of sleep per night this week: (Circle.)
4 5 6 7 8 9 10 over 10

How much did you dream this week while sleeping?

none ☐ some ☐ a lot ☐

2. Exercise this week:

type hours frequency

3. Social and recreational activities:

type total time

4. Beverage intake (average per day):

coffee cups (appx. 8 oz.)

tea cups (appx. 8 oz.)

soft drinks units of (size)

alcoholic drinks:

wine glasses (appx. size)

beer units of (size)

cocktails glasses (appx. size)

liquor glasses (appx. size)

5. average number of units (whole ones) of donuts, sweet rolls, and/or candy per day.

VII. CHANGES IN LIFE STYLE THIS WEEK

1. Changes in diet: none ☐ some ☐ a lot ☐
If a lot, briefly describe the change.

2. Changes in smoking habits:

none ☐ some ☐ a lot ☐

If a lot, explain change:

3. Changes in amount and use of private/personal/alone time:

amount: none ☐ some ☐ a lot ☐

use: none ☐ some ☐ a lot ☐

If there were a lot of changes in either use or amount of private time, please explain very briefly.

4. Did you discuss personal or professional concerns with new person(s) or group(s) this week?

yes ☐ no ☐

If yes, please indicate type of person(s) or group(s) (e.g., new friend(s), social group(s), or institution(s)).

VIII. WEEKLY HEALTH SUMMARY

1. Did you visit a doctor or other health professional this week?

yes ☐ no ☐

If yes, please give reason(s) and indicate number of visits.

2. Please list all medication(s) and drugs taken this week and include symptom-relieving compounds such as aspirin, Bufferin, Tylenol, etc.

type quantity

3. Very briefly list physical symptoms and health problems for each day this past week. If none, please so indicate.

Thursday:

Friday:

Saturday:

Sunday:

Monday:

Tuesday:

Wednesday:

Thursday (to pick up time):

4. How many days did you miss school on sick leave this week?

_____ days

X. COMMENTS, NOTES, ETC.

APPENDIX I

EXCERPTS FROM PELLETIER

APPENDIX I

The following data and excerpts are taken from Pelletier's (1977) Mind as Healer; Mind as Slayer. They highlight the mind-body connection in support of the holistic approach used in this research. Pelletier explains the mechanisms used by the brain and the endocrine system to perceive psychological stress and to translate this perceived psychological stress into physiological response. The means whereby the brain and the neuroendocrine system relay the 'stress messages' throughout the body (to) marshal the body's innate resources to meet the challenge will be noted with each physiological mechanism. Because of the technical nature of the data presented, Pelletier's explanations will be quoted extensively.

Basically, the brain is divided into two major components: the cerebral cortex, or upper part of the brain, and the subcortex, or lower part. Subcortical areas of the brain are concerned with vital bodily functions and comprise the basic control center for the autonomic or involuntary nervous system, which is primarily responsible of the physiological activation which occurs during a stress response. In the subcortex which begins at the brain stem are located three major structures: 1) the cerebellum, which serves as a coordinating center for the timing and integration of bodily movements; 2) the medula oblongata, which contains the center's regulation of such basic processes as heart beat, respiration rate, and blood-vessel diameters; and 3) the pons, which plays a role in sleep-cycle regulation. The medula oblongata is the main connection between the brain and the spinal column . . . (p. 46-47)

Moving up the brain stem, the next major component of the subcortex is the diencephalon (Greek: between brain) or interbrain, which is between the midbrain and the cerebral hemisphere The diencephalon regulates emotions such as fear, hate, passion, rage, and euphoria. If control were not exercised over this area by higher centers of the cortex, individuals would tend to react in an incessant vascillation of emotional extremes. In this region of the brain is the small hypothalamus, which is of primary importance in terms of understanding stress reactivity. It is a somewhat volatile structure which the cerebral cortex attempts to keep under control, with varying degrees of success It is a strong pleasure center, the

primary activator of the autonomic nervous system, and plays a central role in translating neurological stimuli into endocrine processes during stress reactions. Most important of all, the hypothalamus regulates the pituitary gland, which is the body's master endocrine gland. Interaction between the hypothalamus and the endocrine system plays a critical role in the development of psychosomatic disorders. (p. 46-47)

