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Principal stress: Working in conflicting paradigms from newtonian to new science

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PRINCIPAL STRESS: WORKING IN CONFLICTING PARADIGMS
FROM NEWTONIAN TO NEW SCIENCE

by

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**Doctor of Education Degree in Educational Leadership
Department of Educational Leadership
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ABSTRACT

Principal Stress: Working in Conflicting Paradigms from Newtonian to New Science

by

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Shortages of qualified principal candidates and retention of motivated principals, combined with the evidence that the principal is a vital part of effective school improvement, has ominous implications for the future quality of education. A body of research exists describing school administrators' stress over the last 25 years; yet, limited research reflects the impact the changing role of the principal in the accountability era of *No Child Left Behind* has had on principal stress and the possible connections to the shifting paradigms in organizational leadership.

If principals perceive themselves to be overstressed and unprepared to meet the current expectations and challenges of the position, then it becomes more difficult to find people desiring to lead our schools, to keep us competitive in our global community, and to prepare our students for the future.

This study utilized two conceptual lenses to address school principals' stress, new science organizational theories of chaos and complexity and transactional stress theory. Transactional stress theory helped to describe the relationship between principals and their perceived environmental stressors. New science theories provided a basis to view principal stress from an organizational leadership perspective.

The following research questions guided the study:

1. *What are the perceived stressors of principals in Nevada?*
2. *What are the perceived differences in the intensity and types of principal stressors identified prior to and following the implementation of No Child Left Behind?*
3. *What differences in perceived principal stressors are related to school and principal demographics?*
4. *Which perceived stressors may reflect conflicting paradigms between the current construct of our educational system and the expectations of leading school improvement in the globally interconnected and dynamic environment in which we live?*

Descriptive survey methodology was used for this study. Active public school principals in the state of Nevada were included in the sample. The 35 item Likert scale Administrative Stress Index developed by Gmelch and Swent (1984) was utilized to collect data, along with additional Likert items and open-ended and demographic questions designed by the researcher. Descriptive and inferential statistics were used to analyze and report findings from the demographic and Likert scale questions and qualitative coding methodology was used to analyze open-ended questions.

A total of 256 surveys were completed for a 45% return rate. Study findings revealed the participants' highest reported stressors were related to the *No Child Left Behind* accountability reforms. Connections between principals' perceived stress and conflicting organizational paradigms are discussed.

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CHAPTER I

INTRODUCTION

Americans are stressed! Results from the 2008 American Psychological Association annual survey, *Stress in America* (APA, 2008), reflected that 86% of Americans believed stress negatively impacted their physical and psychological health. Data were analyzed from survey questions about perceptions of stress, psychological and physical impacts of stress, sources of stress and stress management. Highlights from the study showed the highest stress factors included: money (80%), the economy (80%), work (68%), health (67%), family responsibilities (62%), and housing costs (63%) (APA, 2008).

Economic fluxuations and the political arena have created stress for both the business industry and public education. National reforms in education have been put in place over the years in response to political, economic, technological and policy changes due to social initiatives and global competition (Boyd, 1992; Bredeson, 1993; Hertert, 1996). With each reform, new initiatives brought new role responsibilities layered on top of the existing ones (DiPaola & Tschannen-Moran, 2003; Olsen & Sexton, 2009; Portin & Williams, 1996). Role changes reflected higher accountability expectations and competition in a global community (Bredeson, 1993; Daly, 2009; ERS, 2000; Tucker & Coddling, 2002).

National reports and legislation including *A Nation at Risk* (National Commission on Excellence in Education, 1983), *Goals 2000* (U.S. Department of Education, 1998), and the *Elementary and Secondary Education Act* (U.S. Department of Education, 2002), created additional stress for school principals leading to fears of failure, frustration, work overload, and doubt about their personal competence and ability to effectively fulfill the

role of educational leader (Bredeson, 1993; Fullan, 2000; Mintrop & Sunderman, 2009).

School principals have been integral in the promotion and implementation of policy and school reform at the site level. Even when new approaches conflicted with existing ones, when requirements were inconsistent with current research, when staff morale was low, and when the principals' growing responsibilities became unmanageable, principals still needed to keep a positive attitude and were expected to be a motivating instructional leader (DiPaola & Tschannen-Moran, 2003; Fullan, 2000; Olsen & Sexton, 2009).

Leading a staff through educational reforms was perceived to be extremely stressful, both physically and emotionally (Bredeson, 1993; Daly 2009; DiPaola & Tschannen-Moran, 2003; Boyd, 1992; Kelley & Peterson, 2002).

The most recent educational reforms came in response to the *No Child Left Behind Act* (NCLB) initiated in 2001 (U.S. Department of Education, 2002). The NCLB federal policy, based on measuring and increasing student achievement through high-stakes testing, increased the pressure on school administrators through a progressive sanctions-based accountability system that penalized schools that did not make Adequate Yearly Progress (Mintrop & Sunderman, 2009). Accountability based on sanctions has been shown to incrementally increase stress, negativity, and demoralization of teachers and administrators at the school site level (Lambert & McCarthy, 2006; Mintrop & Sunderman, 2009; Tucker & Coddling, 2002).

Educational improvement has traditionally been based on a Newtonian model, looking at parts to improve the whole, as in the NCLB accountability reforms (Morrison, 2002; Snyder, Acker-Hocevar, & Snyder, 2008; Wheatley, 2006). In response to the current technological fast-paced interconnected society, a new science organizational

model has been emerging in the global community (Lewin & Regine, 2000; Wheatley, 2006). In new science organizational models, people participate in dynamic interactive networks of learning and improvement is looked at holistically and creatively (Morrison, 2002; Rettig, 2002; Wheatley, 2006). The new science models raise the question of whether the rigid Newtonian parts to whole, top-down reforms of NCLB, that create great pressures on educational leaders, may no longer be effective for school improvement in the global community in which we live (Morrison, 2002; Rettig, 2002; Wheatley, 2006.)

Statement of the Problem

In response to societal and political reforms, school principals' roles have shifted focus from primarily functional and managerial in the first half of the 20th century to the more current expectations of instructional and visionary leaders able to drive the change process for continual school improvement in an age of accountability (Goldring & Greenfield, 2002; Hill, 2002; Murphy, 2002; Tucker & Coddling, 2002). The shift in focus has not eliminated the managerial tasks, but has layered the new responsibilities on the existing ones (Portin & Williams, 1996). The current complexity and demands of the principal's role have created overwhelming challenges for principals to maintain effective leadership and promote healthy organizations (DiPaola & Tschannen-Moran, 2003; Goldring & Greenfield, 2002; Murphy & Louis, 1999).

If principals perceive themselves to be overstressed and unprepared to meet the current expectations and challenges of the position, then it becomes more difficult to find people desiring to lead our schools, to keep us competitive in our global community, and to prepare our students for the future (ERS, 2000). Shortages of qualified principal

candidates and retention of motivated principals, combined with the evidence that the principal is a vital part of effective school improvement, has ominous implications for the future quality of education (Boyd, 1992; ERS, 2000; Hunt, 2008; Mace-Matluck, 1987; Murphy, 1989). A body of research exists describing school administrators' stress over the last 25 years; yet, limited research reflects the impact the changing role of the principal in the accountability era of *No Child Left Behind* has had on principal stress and the possible connections to the shifting paradigms in organizational leadership.

Purpose of the Study

The purpose of the study was to explore the perceived intensity and types of stressors school principals experience in their professional roles and the possible connections to their changing roles in the current era of accountability.

Through descriptive survey methodology, the researcher identified current perceived principal stressors and differences in perceived stressors from the period prior to and following the implementation of the *No Child Left Behind* accountability reforms.

Conceptual Framework

In order to address school principals' stress from the perspective of the individual as a part of a living system, two lenses were utilized for this study, new science organizational theories of chaos and complexity (Gleik, 1987; Lewin, 1992; Wheatley, 2006) and transactional stress theory (Lazarus, 1984, 1995).

The new science organizational theories of chaos and complexity, based on scientific quantum theory, supported a dynamic interconnected systems theory approach (Morrison,

2002; Snyder, Acker-Hoever, & Snyder; 2008 Wheatley, 2006). Systems theory has developed and evolved over the last century, from Bertalanffy's (1950) original definition of general systems theory to Wheatley's (2006) discussion of new science organizational theory. In this study, new science organizational theories provided support for the rationale that school principals' stress may be exacerbated, not only from the overwhelming layers of responsibilities and expectations in the current age of accountability (Cooley & Shen, 2003; ERS, 2000; Grubb & Flessa, 2006), but also due to working in an environment of conflicting paradigms, from Newtonian to Quantum.

Richard Lazarus' (1995) transactional stress theory and Gmelch and Swent's (1981, 1984) framework of the dimensions of stress in the workplace provided the foundation for understanding principal stress through interactions between the individual and the organization.

From General Systems Theory to Chaos and Complexity Theories

General Systems Theory

Ludwig von Bertalanffy, an Australian biologist, often named as the father of general systems theory, studied organisms and the interrelationships of the molecules and cells that worked together to make up the organism (Bertalanffy, 2009). Bertalanffy considered a system to be "a complex of interacting elements" (Bertalanffy, 1950, pp. 143). Bertalanffy observed, "Living forms are not in being, they are happening. They are the expression of a perpetual stream of matter and energy which passes through the organism and at the same time constitutes it" (Bertalanffy, 2009). General systems theory was considered a science of wholeness, where newness emerged from dynamic relationships. Bertalanffy suggested the applicability of systems theory to other

disciplines (Bertalanffy, 1950, 1976).

Social Systems Theory

Soon after Bertalanffy published in the area of systems theory, Jacob Getzels and Egon Guba (1957) developed a model of organizations as social systems. The Getzels-Guba social systems theory model reflected the behavior within an organization as a dynamic between two dimensions, nomothetic and idiographic. Nomothetic related to the structure of the organization and idiographic to the human side of the organization (Getzels & Guba, 1957; Owens & Valesky, 2007).

According to Getzels and Guba (1957), equilibrium needed to exist between the needs of the individual role player and the needs of the organization in order for the relationship to work for both parties. If there was role overload, role ambiguity, or role changes, individual stress increased, causing an imbalance in the system (Getzels & Guba, 1957).

New Science Organizational Theory

Quantum Theory

Changing paradigms in physics, from Newtonian to Quantum perspectives, provided a framework for newly emerging organizational concepts (Morrison, 2002; Porter-O'Grady & Malloch, 2007; Rettig, 2002; Wheatley, 2006). Newtonian physics, a traditional science based on forming hypothesis, deduction and testing, provided a very concrete way to view the universe by looking at parts to understand the whole (Morrison, 2002; Porter-O'Grady & Malloch, 2007; Rettig, 2002; Wheatley, 2006). Quantum physics, the study of the behavior of subatomic particles, involved viewing the system holistically by observing the dynamic relationships between particles, explained in terms

of probabilities. In Quantum theory all of nature was considered interconnected (Rettig, 2002; Wheatley, 2006).

Newtonian leadership models supported linear hierarchies with the administrator in total control and the focus on efficiency through targeting isolated parts of the organization in order to improve the whole (Morrison, 2002; Rettig, 2002, Wheatley, 2006). In Newtonian organizations, separations or boundaries were drawn between the parts, creating strict roles and responsibilities (Morrison, 2002; Rettig, 2002, Wheatley, 2006).

Quantum models of leadership focused on the interrelationships between people, communication, and the dynamic system. In the Quantum model, organizations were considered to be self-organizing living systems that created order through adaptation and growth (Morrison, 2002; Rettig, 2002; Snyder, Acker-Hocever, & Snyder, 2008; Wheatley, 2006).

Chaos Theory

Chaos and complexity theories, built around the principles of quantum theory, were considered new science organizational theories (Morrison, 2002; Rettig, 2002; Snyder, Acker-Hocever, & Snyder, 2008; Wheatley, 2006). Chaos theory provided a different look at the change process in organizations, supporting the belief that all things were in a continual dynamic process of change and systems needed to change in order to survive. Chaos was considered positive and necessary for systems to evolve. (Morrison, 2002; Rettig, 2002; Snyder, Acker-Hocever, & Snyder, 2008; Wheatley, 2006). Gleick (1987), a seminal writer on chaos theory, explained that chaos had an underlying order and that scientists who studied naturally dynamic systems, such as weather and mathematics,

found that order and stability emerged from within as the system adapted to constantly changing conditions. The phrase, “order out of chaos” described how the process of emergence occurred, and how the confusion and discomfort people sometimes experienced in new situations actually was necessary to stimulate creativity and growth (Gleick, 1987; Prirogine, 1993; Wheatley, 2006).

Complexity Theory

Expanding on the basic tenets of quantum science and chaos theory, complexity theory described organizations as a collection of interacting parts, which functioned as a whole into complex self-organizing adaptive systems (Cilliers, 1998; Lewin & Regine, 2000; Morrison, 2002; Rettig, 2002; Wheatley, 2006). Some key ideas in complexity theory were: small changes could produce large effects, effects were not necessarily linearly related to causes, similar inputs could produce different outputs, living systems evolved and were never in equilibrium, and a system should be looked at holistically through its dynamic relationship with the environment (Lewin, 1992; Lewin & Regine, 2000; Morrison, 2002; Rettig, 2002). Complexity theorists described organizations as systems of dynamic interweaving relationships and networks, always evolving for better survival in a changing environment (Lewin & Regine, 2000; Waldrop, 1992; Wheatley, 2006).