After the diencephalon and higher up in the brain hierarchy is the limbic system (Latin: border), which is more complex than the diencephalon but very much interconnected to it This limbic system is often referred to as the visceral brain, since it is an old part of the brain in terms of evolution and involves the regulation of basic biological or visceral functions. Primarily it is concerned with various aspects of emotion and behavior, especially with some types of outward expression of emotion. It also connects with the temporal lobes, which are the primary receptive areas for hearing. Surgical intervention into the temporal lobes indicates that they mediate sexual behavior and govern the presence or absence of emotional expression. Lesions in these areas of the brain produce "hallucinations, disordered recognition and memory, disturbance of reality, dream states, clouding of consciousness, sensory fits, and psychomotor epilepsy" (Gardner, 1968). This being the case, it is abundantly clear that there is a definite if undefined relationship between mood states and neurophysiological activity. (p. 48-49)

part of the limbic system which is receiving increased

Researchers have noted the potential of certain smells to evoke vivid imagery This area of the brain requires more research, since it may provide further links in the neurophysiology of consciousness. Just as surgical intervention into the brain produces alteration in psychological functioning, the feedback structure of the brain suggests that psychological factors such as extreme emotional states also affect brain structures. (p. 49)

Finally, there is one extremely crucial brain structure called the reticular activating system, which has an important bearing on the nature of psychosomatic disorders and psychosomatic interaction. Prior to the 1950s, the prevailing conception of the brain was dualistic. Researchers tended to dicotomize between cortical and subcortical brain functions. Psychologists regarded the two areas as more or less separate entites and categorized human behavior as either cortical or subcortical in nature. Recently, a more innovative model has replaced this dualistic one. The frontal lobes of the cerebral cortex control and regulate many of the functions of the hypothalamus and brain stem through neurological channels between the cortex and subcortex. These connections constitute an elaborate system of interdependent feedback loops. Information is fed into the feedback system via afferent (meaning: leading toward a center) nerve tracts. These afferent tracts conduct impulses directly to the cerebral cortex and also into the brain stem via collateral nerves

which become intermingled with a network of nerves called the reticular activating system The reticular system crosses a number of conventional anatomical boundaries ascribed to the brain and provides the basis for postulating a more integrated relationship between cortical and subcortical functions. Since the subcortical areas of the brain control autonomic or involuntary nervous functions, the neurological evidence suggests a dialogue between autonomic processes and the centers of thought in the cerebral cortex. The reticular system is one of the best pieces of neurophysiological evidence of a profound interconnection between mind and body . . . (p. 50-51)

So the reticular system is a kind of two-way street, carrying messages perceived by the higher awareness centers to the organs and muscles and also relaying stimuli received at the muscular and organic levels up to the cerebral cortex. In this manner, a purely physical stressor can influence the higher thought centers, and a mentally or intellectually perceived stressor can generalize neurophysiological responses. Also, the reticular system appears to be totally responsible for selecting and screening stimuli from the autonomic nervous system prior to their being registered in the cortical or more conscious areas of the brain Some visceral stimuli are never received at a level that can be called conscious awareness, but they are registered subliminally, out of conscious awareness, and they do affect an individual's behavior. (p. 51-52)

The study of brain neurophysiology, and particularly recent information having to do with the integrative function of the reticular system, has much to teach us about stress and the genesis of psychosomatic disorders. It demonstrates graphically that body and mind function together and cannot be regarded as independent of each other More recent evidence seems to indicate that the nervous system is a unified, holistic system, with the reticular system performing a primary integrative function. The new model suggests a continuum of mind/body interaction, with the reticular system mediating conscious awareness along that continuum. (p. 52)

There are two primary physiological systems which are activated by stress. One is the autonomic or involuntary nervous system, and the other is the endocrine system. It is at this point that the role of the hypothalamus in the midbrain becomes increasingly important. This unassuming structure seems to exert decisive control over both the autonomic and endocrine systems It is clearly established that there is a feedback between the hypothalamus and the cerebral cortex. However, despite the certainty that such feedback exists, it is a highly complex interaction, and only partially understood . . . Of primary importance in terms of stress is the fact that the hypothalamus clearly seems to respond to emotional/psychological stimuli from the cortex. Since it in turn activates the body's principal adaptive systems, the autonomic nervous and endocrine systems, it appears to be a critical link in the chain of events through which psychological stress produces a physical reaction. (p. 52-53)

The nervous system can be divided into two parts: the voluntary system which is responsible for posture and all movements initiated by the individual and the autonomic system which is generally considered involuntary and which is thought to act independently of volition.

Much of the time, the autonomic system operates via visceral reflexes based on impulses from the viscera and some internal sensory receptors. When these impulses are received by the autonomic system, the appropriate responses to these impulses are transmitted by reflex back to the organs. Autonomic responses to visceral reflexes mobilizes the body's resources to deal with stressors. When a person is subjected to a mental or physical stressor, the autonomic nervous system reacts "automatically," initiating a complex series of neurophysiological and biochemical changes in the body. (p. 54)

The two distinct but interdependent parts of the autonomic system are responsible for the regulation of these changes. One is the sympathetic nervous system and the other is the parasympathetic system. Generally, the sympathetic system tenses and constricts involuntary muscles, such as those of the blood vessels by means of the tiny muscles in their walls, and activates the endocrine system. Although it does control dilation in some system. In contrast, the parasympathetic system generally initiates dilation of the body's smooth muscles and induces a state of relaxation Each . . . subjective state is the individual's psychological interpretation of sympathetic nervous activity. During stress, blood tends to shift away from the periphery of the body, such as the hands and feet, and the gastrointestinal tract, toward the head and trunk. (p. 54-55)

Both humans and animals share almost identical responses to preparation to engage in fight-or-flight activity. Among these responses are a tense neck and upper back, shallow respiration, and accelerated heart and pulse rates. "Each of these systems or signals is a clue to the individual that he or she is under stress" (p 55). In a similar manner, the parasympathetic system induces subjective feelings but usually of a more pleasurable nature.

It is commonly assumed that the sympathetic and parasympathetic are mutually inhibitory, but this is not true In other instances the two systems act together to produce an effect There is one vital distinction between the two systems which is central to understanding of stress responses. Parasympathetic nervous activity is relatively specific in its influences and selective units activation of the organs it controls. The sympathetic system, although it may act selectively, usually acts through a general

excitation effect upon neural and glandular functions, termed "mass discharge" (Guyton, 1971). By means of this mass discharge response, large portions of the sympathetic nervous system are stimulated simultaneously. This phenomenon is sometimes referred to as the "fight-or-flight" response and constitutes the body's most comprehensive reaction to extreme stress Suffice it to say that when the fight-or-flight response is prolonged, and when an individual cannot take action by fighting or fleeing to release his body from this response, the consequences can be deleterious to health. (p. 55-56)

When the sympathetic nervous system is activated in response to stress, it works in close coordination with the endocrine system. Knowledge of the interaction between the central nervous system and the endocrine system is extremely important for an understanding of how a psychological event becomes translated into a physiological reaction. Glands included in the endocrine system are the pituitary, thyroid, parathyroids, islets of Langerhans, adrenals, and gonads. Endocrine-gland functions involve an extremely complex series of feedback loops. Here we will limit the discussion to those reactions occurring under stressed conditions. In terms of endocrine activity, the hypothalamus again performs a vital regulating function over the pituitary, which in turn controls the rest of the endocrine system. During the body's initial response to stress the pituitary is not directly involved, although it plays an increasingly important role in the secondary, sustained stress response. The hypothalamus is connected to the pituitary along two well-defined physiological pathways: 1) secretions from the hypothalamus are transmitted through direct vascular connections to the anterior or frontal lobe of the pituitary; and 2) hypothalamic nerve endings connect with the posterior lobe. the hypothalamus itself is organized into two mutually inhibitory lobes. The anterior-lateral zone acts to inhibit sympathetic autonomic responses and also inhibits the output of stress hormones from the pituitary. On the other hand, the posterior-medial zones act to stimulate both sympathetic nervous actions and the release of the pituitary's stress hormones. This dynamically poised system provides another important link between the neurological and biochemical systems of the body. (p. 57-58)

Stress has a marked effect upon this delicate balance between the hypothalamus and the pituitary gland This gland is the main center for the regulation of hormones and hormone production and influences the activity of the entire endocrine system. Pituitary hormones discharge into the blood stream and carry specific messages to the other endocrine glands. (p. 58)

Pelletier gives an explanation of the various hormones, their relationships and interrelationships, and their functions during stress situations. He explains that to fully understand the "psychophysiological basis of stress and the genesis of psychosomatic disorder" (p. 60), one must understand adrenal activity and the

adrenal hormones, adrenalin (epinephrine) and noradrenalin (norepinephrine), and their interaction with the other body systems. He summarizes by stating,