Transactional Stress Theory and the Dimensions of Stress

Richard S. Lazarus, an influential social psychologist and professor at the University of California at Berkeley, researched and published in the areas of emotion and stress across four decades, from the early 1960’s to the mid 1990’s (Lazarus, 1995). Lazarus suggested that stress was not a single event, but was a transaction between a person and the environment (Lazarus, 1995; Lazarus & Folkman, 1984). Lazarus pointed out

that when looking at stress between the person and the environment it was important to acknowledge the importance of the context of the event and the individual perception and meaning of the situation (Lazarus, 1995; Lazarus & Folkman, 1984). The stress process was not static and could change depending on the situation, across time and circumstance (Lazarus, 1995). Lazarus suggested that the transaction between the person and the event was only stressful when it was perceived by that person as harm, threat or challenge to the person's well-being (Lazarus, 1995; Lazarus & Folkman, 1984; Lyon, 2000).

Joseph E. McGrath (1976) was one of the first researchers to create a framework to help explain stress in the work setting from a transactional perspective. From his research, McGrath delineated six dimensions of work-related stress: task-based stress, role-based stress, stress related to behavioral settings, stress from social environments, and stress in the interpersonal system (McGrath, 1976). McGrath defined the process of stress through the following closed loop stages: first there was an event (objective situation), followed by the person's interpretation of the event (perceived situation), a choice was made as a response (response selection), and outcomes or consequences of the choice followed (coping behavior). The stages were linked through the processes of appraisal, decision, performance and outcome (Gmelch & Gates, 1998; McGrath, 1976, McGrath & Beehr, 1990).

Based on McGrath's work, Gmelch and Swent (1984) researched and developed the Administrative Stress Index (ASI) instrument to identify stressors that were applicable to administrative stress in the educational setting. Gmelch and Swent identified four work-related stressor categories: role-based, task-based, boundary-spanning and conflict-mediating stress (Koch, Tung, Gmelch, & Swent, 1982). Modeled after McGrath's four

stage stress cycle, Gmelch developed the Administrator Stress Cycle which included four primary stages (Gmelch & Gates, 1998; Gmelch & Swent, 1984). Stage one began with the source of stress. Stage two included the perception of the stressor by the administrator. Stage three included the choice(s) made by the individual and the fourth stage, considered the long range effects or consequences of the stress (Gmelch & Gates, 1998). The stress cycle also included mediating variables related to the individual's background knowledge and personality which moderated the effects of the stress (Gmelch & Chan, 1995). The Administrative Stress Index provided a framework from which to examine school principal stressors from a transactional perspective, acknowledging the dynamic relationships between the administrator and the organization (Gmelch & Chan, 1995).

The two lenses, transactional stress theory (Lazarus, 1995) and the organizational new science theories of chaos and complexity (Gleick, 1987; Lewin & Regine, 2000; Wheatley, 2006), both viewed the individual as part of a dynamic system of interactions. The perception of stress was considered relational to the understanding of the larger environmental network in which the individual participated and interacted. (Gmelch & Gates, 1998; McGrath, 1976, McGrath & Beehr, 1990).

Research Questions

In order to explore the perceived stressors of the principalship and the possible connections to accountability reforms and changing organizational paradigms, the following questions guided the study:

- 1. What are the perceived stressors of principals in Nevada?*

2. *What are the perceived differences in the intensity and types of principal stressors identified prior to and following the implementation of No Child Left Behind?*
3. *What differences in perceived principal stressors are related to school and principal demographics?*
4. *Which perceived stressors may reflect conflicting paradigms between the current construct of our educational system and the expectations of leading school improvement in the globally interconnected and dynamic environment in which we live?*

Methodology

Cross-sectional descriptive survey design was utilized for this study, allowing a great number of principals' perceptions and opinions to be collected from a large geographical area in a short amount of time (Creswell, 2008). Active public school principals in the state of Nevada, who oversee elementary, middle and high schools, were emailed a letter requesting their participation in an online survey (Appendix IV). Across seventeen Nevada school districts, 576 active principals were invited to participate (Nevada Department of Education, 2009). Schools were situated in urban, suburban, and rural environments and included a full range of enrollment figures, socio-economic populations, and school programs (empowerment, charter, magnet, comprehensive).

The online survey (Appendix IV) included Gmelch and Swent's (1984) 35 item Administrative Stress Index (ASI) which utilized a five point Likert scale to record participant responses about statements related to stress on the job from rarely or never bothers me to frequently bothers me (Gmelch & Swent, 1984). Three additional Likert

statements reflecting the current age of accountability, and four open-ended questions were included. New questions were piloted for clarity and understanding. The survey also included a section with questions about school and principal demographics including: school socio-economic status, enrollment, community (rural, urban, suburban), unique school programs, Title I status, *No Child Left Behind* designations, and principal's position, age, gender, level of education, hours worked weekly, and years of experience.

The ASI has been utilized in numerous studies for over 25 years providing strong reliability. Originally, a 15 item questionnaire about job-related stress (Indik, Seashore, & Slesinger, 1964), the ASI was expanded by the researchers after reviewing the literature and analyzing work-related logs of administrators (Koch, Tung, Gmelch, & Swent, 1982). After piloting and revising, the final 35 item ASI was developed and sent to 1,200 principals in Oregon, with 1,156 usable surveys returned. Two matched samples were evenly divided and a varimax rotated factor analysis of data presented four identifiable categories of stress: role-based, task-based, boundary-spanning and conflict-mediating (Gmelch & Swent, 1984; Koch et al., 1982). Intercorrelations between factors were also correlated from one sample to calculate factor scores and correlations from the other sample resulting in .70 or higher internal consistency reliability scores on each dimension and providing strong support for the validity of the instrument (Koch et al., 1982).

Study data were analyzed both quantitatively and qualitatively depending on the questionnaire items. To explore the ways perceptions of stress varied across demographic factors, t-tests and a series of one way analysis of variance (ANOVA) were computed (Hinkle, Wiersma, & Jurs, 2003). Open-ended questions were coded for stressors that

reflected Gmelch and Swent's (1984) four dimensions of stress (Marshall & Rossman, 2006).

Limitations and Delimitations

The study population included active principals in the state of Nevada. Although principals may encounter similar job responsibilities and expectations from state to state, it should not be assumed that the stressors perceived by Nevada principals represent the perceived stressors of principals in other states (Creswell, 2008; Marshall & Rossman, 2006).

Due to the nature of the questions concerning working in the current era of accountability, the survey population was delimited to only active principals and not retired principals in Nevada.

The data were collected from public school principals in Nevada; therefore, no private school principals were included. Public school principals in Nevada are required to administer state criterion referenced tests and state proficiency exams as part of compliance for the *No Child Left Behind* (NCLB) federal legislation. Due to the study question focusing on perceived stressors from pre and post implementation of NCLB, the sample will provide consistency in this area.

For the purposes of this study, principal stressors were operationally defined through the Administrative Stress Index category descriptors. Care should be taken if this study is used to compare with other studies using other means to define stressors.

This descriptive cross-sectional study was non-experimental and care was taken not to infer direct causal relationships (Creswell, 2008; Wallen & Fraenkel, 2001). Survey

data were collected from one point in time and due to various circumstances may have influenced the principals' responses (Creswell, 2008; Marshall & Rossman, 2006; Wallen & Fraenkel, 2001). The survey participants self-reported and therefore the responses only reflect the participants' perceptions (Marshall & Rossman, 2006). It was assumed the survey participants interpreted each statement on the survey instrument as intended and answered honestly and accurately (Creswell, 2008; Marshall & Rossman, 2006).

All active principals in Nevada were invited to complete the survey, but the findings were based on those that choose to respond, therefore, a full complement of geographical locations and personal and professional demographics may not be represented (Creswell, 2008). A final consideration is that response bias may have been a possibility if principals who perceived themselves to be under extreme pressure, did not choose to take the time to complete the survey (Creswell, 2008).

Significance of the Study

Study findings will provide policy makers, school board members, district leaders, university preparation designers, and principals, with awareness of the types of stressors that may be contributing to principal dissatisfaction and the resulting shortage and retention of qualified principals. The data may assist stakeholders in identifying tasks and responsibilities that could possibly be minimized, shared, or redirected, allowing the principal to focus on the most important areas of school leadership.

Study data will be available for principal preparation and district professional development designers for future planning. Data reflecting perceived principal stressors across geographical districts with varying student and principal demographics will also

assist program planners with targeted instruction and trainings.

By adding to the research in the area of principal stress in the *No Child Left Behind* accountability era, legislators and policy makers will be able to utilize the data to help make informed decisions about policy revisions and future legislation.

The study will add to the limited research in the area of new science organizational theory and educational leadership by introducing the component of principal stress and its possible connection with the conflicting paradigms. Raising the awareness of the educational community, especially principals, about the environment of conflicting paradigms in which they are working, will help principals see their leadership positions through a different lens and hopefully help to reduce stress. Knowledge is powerful!

Definitions

Chaos theory: considered a new science; Chaos theorists look at the processes, non-linear relationships, and global nature of complex systems. Key tenets of chaos theory are that natural systems have the ability to learn to adapt to changing conditions and all things are in a continual dynamic process of change (Gleick, 1987; Prigogine, 1993)

Complexity: Complexity in this study does not mean complicated, but instead is defined as “the interactions of the components in the system generate something that is more than the sum of the parts, or qualitatively different from the sum of the parts; and that something is constantly changing” (Lewin & Regine, 2000, pp. 36-37).

Complexity theory: considered a new science; incorporates the tenets of quantum mechanics and chaos theory. Complexity theory focuses on the dynamic interactions

among individuals or components within a complex adaptive system (Kauffman, 1995; Rettig, 2002).

Linear: variables in a system are in direct cause and effect relationships and are in proportion to one another; large changes create large effects, small changes yield small effects (Kiel, 1994)

New sciences: For this study, new sciences will include three sub-theories of physics: quantum theory, chaos theory, complexity theory (Lewin, 1992; Wheatley, 2006; Zohar, 1997).

Newtonian physics: based on the deterministic tenets of motion, inertia, and gravity; built around a theory of linear, mechanical processes through forming hypotheses, deduction and testing. Newtonian physics provided a very concrete way of viewing the world, looking at parts to understand the whole from a structured and reductionistic perspective (Bohm, 1988; Rettig, 2002; Wheatley, 2006; Zohar, 1997).

No Child Left Behind (NCLB): The sanction-based educational reform enacted by the U.S. Department of Education in 2001 mandating statewide testing and public reporting (U.S. Department of Education, 2002).

Nonlinear: behavior in which the relationships in a system are dynamic and not in proportion, small changes can have big effects (Keil, 1994).

Paradigm: “beliefs, values, and techniques...shared by the members of a given community” (Kuhn, 1996, p. 175)

Quantum mechanics: the study of the behavior of subatomic particles, providing the predominant idea that all of nature is interconnected (Porter-O’Grady & Malloch, 2007; Wheatley, 2006; Zohar, 1997).

Stress: from a psychological perspective, stress is “the relationship between a person and the environment that is appraised by the person to be taxing or exceeding his or her resources and endangering his or her well-being” (Lazarus & Folkman, 1996, p. 19).

The following stress dimensions developed by Gmelch and Swent (1984) described the types of stressors identified by school principals in the educational setting:

Role-based stress: role conflict and role ambiguity (i.e., conflicting demands, lack of clarity or understanding of job responsibilities) (Torelli & Gmelch, 1992)

Task-based stress: daily management and administrative activities, such as frequent interruptions, excessive workload, too many meetings, unattainable paperwork deadlines. (Koch, Tung, Gmelch, & Swent, 1982).

Boundary-spanning stress: stems from interactions with the external environment, such as collective bargaining, responding to legislation, legal concerns, and gaining public support (Gmelch & Gates, 1998)

Conflict-mediating stress: resolving differences between staff, parent concerns, and student discipline (Gmelch & Chan, 1995)

Stressors: external causes of stress (Mason, 1975)

Transactional stress: when the interaction between the person and the event is perceived by the person as harm, threat, or challenge to the person’s well being (Lazarus & Folkman, 1984)

Organization of the Study

Chapter 1 provided an introduction, the problem that was addressed, the purpose of the study, a conceptual framework, guiding research questions, the significance of the

study, limitations and delimitations, and operational definitions. Chapter 2 will provide a review of the literature including a brief overview related to stress theory and stress in the workplace, a historical look at the changing and expanding roles of the principalship, perspectives on school leadership and the new science paradigms, and research on the retention and shortages of qualified principals. Chapter 3 will discuss the methodology rationale and descriptions. Chapter 4 will provide the survey findings and data analysis and Chapter 5 will provide a discussion of the findings, the relationship between the findings and the supporting theoretical frameworks, conclusions and implications for practice and further research.

CHAPTER 2

REVIEW OF RELATED LITERATURE

Introduction

School based educational administrators in the 21st century are experiencing stress at high levels (Daly, 2009; DiPaola & Tschannen-Moran, 2003; ERS, 2000; Gooch, 2002; NAESP, 2000). Overwhelming responsibilities and expectations from layers of roles created with each new school reform has become frustrating and extremely stressful for school principals (Chirichello, 2003; Cooley, 2003; Daly, 2009; DiPaola & Tschannen-Moran, 2003; ERS, 2000; Hunt, 2008; Maryland, 2000; NAESP, 2007; Portin, 2000).

Principals are dealing with competing values from both inside and beyond the educational setting (Morrison, 2002; Rettig, 2002, Snyder, Acker-Hocevar, & Snyder, 2008). Structures are still in place from the industrial age, yet students are expected to function in the information age (Morrison, 2002; Rettig, 2002, Snyder et al., 2008). Rigid educational policy has raised the expectations for all students to achieve at extremely high levels, but centralized control is limiting the creative and innovative avenues of teaching and learning (Daly, 2009; Mathison, 2006; Mintrop & Sunderman, 2009; Olsen & Sexton, 2008; Wheatley, 2001). These contradictions in principals' roles can create high levels of stress and low work satisfaction (Gmelch and Swent, 1984; Lazarus, 1995; Owens & Valesky, 2007).

A growing reduction in the retention and recruitment of qualified principals may be the result of policymakers, districts and university programs not fully addressing principal stress from excessive role responsibilities, job expectations, and contradictions in paradigms from the age of accountability as seen through a Newtonian lens (Daly,

2009; DiPaola & Tschannen-Moran, 2003; Olsen & Sexton, 2008) to the holistic new science perspective of organizations as complex dynamic networks of people working together to prepare students for their future in the global age (Morrison, 2002; Rettig, 2002; Snyder, Acker-Hocevar, & Snyder, 2008; Wheatley, 2001).

Stress Defined

Stress is not what happens to us. It's our response to what happens.

And response is something we can choose (Killoran, 2009)

Researchers from differing fields have studied and defined stress through the lens of their particular disciplines (Aldwin, 1994). Stress has been studied from the varied perspectives of behavioral, social, and health sciences: sociology, developmental, personality, community, and environmental psychology, physiology, and medicine (Aldwin, 1994). Each field developed a distinct approach to stress theory, and with it variations in definitions.

According to the Farlex (2009) online medical dictionary, the origins of the word stress can be traced to the Middle English word *stresse* meaning hardship, *destresse*, the Old French word for distress, and *estrece*, the Old French word meaning narrowness or oppression.

Merriam-Webster's Unabridged Dictionary (2005) defined stress as a specific response by the body to a stimulus, as fear or pain that disturbs or interferes with the normal physiological equilibrium of an organism. American Heritage Dictionary (2006) defined stress as a mentally or emotionally disruptive or upsetting condition occurring in response to adverse external influences and capable of affecting physical health, usually

characterized by increased heart rate, a rise in blood pressure, muscular tension, irritability and depression. Taber's Cyclopedic Medical Dictionary, 21st Edition (2009), defined stress as any physical, physiological or psychological force that disturbs equilibrium.

Taber's (2009) clarified the distinctions in definitions between disciplines. In physical science, "stresses" included forces that deform or damage materials. Physiological "stresses" included agents that upset homeostasis, such as infection, injury, disease internal organ pressures or psychic strain. In psychology, "stresses" included perceptions, emotions, anxieties, and interpersonal, social, or economic events that were considered threatening to one's physical health, personal safety or well being (Taber's, 2009). For the purposes of this study, stress was defined from Lazarus and Folkman's (1996) psychological perspective, "stress is a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (p. 19).

Development of Stress Concepts and Theory

Claude Bernard, considered the founder of physiology, was instrumental in the foundational development of scientific stress concepts (Gross, 1998). In the 1860's, through studies with living organisms, Bernard suggested that living things had an internal environment which responded to external influences and interactions. He proposed that a changing environment created physical challenges to living organisms and encouraged physical responses to protect the organism and keep it in constancy (Gross, 1998).

Walter Cannon, the first professor of physiology at Harvard University, introduced the term homeostasis in the 1930's to describe the physical regulating system in humans which balanced threats to health and maintained system continuity (Cannon, 1994). Cannon's theory led one to believe that once the stressors were decreased to a minimum, balance was restored and all was well. Yet, Sterling and Eyer (1988) noted that homeostasis could also occur in ways that could overtax the system with long term consequences. The term allostasis was created to describe the concept that when the stressor had not been defused, trying to maintain homeostasis could create a constant battle in an environment where the pressures were constant (Lovallo, 2005; McEwen, 2004; Sterling & Eyer, 1988).

Across disciplines, three theoretical orientations have been used to explain stress: response based, stimulus based, and transactional based (Lyon, 2000). Mason (1975) simplified the three terms to: internal state, an external event, or an occurrence that developed from the transaction between a person and the environment. In most disciplines, the term "strain" was used to describe the internal origin of the stress and "stressor" was used to describe an external cause of stress (Mason, 1975).

Response Based Theory

Hans Selye, considered the father of stress research, was a pioneer in helping to develop the response based stress theory (American Institute of Stress, 2008). Selye studied physiological responses to stress and recognized it as a systematic concept (American Institute of Stress, 2008; Lyon, 2000). In 1936, Selye coined the term *stress* as we often use it today, and defined it as, "the non-specific response of the body to any demand for change" (Lyon, 2000, p. 28). Selye's research with animals highlighted

patterns of stress responses which he termed the general adaptation syndrome (Lovallo, 1995; Lyon, 2000, Selye, 1974). The ordered stages of the system included the alarm reaction, the stage of resistance, and the stage of exhaustion (Lovallo, 1995; Lyon, 2000; Selye, 1974). According to Selye, in the alarm stage, the body, in reaction to the stressor, caused a process where certain hormones promoted adrenaline release and the body resistance was reduced. In the resistance phase, the body developed adaptations to fight the stress and tried to repair damage where necessary. The exhaustion stage occurred if the person was exposed to the stressor for long periods of time (Lovallo, 1995; Lyon, 2000; Selye, 1974). Selye suggested that people's adaptation resources for stress were limited and stress hormones became depleted allowing stress related diseases or even death to occur (Humphrey, 2005; Lovallo, 1995; Selye, 1974). Since Selye's time, other researchers have revised Selye's conclusion that in the exhaustion stage people's resources for stress became depleted, and instead suggested that with ongoing or chronic stress the stress-response itself may create more harm than the stressor (Sapolsky, 2004).

As Selye continued his work with long term and short term consequences of stress, he realized stress could create both negative and positive qualities (Lyon, 2000; Selye, 1974). The term "eustress" was coined by Selye (1974), in order to distinguish between negative and positive stress. Eustress was defined as positive stress which is required for a person to achieve under pressure (Selye, 1974).

Stimulus Theory

In the late 1960's, psychologists began research in the area of stress related to psychological experiences (Lovallo, 1995; Lyon, 2000). The stimulus theory was based on the premise that major life experiences or changes created stress (Holmes & Rahe,

1967; Lyon, 2000). These events would include divorce, retirement, loss of loved one, etc. Holmes and Rahe (1967) considered people as the receiver of the stress, therefore stress came from the external environment. This theory supported the belief that too much stress increased a person's chances of becoming ill.

Transactional Stress Theory

Richard S. Lazarus, an influential social psychologist and professor at University of California at Berkeley, researched and published in the areas of emotion and stress across four decades, from the early 1960's (Lazarus, 1966) to the mid 1990's (Lazarus, 1995). In the same vein as Kurt Lewin (1936), considered the founder of social psychology, who was the first to describe human behavior in terms of an interaction between the individual and the environment, Lazarus suggested that stress was not a single event, but was a transaction between a person and the environment (Lazarus, 1995; Lazarus and Folkman, 1984).

Lazarus (1995) pointed out that looking at stress between the person and the environment as a primarily external event was neglecting to acknowledge the importance of the context of the event and the individual perception and meaning of the situation. Lazarus suggested that the transaction between the person and the event was stressful when it was perceived by that person as harm, threat or challenge to the person's well-being (Lazarus, 1995; Lazarus & Folkman, 1984; Lyon, 2000). Harm was defined as damage that has already occurred, such as job loss, disapproval by peers or supervisors, or a poor job assessment. Threat was considered an anticipated harmful situation. Challenge referred to a high demand condition which required mastery, overcoming barriers, or personal growth. Challenge provided positive conditions, encouraging

engagement and enthusiasm for the task (Lazarus, 1995; Lazarus & Folkman, 1984).

Lazarus (1995) considered stress a transactional process with personal meaning. The stress process was not static and could change depending on the situation, across time and circumstance. The terms primary and secondary appraisal were used to describe the person's evaluation of the situation (Lazarus, 1995). Primary appraisal reflected the person's relationship to the event and secondary appraisal related to the personal coping strategies available to deal with the harm, threat or challenge to the person's well-being (Lazarus, 1995). Once the person made the appraisal, psychological stress would occur if the demands (internal or external) exceeded the person's resources (Lazarus & Folkman, 1984, 1996). Lazarus (1995) described the key ideas to understanding stress as needing to look at transaction, process, and personal meaning.

Transactional Stress Theory in the Occupational Setting

The National Institute of Occupational Safety and Health (NIOSH) defined occupational stress as the harmful physical and emotional responses that occurred when the requirements of the job did not match the capabilities, resources, or needs of the worker (Sauter, 2009).

Harris (1995), and Brief and George (1995), discussed Lazarus' transactional stress model in the organizational setting noting that Lazarus addressed stress from an interactive relationship between the individual and the environment but did not address the organization as a possible intervening factor. Harris (1995) noted that when looking at occupational stress from a transactional perspective, the influence of organizational situations and structures should also be considered. Harris suggested that the effects of the organizational characteristics had a relationship to the amount of stress encountered,

asserting that the organization may also affect the potential coping options (Harris, 1995). Harris argued that if a predominant goal of social scientists was to locate patterns and trends in order to improve lives that it was important to be able to inform organizations about characteristics which may increase or decrease stress (Harris, 1995).

Developed in the 1970's and formalized by Caplan in the early 1980's, The Person-Environment Fit model was based on prior transactional theories which highlighted the person and their relationships with the environment. The main construct was that stress emerged from a poor fit or misfit between the person and the environment, not from one or the other independently. Two types of person-environment fit were differentiated in the model. One type of fit was between the demands of the environment and the abilities of the person. Demands included work load and job complexity, role expectations and group norms. Abilities included aptitude, skill, training, and energy needed. A second type of fit was the match between the person's needs and the supplies available. Needs was defined as both biological and psychological and supplies included both intrinsic and extrinsic resources. In this theory, stress was defined subjectively, based on the individual's perspective of the adequacy of the available environmental resources (Edwards, Caplan, & Van Harrison, 1998; Livingston, Nelson, & Barr, 1997).

Lazarus agreed that the Person-Environment fit model helped to clarify transactional stress in an occupational setting, but felt the model emphasized static relationships between the person and the environment instead of allowing for the impact of changing contexts on the stress process (Lazarus, 1995).

Role stress has been explained in the terms of general role theory (Palmer, 1981) which is based on the premise that everyone plays a role both in their personal life and at

work (Biddle, 1979; Owens and Valesky, 2007). Role stress occurred when roles conflicted or were ambiguous, or when the expectations of the roles were too demanding, too restrictive, unclear, or not challenging enough. People also experienced higher levels of stress from role changes, lack of control, and needing to learn new roles. (Harris, 1995; Owens & Valesky, 2007; Palmer, 1981).

Bredeson (1993) explored the impact of principals' role transitions on role strain during the school restructuring movement. Role transitions were considered from the principals' perspective as changing from one set of expectations to another or a layering of responsibilities (Bredeson, 1993). Role strain, "a subjective state experienced by the role holder characterized by acute cognitive and affective disturbance such as discomfort, anxiety, perplexity and uneasiness" (p.37), was identified as the individuals' responses to stress (Bredeson, 1993). Findings from Bredeson's study revealed role overload and role complexity as major contributors to role strain.

Changing Roles and Expectations of the Principalship

Stress is simply the adaptation of our bodies and minds to change; and change, as we noted, is about the only constant left in the workplace (Hansen, 2009).

School Reform and Principal Stress

National reforms in education have been put in place over the years in response to political, economic, technological and policy changes due to social initiatives and global competition (Boyd, 1992; Hertert, 1996; Bredeson, 1993). Each reform created new role expectations and pressures for school leaders. National reports and legislation including *A Nation at Risk*, *Goals 2000*, and the *Elementary and Secondary Education Act*, created

additional stress for school principals leading to fears of failure, frustration, work overload, and doubt about their personal competence and ability to effectively fulfill the role of educational leader (Bredeson, 1993; Fullan, 2000).