There is a discernible difference between proportions of adrenalin and noradrenalin released from one stress response to another. The reasons why adrenalin is released in one instance and noradrenalin in another are not clearly understood In other words, a differentiation that can be clearly classified as psychological in nature seems to be the decisive factor in determining how the adrenal medulla responds. (p. 62)

In addition to the evidence which relates brain function, the nervous system, and the endocrine system to the psychobiology of stress, it is also necessary to be aware of the relationship of the immune system to levels of stress. Pelletier explains that the "immune system response constitutes man's principal defense against micro-organisms" (p. 68). One example of the interrelationships between feedback systems is explained:

. . . the thymus itself, through its relationship with the hypothalamus, is also stress responsive and it plays a major part in the feedback loop regulating the endocrine system. In particular, thymus function affects the production of thyroxine by the thyroid, which speeds metabolism and increases heart rate. When hormonal levels are altered because of stress, one frequent result is often an increase in the blood of corticoids in the form of pro- and anti-inflammatory corticoids. When the presence of these in the system is prolonged, an imbalance may result which can seriously interfere with the effectiveness of immunological defenses. (p. 63-64)

While the connection between psychosocial responses and body processes effecting the immune system are not clearly understood, "there is enough evidence of a connection to warrant significant research attention" (p. 62). He continues, "Basic immunological research of Solomon and others has strengthened the hypothesis that stress induces small changes in immune mechanisms" (pp. 67-68).

One of the early clues to the psychophysiological connections was provided by the research of Holmes and Rahe (19) of the Washington School of Medicine. Noting an apparent relationship between life events and health problems, they

developed a hypothesis concerning the relationship and developed a method for correlating life events with illness which has been researched extensively.

Pelletier explains:

. . . previous research by Harold G. Wolff had indicated that stressful life events played an important causative role in the genesis of disease by evoking neurophysiological reactions. This link applies not only to the classical psychosomatic disorders but also to more organ pathology such as infectious disease and traumatic injuries. Further studies reported that respiratory illness, due to both streptococcal and non-streptococcal infection, are about four times as likely to be preceded as followed by acute stress (Meyer and Haggerty, 1962). Drawing upon this research, Holmes and Rahe undertook a systematic investigation of the relationship between social readjustment, stress, and susceptibility to illness. (p. 108)

Holmes and Rahe began their work with retrospective studies which showed " . . . a strong correlation between the intensity of life changes and onset of severe illness. Similar correlations were reported with minor health changes, such as cuts, bruises, headaches, backaches, and colds . . . " Next they developed a social readjustment rating scale (SRE) which assigned values to life events such as death of a close relative, marriage, job changes, and divorce. Many of these events may be considered positive changes, but in keeping with Selye's theory of non-specific responses both positive and negative changes evoke the same biochemical and neurophysical responses but may vary qualitatively. The researcher allotted values to each life change event, the higher the sum of the values in an individual's life, the greater the possibility of health changes within a year. "Rahe's work with 2,500 officers and enlisted men aboard three Navy cruisers dramatically illustrates the validity of the Social Readjustment Rating Scale" (p. 111).

The reader is referred to the book for a more complete description of the functioning of psychophysiological stress phenomena.

APPENDIX J

STANDARD DEVIATIONS AND MEANS FOR

SELECTED SUBSETS OF

PROFESSIONAL TASKS AND PERSONAL LIFE MEASURES

APPENDIX J

Standard Deviations and Means for Selected Subsets of Professional Tasks and Personal Life Measures

	<u>Mean**</u>	<u>Standard Deviation</u>
<u>Energy Expended</u>		
<u>Professional Tasks</u>		
Classroom Instruction	3.75	0.85
Instructional Planning & Preparation	3.57	0.90
Personal-Social Needs of Students	3.49#	1.02
Paper Work--Grading & Record Keeping	3.45	1.19
<u>Personal Life</u>		
Family	3.64	0.99
Economics	2.43	1.28
<u>Pressure</u>		
<u>Professional Tasks</u>		
Classroom Instruction	3.31	1.07
Instructional Planning & Preparation	3.25#	1.11
Personal-Social Needs of Students	3.25	1.12
Paper Work--Grading & Record Keeping	3.36#	1.22
<u>Personal Life</u>		
Family	2.89	1.22
Economics	2.96#	1.16

*recalculation of means and standard deviaitons; the four items marked # differ slightly from original computations

**variable N

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