School reform, based on societal and political pressure, has occurred since the early days of public education with waves of conflicting initiatives moving between local and centralized control (Kaestle, 1983). Reforms in the early twentieth century occurred in response to the flood of immigrants to the United States with an emphasis on social control as the principals' primary role (Boyd, 1992; Tyack & Cuban, 1995). In the mid twentieth century, attention was placed on providing a more rigorous curriculum, especially in science and mathematics, in response to the fear of competition from the Soviets with the launching of Sputnik (Boyd, 1992; Tyack and Cuban, 1995). At this time, the role of the principal was primarily managerial with the execution of core subject and curriculum left to the teachers (Tyack & Cuban, 1995).

By the 1960's and 1970's, educational reforms came as a response to the Civil Rights movement with an emphasis on social equality (Boyd, 1992; Heinecke, Curry-Corcoran, & Moon, 2003). Key litigation and legislation at this time, *Brown vs. Board of Education, Elementary and Secondary School Act of 1965, and Individuals with Disabilities Education Act of 1976*, accelerated federal involvement in states and school districts around the nation (Hallinger, Murphy, & Hausman, 1991). Although accountability measures were beginning to appear, the role of the school principal continued to be primarily administrative and managerial, with an emphasis on efficiency and control (Boyd, 1992; Heinecke et al., 2003).

School reforms in the 1980's reflected the national climate of urgency and alarm

initiated by fear of falling behind in global competitiveness. Schools were blamed for citizens' lack of skills in the post-industrial technological economy (Boyd, 1992; Heinecke et al., 2003). The competitive spirit and conservative politics that were part of this era prompted the federal government to get involved in societal demands for better educational models leading to stronger accountability measures and a focus on student outcomes (Boyd, 1992, Heinecke et al., 2003). Findings from the 1983 report, *A Nation at Risk*, reflected declining test scores, lowered standards and a "...rising tide of mediocrity that threatens our very future as a Nation and a people" (National Commission on Excellence in Education, 1999). Accountability measures were beginning to be of public interest and the effective schools movement came into the forefront of education (Boyd, 1992; Hunt, 2008; Murphy, 1989). During this period, educational reforms became more regulated at the state level with an abundance of laws and regulations related to improving school performance (Boyd, 1992; Lapan & Houghton, 2003; Tyack & Cuban, 1995).

Key effective schools researchers, Larry Lezotte and Ron Edmonds, identified correlates for improving schools (Mace-Matluck, 1987). Many of these correlates created additional responsibilities for principals: providing instructional leadership, creating a climate of high academic expectations, leading with a clear and focused mission, supporting home-school relations, and ensuring frequent monitoring of student progress (Mace-Matluck, 1987). The effective schools research findings put a heavy emphasis on the principal as a key player in the implementation of reforms toward higher student achievement (DiPaola & Tschannen-Moran, 2003; DuFour, 1992; Leithwood, Seashore-Louis, Anderson & Wahlstrom, 2004; Murphy, 1989; Tirozzi, 2001). Throughout the

research it was noted that principals often lacked the skills necessary to assist a school through the improvement process (DiPaola & Tschannen-Moran, 2003; DuFour, 1992; Hallinger & Heck, 2000; Murphy, 1989).

The restructuring movement evolved from the effective schools movement in the late 1980's (Duke, Grogan, Tucker, & Heinecke, 2003; Hertert, 1996; Hunt, 2008). This movement shifted the emphasis from state policy to district policy. The idea of site-based management became a focus and principals were encouraged to be creative and initiate new ideas for improved instruction (Hertert, 1996). The term "restructuring" took on a variety of meanings depending on context and interpretation, but in most cases principals were expected to add instructional coach and academic leader to the principals' resumes and a spotlight was placed on improving teacher instruction (Hertert, 1996; Hunt, 2008). Along with the newfound freedom to be innovative, schools were also expected to show improvement and accountability results were published in many states (Duke, et al., 1996; Hunt, 2008). The responsibility of becoming the instructional leader along with the initial public display of test data, once again raised the stress levels of administrators (Duke, et al., 2003; Hertert, 1996; Hunt, 2008).

The standards movement that represented the late 1990's and 2000's was initiated in 1994 with the federal *Goals 2000: Educate America Act* (U.S. Department of Education, 1998). This legislation, connected to the reauthorization of the Title 1 *Elementary and Secondary Education Act* (U.S. Department of Education, 2002) emphasized a uniform approach to standards and accountability for all students. Federal funding was attached to high academic standards and state assessment alignment systems. Focus was redirected from teacher instruction to student achievement with expectations for states to develop

graded subject area standards and aligned student testing (Duke et al., 2003; Heinecke et al., 2003; Lappan & Houghton, 2003).

Once again, a reauthorization of the *Elementary and Secondary Education Act* (US Department of Education, 2002) in 2001 raised the accountability stakes and incrementally increased the pressure on school principals. Stricter guidelines for receiving federal funds were directly related to student outcomes on high-stakes testing. This measurement-driven reform, the *No Child Left Behind Act* (NCLB), included graded benchmarks with progressive sanctions for schools not attaining the adequate yearly progress in each of thirty-six subgroups (US Department of Education, 2002). According to NCLB (US Department of Education, 2002), all students were expected to meet 100% proficiency by the 2013-2014 school year. School test results were to be published and readily accessible to the public. The pressure on school principals to meet these goals created almost unattainable challenges (Mintrop & Sunderman, 2009). Accountability based on sanctions has been demonstrated to increase stress, negativity and demoralization of school leaders and staff (Lambert & McCarthy, 2006; Mintrop & Sunderman, 2009; Tucker & Coddling, 2002).

Reforms over the past thirty years have placed a higher focus on accountability and student testing. With each reform effort, new initiatives increased the leadership responsibilities of school principals (Duke et al., 2003; Heinecke et al., 2003, Hunt, 2008). The new roles and responsibilities had been layered on the existing ones, creating job overload and extremely stressful conditions (Portin & Williams, 2000).

Expanding Roles of the Principalship

The larger social system, with its constant ebb and flow of global and political

influences, had a major affect on the principal's role. As each reform was enacted, principals responded to the expectations by taking on more responsibilities (Cooley & Shen, 2003; Portin & Williams, 1996). Principals often became the linchpin to school reform, with pressures to succeed from all stakeholders including federal, state, local governments, school boards, parents, teachers and students (Trail, 2000).

Traditional roles of the principal included the management tasks of ensuring a safe environment, managing the budget and resources, and maintaining discipline (Murphy & Louis, 1994). With the advent of high stakes testing and increased accountability, the principal's management load grew incrementally with a focus on data collection, disaggregation, analyses, and reporting of student data (Cooley & Shen, 2003; Duke et al., 2003; Hunt, 2008).

The additional role of the principal that became a primary focus in the accountability movement was as an instructional leader (Heinecke, 2003; DiPaola & Tschannen-Moran, 2003; Kelley & Peterson, 2002; Wiseman, 2005). The focus on raising student achievement included the responsibility of ensuring that all students, including those with learning disabilities and special needs, language barriers, and social concerns, met academic standards (DiPaola & Tschannen-Moran, 2003; Kelley & Peterson, 2002; Wiseman, 2005).

The Institute for Educational Leadership report, *Leadership for Student Learning: Reinventing the Principalship* (2000), noted that the schools of the 21st century required a new type of principal who could fill the roles of instructional leader, community leader, and visionary leader. Kathleen Trail (2000) synthesized the research by describing the roles of principals during school reform in the 21st century as: psychologist, teacher,

facilities manager, philosopher, police officer, diplomat, social worker, mentor, public relations director, coach and cheerleader. Buchen (2004) saw the future of the principal's role as chief learning officer (CLO), broker, and outsourcer.

Professional organizations and researchers have identified key roles and responsibilities for principals working in the 21st century. Hill (2002) synthesized the research by suggesting the most important principals' roles are leading and managing change, motivating and managing people, and designing and aligning systems, processes and resources. Leithwood and Duke (1999) described six types of leadership required to do the job: instructional, transformational, moral, participative, managerial and contingent.

In the mid 1980's, The National Association of Elementary School Principals (NAESP, 2002) developed standards with a detailed list of specific strategies for attainment, that have been revised to reflect current administrative responsibilities. Six standards for what principals should know and be able to do included: putting students and adult learning at the center, setting high expectations for academic and social development of all students, demanding content and instruction that ensure student achievement of standards, creating a culture of continuous learning for adults, using multiple sources of data to assess, identify and apply instructional improvement, and actively engaging the community to create shared responsibility (NAESP, 2002).

During a combined leadership meeting in 1999 of the National Association of Elementary School Principals (NAESP) and the National Association of Secondary School Principals (NASSP), principals and directors were asked to identify the most important leadership qualities of principals in the 21st century (ERS, 2000). The list

included: have a clear focus and personal vision, be innovative, be capable of building consensus and teambuilding, have good communication skills, be aware of technology, have a good grasp of issues related to curriculum, instruction, and assessment, be capable of evaluating teachers and helping them to grow, be able to sell the school, be capable of interacting with a diverse constituency, be a good manager, be interested in using and applying research to improve the school's programs, have the ability to deal with multiple priorities, have an accurate understanding of the environment in which the school operates, possess good conflict resolution and mediation skills, be a loving child advocate, and be dedicated to doing the job well (Educational Research Service, 2000).

In 1996, the highly respected Interstate School Leadership Licensure Consortium (ISLLC) developed six standards for a basic level of knowledge required for school administrators (Council of Chief State School Officers, 2007). The standards were revised in 2007 to reflect changes in focus and role expectations (Council of Chief State School Officers, 2007). The standards basically remained the same but the functions describing the implementation and expectations have changed. The new functions reflected the current NCLB accountability requirements in a standards-based environment within a climate of systematic reform. The functions of each standard included new terminology and phrases such as: stakeholders (instead of school community), monitor and evaluate, rigorous, assessment and accountability systems, obtain, allocate, align, collect and analyze data (Council of Chief State School Officers, 2007).

Each of the current ISLLC standards begins, "An education leader promotes the success of every student by..." (Council of Chief State School Officers, 2007). Standard

one addresses vision of learning, standard two focuses on school culture and instructional program, standard three targets organizational management and safety, standard four relates to collaboration with staff, families, and community partners, standard five reflects values, moral and ethical leadership, and standard six advocates for leaders to keep abreast of trends and initiatives and to be responsive to political and social changes (Council of Chief State School Officers, 2007).

Metaphors are often used to represent the societal and political climate of the times. Beck and Murphy (1993) defined the key roles of the principal through the decades with metaphors: values broker (1920's), scientific manager (1930's), democratic leader (1940's), theory-guided administrator (1950's), bureaucratic executive (1960's), humanistic facilitator (1970's), and instructional leader (1980's). Researchers in the 1990's referred to the principal's role as a transformational leader (Pounder and Merrill, 2001). According to Wheatley (2006), a metaphor for the majority of schools in the 2000's might be an "organizational machine." The machine metaphor represents the current climate of measurement-driven, progressive sanctions-based reform of *No Child Left Behind* (Rettig, 2002; Wheatley, 2006). Graded benchmarks with associated sanctions, if subgroups of students do not attain the adequate yearly progress, exemplify the machine metaphor (Rettig, 2002). With this perspective, all the facets of the principal's job are supposed to be placed into neat structured boxes where people perform in linear, efficient and predictable ways and creativity and innovation are discouraged (Morrison, 2002; Rettig, 2002; Wheatley, 2006).

With each reform new responsibilities and pressures were added, not replaced or eliminated, to the role of the school principal (Portin & Williams, 2000). Work overload,

along with the punitive nature of the federal NCLB legislation, is reflected in the transcripts of interviews from principals from around the nation about their job stressors (Oral History of the Public School Principalship, 2009).

Principals' Voices: Stress in the Field

Through a sampling of retired principals' oral interviews from the Oral History of the Public School Principalship project, similar themes that crossed decades from the 1970's to the 2000's included stress related to: student and staff safety, parental concerns, teacher motivation, meeting the needs of students, student discipline, and teacher supervision and discipline (Oral History of the Public School Principalship, 2009).

A common concern throughout the decades included the safety of students and staff. Carol Sorensen, a principal who retired in the 1980's stated, "There is nothing quite so scary as to have a building like ... High School and get a bomb threat from an adult because you are not quite sure what that means" (Sorensen Interview, 453). Stephen McCoy, a principal, who retired in the early 1990's, explained, "There is always pressure to be on top of what is going on in the school, because you never know with kids, where they might be, what they might do and you felt the pressure before school, after school, lunch time, and between classes to always really be out watching..." (McCoy Interview, 428). Carol Leavitt, who retired in the 2000's, believed, "...every principal you talk to would say that safety is just one of those things that you never stop thinking about" (Leavitt Interview, 452).

Another common stressor that spanned the decades included interactions with parents. Principals who retired in the 1980's shared frustrations with parents. Norma Norman explained, "The biggest headaches were the parents...dealing with parents who

really had very little expectations...” (Norman Interview, 499). Carol Sorenson stated, “There are all sorts of pressures from dealing with unhappy parents and unhappy representatives that they brought to conferences with them” (Sorenson Interview, 453). Kenneth Bendrosian, a principal who retired in the 2000’s noted, “...all it takes is two to three parents to just totally take up your week or take up your day because they demand so much of your time” (Bendrosian Interview, 490).

Differences in the principal stressors from the 1970’s to the 2000’s were reflected in the principals’ comments relating to student achievement and accountability. Principals who retired in earlier decades discussed stress related to student discipline and parental concerns but there was little mention of academics and student achievement. Many stressors, described by principals who retired in the late 1990’s and 2000’s, related to the changes in academic focus in response to national reports and federal legislation targeting instructional leadership and accountability (Oral History of the Public School Principalship, 2009).

As summarized by Carol Leavitt, a retired administrator who held the role spanning thirty years from the 1970’s to the early 2000’s, “There is so much paperwork, and so much accountability and so much stress related to all of that” (Leavitt Interview, 452). Kathleen Kinley, a twenty year administrator who retired in the early 2000’s discussed the “overwhelming responsibility that’s on your shoulders as far as moving the school forward” (Kinley Interview, 551).

Joan Gray, a 2003 retiree stated that principal stress also came from “the pressure from above, relative to testing and achievement” (Gray Interview, 459). Ken Bendrosian, a 2004 retiree expressed his frustration with the amount of time expended on fulfilling

legislative requirements, "...prime examples of what a principal often feels interferes with their being able to just take care of business...having to deal with mandates that are passed down, testing and special education law" (Bendrosian Interview, 490).

Doretta Worsham, a long time administrator who retired in the 2000's summed it up, "It is considerably different when I first started as principal and then as I finished, the demands and the accountability and assessment and achievement are incredible for a principal and the pressure that they feel" (Worsham Interview, 549).

Gmelch and Swent (1984) developed the Administrative Stress Index (ASI) instrument to identify stressors that were applicable to administrative stress in the educational setting. After analyzing results from studies of over 1,200 principals and superintendents utilizing the ASI, Gmelch and Swent identified four work-related stressors: role-based, task-based, boundary-spanning and conflict-mediating stress.

Role-based stress was defined as role conflict and role ambiguity. For example, not having enough information to perform satisfactorily, conflicting demands, lack of clarity or understanding of job responsibilities constituted role-based stress (Torelli & Gmelch, 1992). Task-based stress included daily administrative stressors: frequent interruptions, excessive workload, too many meetings, and unattainable paperwork deadlines. Conflict-mediating stress included solving conflicts between parents and school, student discipline, and staff concerns. Boundary-spanning stress was related to interactions with the external environment including collective bargaining, responding to legislation, legal concerns, and gaining public support for funding (Koch, Tung, Gmelch, & Swent, 1992).

A review of research studies across the United States utilizing the Administrative Stress Index (ASI) instrument reflected a changing trend in principal stressors. Findings

from studies in the United States and Canada prior to the year 2000 reflected task-based stress as the highest stress factor as measured by the ASI (Gmelch & Swent, 1994). For example, principals surveyed in studies in Texas, Florida, British Columbia, Pennsylvania, California, Tennessee, Connecticut and two national studies recorded the top two stressors as “feeling that I have too heavy a workload that I cannot possibly finish during the normal workday” and “feeling that meetings take up too much time” (Allison, 1995; Atwood, 1997; Cooper, 1988; Czernaikowski, 1995; Gmelch & Swent, 1984; Kilgore, 1999; Richardson, 1998; Shumate, 2000; Williamson & Campbell, 1987).

In the new millennium, studies from Massachusetts, Florida, South Dakota, Virginia, North Carolina and California began to show the boundary-spanning stressors as top priorities. In eight of ten studies, boundary-spanning stress was either the first or second stress category with the following factor as one of the top three identified stressors: complying with state, federal, and organizational rules and policies and trying to gain public approval and/or financial support for school programs (Bradley, 2004; Buss, 2008; Clash, 2006; DiPaola & Tschannen-Moran, 2003; Halling, 2003; Monroe, 2007; Redfox, 2006; Ryan, 2001; Weber-Sorice, 2002; Welmers, 2005). Throughout the studies, task-based stressors of excessive workload, including paperwork, reports, and meetings continued to score in the top three stressors.

Principal Stress in an Environment of Rigid Accountability

Threat rigidity, an organizational behavioral concept, has been discussed to help explain school responses to the NCLB (U.S. Department of Education, 2002) sanctions-based accountability environment (Daly, 2009; Olsen & Sexton, 2009). Threat rigidity

researchers asserted that organizations that perceived themselves in jeopardy or in crisis responded in similar ways (Staw, Sandelands, & Dutton, 1981). Organizational responses to perceived threat included: tightened structures, an increase in centralized control and conformity, and an emphasis on accountability and efficiency (Daly, 2009; Griffith, 2004; Olsen & Sexton, 2009). Threat rigidity was found to increase psychological stress, reduce flexibility and innovation, and limit an individual's perceived value to the organization (Daly, 2009; Griffith, 2004; Olsen & Sexton, 2009).

Sanctions, penalties for non-compliance, can prompt feelings of shame, resentment and fear (Posner & Rasmusen, 1999) and can be perceived as threatening to a school's survival (Mintrop & Sunderman, 2009). *No Child Left Behind* (NCLB), a sanctions-based accountability system, exemplified the negative consequences of threat rigidity in schools (Daly, 2009; Mintrop & Sunderman, 2009; Olsen & Sexton, 2009). Findings from the Center on Education Policy's (2006) fourth annual report, which surveyed educators in 50 states and 299 school districts and followed 80 district and school case studies, indicated that pressure on educators from NCLB's high-stakes accountability system, led to high stress levels and low morale.

“Accountability systems fashioned after NCLB principles violate core professional norms of educators and produce widespread frustration and de-moralization among those charged with carrying out needed school improvement efforts” (Mintrop & Sunderman, 2009, p. 23).

Thomas Kuhn (1996) explained that new paradigms emerge as existing ideas or theories no longer fit the old paradigms. Paradigms in the sociological context, as in a school setting, are defined by Kuhn as, “beliefs, values, and techniques...shared by the

members of a given community” (p. 175). Paradigms help us make sense of our world, yet, we can become trapped in a paradigm that no longer works (Zohar, 1997). Paradigm shifts are necessary when dysfunction occurs and the organization can not effectively provide answers to the problems created by the environment (Kuhn, 1996). The educational system in America has been based on a Newtonian paradigm that may no longer be able to respond to the larger environment of complex, fast-paced, global networks that make up the world of the 21st century (Morrison, 2002; Rettig, 2002; Snyder et al., 2008; Wheatley, 2006).

New Science and Educational Leadership

The real act of discovery consists not in finding new lands,

but in seeing with new eyes (Marcel Proust)

Shifting Paradigms from Newtonian to New Science

Paradigm shifts have followed scientific theory throughout history. New worldviews followed the work of Aristotle, Copernicus, Galileo, Einstein, Darwin and Newton (Bohm, 1988; Gleik, 1987; Kauffman, 1995; Kuhn, 1996). Newtonian physics was built around a theory of linear, mechanical processes which promoted forming hypotheses, deduction and testing (Bohm, 1988; Rettig, 2002; Wheatley, 2006). Newtonian perspectives provided a very concrete way of viewing the world, looking at parts to understand the whole from a structured, deterministic, and reductionistic perspective (Rettig, 2002; Wheatley, 2006; Zohar, 1997).

The scientific community encountered another paradigm shift when quantum mechanics provided a new view of physics (Bohm, 1988; Kuhn, 1996; Zohar, 1997).

Quantum mechanics, the study of the behavior of subatomic particles, provided the predominant idea that all of nature is interconnected (Porter-O'Grady & Malloch, 2007; Rettig, 2002; Wheatley, 2006; Zohar, 1997). In contrast to Newtonian physicists who looked at parts to understand the whole, quantum scientists viewed whole systems with a focus on networks of dynamic relationships between particles (Rettig, 2002; Wheatley, 2006; Zohar, 1997).

The new science paradigm continued to unfold with the introduction of chaos and complexity theories, built on the principles of quantum theory (Wheatley, 2006; Zohar, 1997). Chaos theory, borne out of questions to understand complex systems and irregularities in nature, such as the turbulence of the oceans and disturbances in the atmosphere (Gleik, 1987), was explored and utilized as a lens to explain irregular phenomena across disciplines, including: life science, biology, brain research, medicine, astronomy, mathematics, and social organizations (Holte, 1993).

Chaos theorists looked at the processes, non-linear relationships, and global nature of complex systems, observing that natural systems had the ability to learn to adapt to changing conditions, and supporting the belief that all things were in a continual dynamic process of change; systems needed to change in order to survive (Gleick, 1987; Snyder et al., 2008; Wheatley, 2006). In natural systems, order happened spontaneously from irregular seemingly chaotic conditions; in this case, chaos was considered positive and necessary for systems to evolve. (Gleick, 1987; Morrison, 2002; Rettig, 2002; Snyder et al., 2008; Wheatley, 2006). Nobel Prize winner, Ilya Prigogine (1993), explained that “order out of chaos” (p. 80) described the way non-equilibrium non-linear systems moved from dynamic chaos to self-organization. Prigogine (1993) explained that

disequilibrium was necessary for a system to grow; systems went through a process called dissipative structures, giving up one form to recreate themselves into new forms.

Mandelbrot (1990), a seminal mathematician, discovered a way to study nonlinear geometry, using a term he coined as “fractals” to explain the repetition of complex nonlinear shapes in a natural system. In fractals “every piece holds the key to the whole structure” (Mandelbrot, 1990, p. 10), therefore, the whole was replicated in each part of the fractal (Porter-O’Grady & Malloch, 2007). Fractals demonstrated the self-organizing capability of systems; even the smallest components of the structure contained the complete pattern and the complexity of the structure was built from simple forms (Mandelbrot, 1990; Porter-O’Grady & Malloch, 2007; Wheatley, 2006).

Complexity theory evolved from an interdisciplinary conference of scientists at the Santa Fe Institute in the early 1980’s. Expanding on the foundational concepts of a dynamic open systems theory, complexity theory incorporated the concepts of quantum mechanics and chaos theory. To clarify terminology, complexity in this context did not mean complicated, but instead was defined as “the interactions of the components in the system generate something that is more than the sum of the parts, or qualitatively different from the sum of the parts; and that something is constantly changing” (Lewin & Regine, 2000, pp. 36-37). Complexity theory focused on the dynamic interactions among individuals or components within a complex adaptive system (Kauffman, 1995; Lewin & Regine, 2000).

Kauffman (1995), a biologist and seminal writer in the field of complexity, discussed complexity theory from the aspect of natural living systems, biological and human social systems. Kauffman (1995) described self-organizing systems as the underlying concept

of complexity theory and the “root source of order” (p. vii). The edge of chaos was explained as the transition between order and chaos, when a system reordered itself to a new form through spontaneous self-organization (Cilliers, 1998; Kauffman, 1995; Lewin & Regine, 2000).

Other key ideas in complexity theory included: systems are non-linear and non-stable, and evolve, emerge and are infinite, small changes can produce large effects, effects are not necessarily linearly related to causes, similar inputs can produce different outputs, living systems evolve and are never in equilibrium, and a system should be looked at holistically through its dynamic relationship with the environment (Lewin, 1992; Lewin & Regine, 2000; Kauffman, 1995; Morrison, 2002).

Organizational Leadership and New Science

Social organizations and leadership models have been influenced by Newtonian scientific thinking since the 17th century (Rettig; 2002; Zohar, 1995, Wheatley, 2006). In a linear bureaucratic Newtonian leadership model, the administrator is in control and the focus is on efficiency, looking at isolated parts of the organization in order to improve the whole (Rettig, 2002; Wheatley, 2006). Margaret Wheatley (2006) termed the Newtonian model, the “mechanistic” organization, with material structures and numerous parts. In Newtonian organizations, separations or boundaries were drawn between the parts, creating strict roles and responsibilities (Morrison, 2002; Rettig, 2002; Wheatley, 2006).

From the perspective of new science, the Newtonian model does not meet the needs of organizations in the globally connected environment in which they function (Morrison, 2002; Rettig, 2002; Snyder et al.; Wheatley, 2006). This machine model does not allow for the natural fluidity and self-organization of systems to emerge. The more leaders try

to control complex systems, the more resistance and frustration is experienced (Morrison, 2002; Rettig, 2002; Snyder et al.; Wheatley, 2006).

The new science models of leadership focused on the interrelationships between people, communication, and the dynamic system. Organizations were considered to be self-organizing living systems that created order through adaptation and growth (Lewin & Regine, 2000; Morrison, 2002; Rettig, 2002, Snyder et al., 2008; Wheatley, 2006). Organizational models based on new science valued diversity, creativity, adaptability and distributive leadership, allowing people to self-organize to solve problems (Crow, Hausman, & Scribner, 2001; Lewin & Regine, 2000; Morrison, 2002; Porter-O'Grady & Malloch, 2007; Wheatley, 2006).

Business management models, based on complexity science principles, have begun to make revolutionary changes in response to the dynamic fast-paced technological and globally connected society (Lewin & Regine, 2000; Porter-O'Grady, 2000; Wheatley, 2006). In new science business models, relationships were considered the heart of healthy organizations and complex adaptive systems, thriving on dynamic interactions of diverse networks of people (Lewin & Regine, 2000; Porter-O'Grady, 2000; Rettig, 2002; Wheatley, 2006). Hierarchies were flattened and leaders became facilitators, being open and aware of the interactions, internal and external forces, changing climates, and dynamics in the networks of people, production, and services (O'Grady & Malloch, 2007; Lewin & Regine, 2000).

Leaders in business organizations embracing the new science theory, didn't necessarily throw out traditional models but enhanced their abilities by cultivating qualities that supported complex adaptive systems (Lewin & Regine, 2000; Wheatley,

2006; Zohar, 1997). Lewin and Regine (2000) described the paradoxes of leadership in this model as “being leaders by not leading” (p. 272), exemplified by leaders who could “provide direction without directives, freedom with guidance” (p. 275), “be visible and invisible when needed” (p. 276), and be tuned in by “knowing through hunches, intuition, senses and not knowing all the facts” (p. 278).

Often a leader’s greatest fears in a Newtonian model are the disruptions, confusions and imbalance in the system, whereas looking from a new science viewpoint, those are qualities that are necessary to elicit creativity, the point at which “order out of chaos” creates something new (Kauffman, 1995; Prirogine, 1993; Wheatley, 2006). New science leaders accepted ambiguity, contradictions, and uncertainty as part of the unfolding and evolving emergent system (Lewin & Regine, 2000). Murphy and Murphy (2002), business leaders who embraced the concept of leading from the new science shared their ability to survive in the volatile economy, “they have learned how to succeed at the ‘edge of chaos,’ that zone of adaptivity and creative insight where complexity science tells us breakthrough achievement occurs” (p. xi). Heifetz, Grashow, and Linsky (2009) explained that leading within a new science organization allows leaders to be transparent, to let conflicts emerge without feeling the need to fix things, and to be able to challenge norms or let them be challenged because this is how dynamically new ideas emerge.

The business world of the 21st century has responded to the fast paced and fluid communication and information exchanges in the technological age (Murphy & Murphy, 2002; O’Grady & Malloch, 2007). The movement from institutions to dynamic interrelated systems has created a different working environment, one of “intersections,

interactions, interdependencies, and horizontal linkage” (O’Grady & Malloch, 2007, p. 62).

School Leadership and the New Science

Schools in the 20th century reflected the industrial age Newtonian model, with an emphasis on efficiency, hierarchies and segmentation (Crow, Hausman, & Scribner, 2001; Rettig, 2002; Snyder et al., 2008). Classrooms, as well as the school itself, were self-contained units with limited outside contact and principals followed standardized procedures and protected teachers from outside interruptions and influences (Crow, Hausman, & Scribner, 2001; Rettig, 2002; Snyder et al., 2008).

In the 21st century, principals with new types of leadership skills are required to lead our schools, those who can lead “complex adaptive systems that are nested in large complex adaptive systems” (Lewin & Regine, 2000, p.33; Morrison, 2002). A paradigm shift is needed for schools to move from linear hierarchies to webs of networks in self-organizing, living organizations, where stronger relationships and connections lead to stronger organizations (Lewin & Regine, 2000; Morrison, 2002; Snyder et al., 2007; Wheatley, 2006).

Principals’ roles in the new science educational organization will include: endorsing a shared vision, remaining open and staying focused on the whole picture, stimulating change, fostering relationships, supporting staff as they interact and engage in learning through dynamic networks, and encouraging creativity (Lewin & Regine, 2000; Morrison, 2002; Rettig, 2002; Snyder et al., 2008). School principals will need to be able to deal with ambiguity and disequilibrium while supporting fluid networks (Morrison, 2002; Rettig, 2002; Wheatley 2006).

Porter-O'Grady and Malloch (2007) noted that to understand their role in the quantum age, leaders must learn about new science principles and how they are relevant to their position. Fullan (2001) articulated that in order to be effective, school leaders must increase understanding of complexity science, explaining that schools as living organizations will thrive in the present culture of change when people are encouraged to be creative, to talk in terms of possibilities, and to create collaboratively.

If the school principal is expected to be the instructional leader and change agent, and principals perceive themselves to be overstressed and unprepared to meet the new responsibilities and challenges, then it becomes more difficult to find people desiring to lead our schools, to keep us competitive in our global community, and to prepare our students for the future (Caldwell, Calnin, & Cahill, 2002; ERS, 2000; Maryland Task Force, 2000). Shortages of qualified candidates and retention of motivated principals are potential problems that will have a huge impact on education (ERS, 2000; Chirichello, 2000).

Principal Shortages and Principal Retention

The recruitment and retention of qualified administrators has become a great challenge over the last few years (Delisio, 2008; DiPaola & Tschannen-Moran, 2003; ERS, 2000; IEL, 2000). Findings from national surveys reflected shortages of interested candidates for principal positions in nearly half of all surveyed rural, suburban and urban districts (ERS, 2000; IEL, 2000). Findings from a three year comprehensive study of 83 public school districts across the nation revealed that although applicant shortages were noted in areas with lower compensation and lower socio-economic conditions, there was

not a shortage of the number of applicants in every region; yet, there were a limited number of highly skilled qualified applicants (Roza, 2003). The true concerns of the superintendents in the study were the lack of necessary leadership qualities of potential principals (Roza, 2003). Superintendents' top priorities for principal qualifications were not curriculum background or teaching experience, but the ability to motivate staff and to implement and be held accountable for effective school improvement (Roza, 2003).

The changing role of the principal is affecting the retention and recruitment of quality principals across the nation (Whitaker, 2003). The extensive Educational Research Service study on attracting and keeping qualified school leaders, sponsored by the National Association of Elementary School Principals and the National Association of Secondary School Principals, reported that the most prevalent concerns of principals surveyed nationwide were: high stress, long hours, and disproportionate compensation for the amount of responsibilities and the level of accountability expected with little actual authority (ERS, 2000). Data from surveyed superintendents in the NAESP/NASSP study, reflected the three highest discouraging factors for principal applicants: compensation not commensurate with responsibilities (60%), too stressful (32%), and too much time required (27%) (ERS, 2000). In a study of 195 potential principal applicants in the Midwest, only 10% of the study participants noted that they would be likely to apply for the principalship (Winter, Renhart, & Munoz, 2001). A major reason for not applying was the extensive time required to meet the expectations of the position (Winter, Renhart, & Munoz, 2001). A study of assistant principals in Kentucky reflected that the impact of achievement in terms of the NCLB designation accounted for 64 percent of the potential candidates' job ratings (Winter & Morgenthal, 2002). In a study of seven

Florida counties, Taylor (2007) found a significant relationship between job satisfaction and school achievement levels.

Role changes are having an incremental effect on principal recruitment and retention (Chirichello, 2001; DiPaola, 2008; Pounder & Merrill, 2001; Whitaker, 2003). In Chirichello's (2001) study on the looming shortage of principal applicants from the perspective of changing role responsibilities, principals reported increased stresses due to demands and expectations from a variety of stakeholders (unions, parents, business community, and superintendents) as well as the new responsibilities of visionary leaders in the age of the digital revolution. Only 33 percent of the 170 assistant principal respondents in a western state survey planned on pursuing the principalship in the next five years; time demands along with balancing work and home were highly rated as the least attractive factor of the position (Pounder & Merrill, 2001). Delisio (2008) reviewed studies which addressed the principal shortage between 1998 and 2005. A common finding was that the image of the super principal discouraged current principals and potential candidates (Delisio, 2008). Caldwell, Calnin, and Cahil (2002) remarked that the principal shortage is primarily the result of the current role of the principal, one that is essentially unachievable.

CHAPTER 3
METHODOLOGY

Research Design

Cross-sectional descriptive survey design was utilized in this study. Creswell (2008) defined survey research designs as those that “describe the attitudes, opinions, behaviors, or characteristics of the population” (p.388). The intent of this study was to learn about current perceptions and opinions of the participant principals, making it well suited for survey methodology. Surveying participants using an online questionnaire allowed the researcher to systematically collect information from a great number of participants across a large geographical area in a relatively short amount of time (Creswell, 2008). The questionnaire provided both quantitative and qualitative data from which to address the research questions.

The Administrative Stress Index (ASI) (Gmelch & Swent, 1984; Koch, Gmelch, Tung & Swent, 1982) that was used as the predominant survey instrument has been utilized over a 25 year period in school administrator research studies and provided a means to identify current perceived stressors and to explore differences in perceived stressors over time. Written consent to use the copyrighted ASI was secured prior to instrument usage (Appendix III).

Research Questions

Survey data collection was used to help answer the following four questions:

1. *What are the perceived stressors of principals in Nevada?*

2. *What are the perceived differences in the intensity and types of principal stressors identified prior to and following the implementation of No Child Left Behind?*
3. *What differences in perceived principal stressors are related to school and principal demographics?*
4. *Which perceived stressors may reflect conflicting paradigms between the current construct of our educational system and the expectations of leading school improvement in the globally interconnected and dynamic environment in which we live?*

Research Setting and Target Population

Surveys were sent to all active public school principals in the state of Nevada at the elementary, middle, and high school levels. Seventeen Nevada school districts, organized by county, included 576 public school principals that were invited to participate (Nevada Department of Education, 2009). Schools were situated in urban, suburban, and rural environments and included a full range of socio-economic populations. Principals who led unique school models, such as charter, empowerment, and magnet schools, were a part of the public school system and were included in the target population.

Data Collection

Once the Institutional Review Board process was complete and permission was granted to begin the study, a letter was sent through email to the principals in Nevada requesting their participation (Appendix I). The link to take the online survey was included in the letter. Participants were asked to complete the survey within a two week

period. A follow up reminder was sent one week after the initial sending (Appendix II). Respondents were able to note on the survey if they were willing to answer follow-up questions by email and if they would like a copy of the study results.

Instrumentation

The survey was comprised of two parts (see survey, Appendix IV). Part one was close-ended demographic questions related to both the school (enrollment, community, unique school programs, Title I status, and *No Child Left Behind* designations) and the principal participant (position, age, gender, level of education, hours worked weekly, and years of experience).

Administrative Stress Index

Part two was comprised of Gmelch and Swent's Administrative Stress Index (ASI) (Gmelch & Gates, 1998; Gmelch & Swent, 1984; Koch et al., 1982). The 35 ASI stressor statements were included in the survey with three additional statements targeting school reform and four open-ended questions. Participants responded to the statements using a five-point Likert scale from rarely or never bothers me to frequently bothers me.

The ASI instrument was chosen because of its strong validity and reliability, with a factor correlation of .70 or higher on each dimension (Gmelch & Swent, 1984; Koch, et al., 1982), and wide usage over a 25 year period. The findings from this study were used to identify current perceived principal stressors and to help describe the changes in trends when looking at other studies that used the ASI from the period prior to the *No Child Left Behind* reforms to the period following implementation. Newly developed survey

questions were administered to a pilot group of administrators, who were not a part of the study population, to clarify any confusion or needed revisions.

Administrative Stress Index Development

The Administrative Stress Index (ASI) was developed to identify the complex dimensions of stress in school administrator positions (Koch et. al., 1982). The initial questionnaire was based on the 15 item job-related stress index (JRS) developed by Indik, Seashore, and Slesinger (1964). Additional questions were developed from reviews of literature and through work-related stress logs of 40 administrators over a one week period (Koch et al., 1982). After a series of pilot tests and revisions, the final 35 item ASI was developed and sent to principals in the state of Oregon (Koch et al., 1982). Using a split-half reliability procedure, the 1,156 usable surveys were evenly divided into two matched samples, providing replication of factor structures. A varimax rotated factor analysis of data presented four identifiable dimensions of stress: role-based, task-based, boundary-spanning and conflict-mediating (Gmelch & Swent, 1984; Koch et al., 1982). Intercorrelations between factors were also assessed by using coefficients from one sample to calculate factor scores and correlations in the other sample. Results showed .70 or higher internal consistency reliability scores on each dimension, providing strong support for the validity and reliability of the instrument (Koch et al., 1982).

Role-based stress was defined as role conflict and role ambiguity. For example, not having enough information to perform satisfactorily, conflicting demands, lack of clarity or understanding of job responsibilities constituted role-based stress (Torelli & Gmelch, 1992). Task-based stress included daily management and administrative activities, such as: frequent interruptions, excessive workload, too many meetings, and unattainable

paperwork deadlines. Boundary-spanning stress stemmed from interactions with the external environment, such as, collective bargaining, responding to legislation, legal concerns, and gaining public support for funding (Gmelch & Gates, 1998; Koch et al., 1982). Conflict-mediating stress included resolving differences between staff members, parent concerns, and student discipline (Gmelch & Chan, 1995).

Data Analysis

Data from the study were analyzed both quantitatively and qualitatively depending on the questionnaire items. Frequency distributions and means were reported for Likert scale statements. To explore the ways perceptions of stress vary across demographic factors, *t*-tests and a series of one-way analysis of variance (ANOVAs) were computed (Hinkle, Wiersma, & Jurs, 2003). Open-ended questions were analyzed qualitatively and coded for stressors that may mirror one of the four Gmelch and Swent stress dimensions (Marshall & Rossman, 2006).

Summary

Educational systems have primarily functioned from a Newtonian perspective where work structures are compartmentalized and problems are considered something to be fixed (Morrison, 2002; Rettig, 2002; Wheatley, 2006). In contrast, new science perceptions supported networks in dynamic interaction, focused on creative continuous development (Lewin & Regine, 2000; Porter- O'Grady & Malloch, 2007; Rettig, 2002). School leaders have been working amidst a universal paradigm shift where the larger system is moving toward a more fluid quantum perspective while the educational system

is firmly immersed in a rationalistic world (Morrison, 2002; Rettig, 2002; Snyder et al., 2008). No one would argue that the principalship is a stressful job (DiPaola, & Tschannen-Moran, 2003; ERS, 2000; Wiseman, 2005); this study will help to inform stakeholders about which perceived stressors principals are encountering in the age of accountability in an effort to ensure present and future principals are prepared to meet the needs of the students in the global community.

CHAPTER 4

FINDINGS OF THE STUDY

Introduction

The intent of this study was to learn about the current perceptions and opinions of principals concerning the stressors they are encountering in their work settings and the possible connections to the current era of accountability. The study also explored the possible connections between the perceived stressors and the changing perspectives on organizational leadership from Newtonian to the new science theories of chaos and complexity. Both qualitative and quantitative data were collected in the online survey which was emailed to public school principals across the state of Nevada. The survey (Appendix IV) was comprised of two parts; part one included close-ended demographic questions related to both the principal participants (position, gender, age, ethnicity, level of education, years of experience, and hours worked) and the school (enrollment, community, Title 1 status, unique programs, and *No Child Left Behind* designation). Part two comprised the stressor questionnaire with both Likert style and open-ended questions.

Descriptive and inferential statistics were used to analyze the quantitative data with the support of the SPSS Version 18 statistical program. An alpha level of .05 was used for all statistical tests. Qualitative data was coded for keywords and themes (Marshall & Rossman, 2006) and analyzed to reflect the four stressor categories identified in the Gmelch and Swent Administrative Stress Survey (ASI): task-based, role-based, boundary-spanning and conflict-mediating (Gmelch & Swent, 1984; Koch, Gmelch, Tung & Swent, 1982). Task-based stressors included daily management and

administrative activities, such as: frequent interruptions, excessive workload, too many meetings, and unattainable paperwork deadlines. Boundary-spanning stress stemmed from interactions with the external environment, such as, collective bargaining, responding to legislation, legal concerns, and gaining public support for funding (Gmelch & Gates, 1998; Koch et al., 1982). Conflict-mediating stress included resolving differences between staff members, parent concerns, and student discipline (Gmelch & Chan, 1995). Role-based stress was defined as role conflict and role ambiguity; for example, not having enough information to perform satisfactorily and lack of clarity or understanding of job responsibilities (Torelli & Gmelch, 1992).

Chapter IV presents the study findings in two sections. The first section contains information on the study sample, including principal and school demographics. The second section is organized by the four survey questions describing the findings of the 35 Likert-style interval questions from the Gmelch and Swent Administrative Stress Survey (Gmelch & Swent, 1984; Koch, Gmelch, Tung & Swent, 1982), the researcher's three additional interval questions, and the four open-ended questions.

Demographic Sample

Survey invitation letters were sent through email to 576 active public school principals across 17 school districts in the state of Nevada at the elementary, middle, and high school levels. A second email reminder was sent one week later. Principals who led unique school models, such as charter, empowerment, and magnet schools, were a part of the public school system and were included in the target population. A total of 256 surveys were completed for a 45% return rate. Partially completed surveys were not

included in the results. The researcher also received 13 emails from principals who were invited to take the survey but were not currently working at a school site and did not feel qualified to complete the survey.

The following summarizes the demographics of the survey respondents. For a table of demographic results, see Appendix V. Groups within years of experience and weekly hours worked were collapsed for more efficient data analyses and reporting (Katz, 2006). The number of respondents included 164 elementary school principals (64.1%), 44 middle school principals (17.2%), 33 high school principals (12.9%), and 15 other configurations (5.9%). Females outnumbered male respondents with 59% female and 41% male principals.

Only one respondent was in the 24-30 age group and the majority of the respondents were between 41-60 (70.7%), with the balance of principals 31-40 years of age (18.4%) and 61 years or older (10.5%). A predominant number of principals who responded were White at 89.1%, with other ethnicities comprising the other 10.9%: Hispanic (3.5%), Black (3.1%), Asian/Pacific Islander (2.3%), American Indian/Alaskan Native (1.6%), and Other Ethnicity (.4%).

The majority of the respondents held Master's degrees (74.6%) with the other 25.4% of participating principals holding: Doctoral degrees (14.8%), Educational Specialist degrees (7.8%), and Other degrees (2.7%). Years of experience ranged from first year principals (7.0%), to 20 or more years (6.3%), with the majority having 2-7 years (56.6%) and the remainder with 8-13 years (21.5%) and 14-19 years (8.6%). Fewer respondents worked 40-49 hours a week (18.0%), with the majority working 50-59 hours a week (57.4%) and many working 60 or more hours a week (24.6%).

Principals characterized their school communities as follows: Urban (49.6%), Suburban (28.9%), Rural (18.4%), and Other (3.1%). Title 1 eligibility funding was split with 43.4% eligible and 56.6% not eligible. School enrollment categories were collapsed for more efficient data analyses and reporting (Katz, 2006): 0-600 students (34.8%), 600-1200 students (48.0%), 1200-1800 students (11.7%), and more than 1800 students (5.5%).

The responses to unique school programs were extremely varied and the majority of responses were 63% that marked none and 20% who did not choose a response. The remainder of the responses on this question accounted for a combined 17%. The write in responses included many purchased content area programs and not necessarily a unique school program as the question intended. This question was not used for further analysis due to the very low number of respondents of unique programs, the high number of blank responses, and the respondents' varied interpretations of the question (Franenkel & Wallen, 1999).

The federal *No Child Left Behind* (NCLB) requirements mandate that states annually designate and publicize the status of each school based on their annual state assessment scores. Combined responses on the survey question asking about the NCLB designation reflected that 54% of respondents' schools performed at the state proficiency levels or better and 46% did not. The participants' *No Child Left Behind* (NCLB) designations for the 2008-2009 school year are listed in the demographics table in Appendix V.

Designations, as defined by the Nevada Department of Education (2009), are as follows: Exemplary, the number of students meeting or exceeding the proficiency score must be significantly higher than the objective, and the number of students that are non-proficient

must decrease by more than 10% from the previous year; High Achieving, the school made significant progress over the previous year and the number of non-proficient students needed to be significantly reduced; Adequate Yearly Progress (AYP), when a school meets the proficiency score in all categories or reduces the number of non-proficient students by 10%; Hold status, when a school did not make AYP the previous year but did in the current year they are considered on Hold; Watch status, if a school has missed AYP for the first time; Needs Improvement Year 1-5 or more, when a school does not make the proficiency score in one or more subgroups or subject areas.

Results by Research Question

Research Question #1: What are the perceived stressors of principals in Nevada?

In analyzing the results for this question, frequencies and means were computed for each of the 38 Administrative Stress Index questions. Respondents chose the level of stress they perceived on each item on a scale from 1 – 5, with 1 labeled as “Never Bothers Me” to 5 as “Frequently Bothers Me” (see survey, Appendix IV). The 38 Likert questions, in ranked order of means from highest ($M = 3.99$) to lowest ($M = 1.51$) is displayed in Appendix VI.

Seven survey items scored $M = >3.00$. An unpaired t-test, showed a significant effect between the seventh ranked survey item, “Feeling that I have too heavy a workload, one that I can not possibly finish during the normal workday” ($M = 3.13$, $SD = 1.25$), and the eighth ranked survey item, “Having to make decisions that affect the lives of individual people that I know” ($M = 2.88$, $SD = 1.07$), where $t(507) = 2.41$, $p < .05$, and therefore, $M = >3.00$ is being used here to determine the highest perceived stressors.

Of the 38 items, seven items had a mean score of 3.13 or higher, indicating a high level of stress, 25 items had a mean that fell in the 2.03 to 2.88 range, indicating a moderate level of stress, and seven items had a mean of 1.51 to 1.84, indicating a low level of stress. No items had a mean of higher than 3.99 or lower than 1.84.

In ranked order, the highest perceived stressors for principal respondents were: “Feeling it is my responsibility if the school does not make Adequate Yearly Progress,” “Trying to complete reports and other paper work on time,” “Publicly being compared to other schools,” “Imposing excessively high expectations on myself,” “Complying with state, federal, and organizational rules and policies,” “Feeling that meetings take up too much time,” and “Feeling that I have too heavy a workload, one that I can not possibly finish during the normal workday” (see Table 1).

The highest perceived items with a moderate stress rating were: “Having to make decisions that affect the lives of individual people that I know (colleagues, staff members, students, etc.), “Trying to resolve parent/school conflicts,” and “Feeling pressure for better job performance over and above what I think is reasonable.”

The lowest perceived stressors of all the ranked items were: “Feeling not enough is expected of me by my superiors,” “Being involved in the collective bargaining process,” and “Trying to resolved differences with my superiors.”

Using a principal components varimax solution for matched samples with a minimum specified eigenvalue of 1.0, Gmelch and Swent identified four factors or dimensions with a correlation of .70 or higher, to categorize administrator stress on the original Administrative Stress Index (ASI): boundary-spanning, task-based, role-based and conflict-mediating. Of the 35 original items, 10 items were eliminated from subsequent

analysis after failing to lead at least .30. The 25 items which clustered into the four dimensions are identified in Appendix VII (Koch, Gmelch, Tung & Swent, 1982).

Table 1

Means and Standard Deviations of Highest Perceived Stressors

Stressor	Mean	Standard Deviation
Feeling it is my responsibility if the school does not make Adequate Yearly Progress	3.99	1.10
Trying to complete reports and other paperwork on time	3.33	1.16
Publicly being compared to other schools	3.21	1.30
Imposing excessively high expectations on myself	3.19	1.20
Complying with state, federal, and organizational rules and policies	3.15	1.23
Feeling that meetings take up too much time	3.14	1.15
Feeling that I have too heavy a workload, one that I can not possibly finish during the normal workday	3.13	1.25

When analyzing the means of the 25 ASI clustered stressor items by stressor category in the current study, the highest factor was task-based, followed by boundary-spanning, with conflict-mediating and role-based to follow (Table 2).

Table 2

Mean and Standard Deviations Using the Administrative Stress Dimensions

Dimension	Mean	Standard Deviation
Task-based	2.76	0.67
Boundary-spanning	2.46	0.73
Conflict-mediation	2.34	0.79
Role-based	2.19	0.78

The top seven perceived stressors in this study fit into Gmelch and Swent's Administrative Stress Index categories of boundary-spanning and task-based stress. As defined by Gmelch and Gates (1998), boundary-spanning stress stemmed from interactions with the external environment, and task-based stress included daily managerial and administrative activities. Of the highest perceived stressors "Feeling it is my responsibility if the school does not make Adequate Yearly Progress," "Publicly being compared to other schools," and "Complying with state, federal, and organizational rules and policies" are all boundary-spanning stressors. "Trying to complete reports and other paper work on time," "Imposing excessively high expectations on myself," "Feeling that meetings take up too much time," and "Feeling that I have too heavy a workload, one that I cannot possibly finish during the normal workday," are all task-based stressors. Ranked stressor items in the other two categories, conflict-mediating and role-based, had means below 3.00 and were therefore not considered high stressors for the purposes of this study.

Open-ended survey question #14 supported and helped to clarify the quantitative analysis of the Administrative Stress Inventory results. The question asked, “What do you feel currently are the five highest stressors in your position?” The question was coded for frequency of keywords/terms using word count in Microsoft Word 7.0 and then terms were color-coded and grouped by the Administrative Stress Inventory (ASI) stressor category definitions (Marshall & Rossman, 2006). Table 3 presents the data resulting from the analysis of the frequency of words/terms and category coding. The responses reflect the results from 242 principal respondents.

The results of the qualitative coding reflected the Administrative Stress Index results which demonstrated the two highest categories of stressors, boundary-spanning and task-based. The number of times words were used that related to federal and state mandates of *No Child Left Behind* (NCLB), such as AYP, Testing, Student Achievement/Performance, and Expectations, along with the words describing financial inadequacies mirror the pressure principals are dealing with from external influences. The words used to describe task-based stressors of managerial and administrative responsibilities were used with extremely high frequency: time, paperwork, meetings, and reports.

Phrases used by respondents in Question #14 highlighted the perceived stressors related to boundary-spanning stress: “conflict between state authority and district authority,” “AYP is a constant worry,” “competing with other schools,” “news, media, governor,” “state and federal interference,” “pressure of making AYP,” “public perception,” “being compared to other schools in the newspaper,” “NCLB is becoming

more and more unrealistic with increasing academic targets to 100% by 2014,” “AYP is just so hard to achieve, and it consumes our lives.”

Table 3

Coding for Survey Question #14: What do you feel currently are the five highest stressors in your position?

Keywords	Frequency
Boundary-spanning Stress (stress from external influences)	
AYP	100
NCLB	37
Federal/State	32
Student Achievement	21
Testing /CRT	17
Mandates	10
Performance	7
Expectations	38
Community	18
Unrealistic Expectations	17
Public	10
Budget	43
Funding	31
Resources	14
Special Education	11
Budget Cuts	10
Money	7
*Staff	43
(Grouped by content)	
Task-Based (managerial or administrative)	
Time	114
Paperwork	52
Reports	41
Meetings	33
*Staff	81
Conflict-mediating (resolving differences)	
Parents	44
*Staff	19

*Staff was used in a variety of contexts across boundary-spanning, task-based, and conflict-mediating dimensions.

Question #15 on the survey also provided feedback to the question of the perceived stressors of the principalship. The question asked, “How does your job differ from your expectations of the position?” Responses were overwhelmingly geared toward the frustration that principals are expected to be instructional leaders in their buildings but the managerial and administrative responsibilities related to the current era of accountability is extremely time consuming. Of the 222 total written responses to this question, 60 referred directly to the principals’ expectations that their primary responsibility was as an instructional leader, but that increased paper work and required reports, most related to the current *No Child Left Behind* (NCLB) and Adequate Yearly Progress (AYP) requirements, consumed their days. The comments spoke to the layers of responsibility that have been compounded, not replaced.

The following comments illustrate the frustrations of the principals: “we are now managers, not instructional leaders due to the excessive state and federal reports,” “public scrutiny of everything I do is much greater than ever before.” “AYP expectations, political pressures,” “I spend a lot more time analyzing and crunching numbers,” “there is now only one focus...AYP, nothing else seems to matter,” “increased accountability and reports for both the district and state take away from instructional supervision and time in the classroom,” “the job has changed over the last 5 years – we used to be instructional leaders to improve classroom instruction, now we are data managers and all we care about is making AYP – no one seems to care if we make tremendous growth unless it affects AYP,” “it is difficult being a real instructional leader when managerial tasks take up so much of your time,” “NCLB made this job significantly more difficult,” “I did not expect the amount of paperwork that needs to be done since NCLB has been enacted,”

“too many unnecessary hurdles to overcome and hoops to jump through imposed upon us by the state and Federal Government,” “we are burdened by compliance documents, paperwork and managerial responsibilities that prevent administrators from becoming effective educational leaders.”

Research Question #2: What are the perceived differences in the intensity and types of principal stressors identified prior to and following the implementation of No Child Left Behind?

Question #17 on the survey addressed the research question of the perceived differences in stressors from the time prior to and following the implementation of *No Child Left Behind*. The open-ended question asked, “If you have been a principal for 8 years or more, what are the most significant ways in which your experiences and responsibilities have changed during that period?” There were 89 responses to this question. Of the 89 responses, 30 (34%) related to NCLB, and included the keywords: federal and state mandates, AYP, reports, accountability, data, testing/assessments, and paperwork. The data is presented in Table 4.

The following comments represented the changes principals have noticed since the implementation of NCLB: “much more pressure on state tests, AYP, and budget constraints,” “the role has gone from instructional leader to test coordinator and manager,” “the emphasis is no longer on the child but on data, data, data,” “it is the NCLB and more clinical approach and direction that education has gone,” “increased accountability for high achievement academically,” “more time spent on data, assessment and accountability,” “accountability has largely increased and along with it the amount of paperwork,” “more, more, more of everything, more responsibility, more accountability,

etc.,” “the principalship is becoming very clinical in regards to data and assessment and schools meeting standards, concentrating so much on the meets/approaches groups of students for testing purposes, this focus has changed the principalship through the years.” One principal’s statement summarizes many of the written responses concerning the changes to the position from the time NCLB was enacted to the present, “When I first became principal, the full wrath of NCLB had not yet been unleashed. While it certainly has had many positive outcomes, it has huge, hidden expenses and has created an incredible workload for administrators.”

Table 4

Frequency of Keywords in Question #17

Keywords	Frequency
Accountability	12
Data	12
Federal and State	11
Paperwork	11
Assessment/Test	9
AYP	8
NCLB	4
Technology	4
Reports	3

Research Question #3: What differences in perceived principal stressors are related to school and principal demographics?

Due to the focus of the study on the perceived stressors of the respondent principals, the highest stressors ($M > 3.00$) were selected for further analysis to determine if there were any significant differences between groups. For each demographic variable,

statistical tests were run on the highest seven items to compare means and determine levels of significance between stressor variables and school and principals' characteristics. T-tests were administered for items containing two groups and one-way ANOVAs were run for items containing three or more groups (Hinkle, Wiersma, & Jurs, 2003). Where levels of significance were identified ($p < .05$), post hoc tests, Tukey HSD for equal groups and Tamhane's T2 for unequal groups, were run to determine which groups were identified for effects (Hinkle, Wiersma, & Jurs, 2003). After identifying the stressor variables with significance levels of $p = < .05$ for each demographic, patterns were explored.

Using SPSS version 18.0, Cronbach's Alpha was run to ensure internal consistency of the top seven stressors. The alpha coefficients for the seven questions ranged from .76 to .80, with a total scale reliability of .81. Alphas in the .80s to .90s range demonstrate reliability (Gregory, 2000) supporting the reliability for the top stressors.

In order to reduce the complexity of the findings, only the stressor items that demonstrated significance ($p < .05$) with each demographic will be reported in the results.

Principals' Position (Elementary School, Middle School, High School)

As shown in Table 5, a significant effect was demonstrated in the perceived stressors between the grade levels that a principal governs (elementary, middle, high) and the Administrative Stress Index stressor item, "Publicly being compared to other schools," where $F(3, 252) = 2.978, p < .05$. The Tamhane's T2 statistical test for unequal groups identified significance between middle school principals where the mean was

considerably higher ($M = 3.50$, $SD = 1.26$) than high school principals ($M = 2.64$, $SD = 1.34$).

Table 5

Frequencies, Means, Standard Deviations, and Analysis of Variance for Position

Publicly being compared to other schools

	Total df	N	Mean	SD	F
Elementary	255	164	3.23	1.29	2.978*
Middle		44	3.50	1.26	
High		33	2.64	1.34	
Other Configurations		15	3.33	1.23	

* $p < .05$

Table 6

T-test, Frequencies, Means, Standard Deviations for Gender

Gender	Total df	N	Mean	SD	t
Feeling it is my responsibility if the school does not make Adequate Yearly Progress					
Men	254	106	3.7	1.22	-3.629*
Women		150	4.19	0.96	
Publicly being compared to other schools					
Men	254	106	2.96	1.32	-2.551*
Women		150	3.38	1.26	
Feeling that I have too heavy a workload, one that I can not possibly finish during the normal workday					
Men	254	106	2.92	1.20	-2.168*
Women		150	3.27	1.27	

* $p < .05$

Gender

In three of the seven highest stressor items, women perceived higher stress than men, “Feeling it is my responsibility if the school does not make Adequate Yearly Progress,” $t(254) = -3.629$, “Publicly being compared to other schools,” $t(254) = -2.551$, and “Feeling that I have too heavy a workload, one that I can not possibly finish during the normal work day,” $t(254) = -2.168$ (Table 6).

Hours Worked Weekly

There was a significant effect between the number of hours worked weekly and three stressor items, “Trying to complete reports and other paper work on time,” $F(2, 253) = 3.64$, $p < .05$ “Feeling that meetings take up too much time,” $F(2, 253) = 3.18$, $p < .05$ and “Feeling that I have too heavy a workload, one that I can not possibly finish during the normal workday” $F(2, 253) = 11.12$, $p < .05$. In the area of stress related to completing reports and other paperwork, the Tamhane’s T2 test for unequal groups showed significant interaction between those principals that worked 40 – 49 hours and those that worked 60 hours or more. In the stressor area of too heavy a workload, the Tamhane’s T2 test showed significant differences between all groups, 40 – 49 hours a week, 50 – 59 hours a week and 60 or more hours a week. As might be expected, principals working more hours, reported higher stress from administrative tasks of paperwork overload, too many meetings, and feeling that they have too heavy a workload (Table 7).

Years of Experience

Based on the analysis of variance (ANOVA), a significant effect was demonstrated for years of experience for stressor item, “Feeling that I have too heavy a workload, one that I can not possibly finish during the normal workday” $F(4, 251) = 2.883$, $p < .05$.

When the Tamhane's T2 test for unequal groups was administered for this item, all group interactions were $p > .05$, showing no statistical significance between paired groups.

When means for groups in homogeneous subsets were displayed using the harmonic mean sample size, 26.513, $p > .05$, Type 1 errors were not guaranteed. According to Glass, Peckham, & Sanders (1972), "When n's are unequal and variances are heterogeneous, the actual significance level may be greatly exceeded by the nominal significance levels when samples with smaller n's come from populations with smaller variances" (p. 245). As Table 8 shows, the group from 2-7 years of experience accounted for more than half of all the responses and had the highest levels of perceived stress.

Table 7

Frequencies, Means, Standard Deviations, and Analysis of Variance for Hours Worked Weekly

Hours	Total df	N	Mean	SD	F
Trying to Complete Reports and Other Paperwork on Time					
40 - 49 Hours	255	46	2.93	1.20	3.644*
50 - 59 Hours		147	3.37	1.10	
60 or more Hours		63	3.52	1.24	
Feeling meetings take up too much time					
40 - 49 Hours	255	46	2.78	1.22	3.185*
50 - 59 Hours		147	3.16	1.09	
60 or more Hours		63	3.33	1.17	
Feeling that I have too heavy a workload, one that I can not possibly finish during a normal workday					
40 - 49 Hours	255	46	2.49	1.02	11.121*
50 - 59 Hours		147	3.15	1.16	
60 or more Hours		63	3.56	1.41	

* $p < .05$

Table 8

Frequencies, Means, and Standard Deviations for Years of Experience

Number of Years	df	N	%	Mean	SD	F
Feeling that I have too heavy a workload, one that I can not possibly finish during a normal workday						
One Year	255	18	7	2.56	1.04	2.883*
2 - 7 Years		145	56	3.30	1.22	
8 - 13 Years		55	22	3.11	1.28	
14 - 19 Years		22	9	2.55	1.14	
20 or more Years		16	6	3.06	1.48	

*p<.05

*Level of Education, Enrollment, Type of Community, Title 1, No Child Left Behind**Designation*

The demographic categories of highest levels of education, enrollment, community (urban, suburban, rural), Title 1, and *No Child Left Behind* designations showed no significance ($p > .05$) for differences in any of the seven highest stressor items.

Age and Ethnicity

In the categories of respondents' age and ethnicity, at least one group had fewer than two cases with cell sizes too small to conduct meaningful ANOVA tests. According to Urdan (2001), "as a general rule, cells that have fewer than 10 cases are too small to include in ANOVAS, and cell sizes of at least 20 are preferable" (p.94).

Patterns

After analyzing all demographics for significance between groups for the top seven stressors, no clear patterns emerged across demographics. The only areas that had significance between groups on more than one stressor item were gender and hours

worked weekly. The stressor, “Feeling that I have too heavy a workload, one that I can not possibly finish during the normal workday,” had an effect in three areas: gender, hours worked weekly, and experience.

Research Question #4: Which perceived stressors may reflect conflicting paradigms between the current construct of our educational system and the expectations of leading school improvement in the globally interconnected and dynamic environment in which we live?

All four categories of stressors on the Administrative Stress Index (ASI) (boundary-spanning, task-based, role-based and conflict-mediating) may have an affect on the conflicting paradigms of the construct of education in the current era of accountability and the expectations that principals will lead our schools into 21st century in our globally connected society. Yet, the descriptions of the boundary-spanning and task-based items are most closely aligned with the outside influences affecting schools today.

The stressor item in the current study with the $M > 3.00$ and identified in Gmelch and Swent’s original ASI as boundary-spanning was, “Complying with state, federal, and organizational rules and policies” ($M = 3.15, SD = 1.24$). Additional stressor items added to the survey for this study in the boundary-spanning dimension scoring $M > 3.00$ were: “Feeling it is my responsibility if the school does not make Adequate Yearly Progress” ($M = 3.99, SD = 1.10$), and “Publicly being compared to other schools” ($M = 3.21, SD = 1.31$).

Task-based stressors with a $M > 3.00$ included: “Trying to complete reports and other paper work on time” ($M = 3.33, SD = 1.17$), “Imposing excessively high expectations on myself” ($M = 3.19, SD = 1.21$), “Feeling that meetings take up too much

time” ($M = 3.14$, $SD = 1.16$), and “Feeling that I have too heavy a workload, one that I can not possibly finish during the normal workday” ($M = 3.13$, $SD = 1.26$).

Open-ended survey responses strongly supported the highest stressor results ($M = > 3.00$) on the Administrative Stress Index in both the boundary-spanning and task-based categories. Throughout survey questions #14 - #17, principals described stressors related to the current era of the federally mandated *No Child Left Behind* (NCLB) legislation, limiting their ability to focus on the instructional leadership that is expected from their superiors and their communities in order to prepare students for the future.

Stressors related to the boundary-spanning federal and state mandates were represented in the responses as follows: “stress of chasing AYP in subgroups,” “complying with expectations from the state and local school district,” “much more pressure on state tests, AYP and budget constraints,” “much more time is spent on making AYP and testing,” “greater emphasis on achievement data for the core curriculum and improving those scores at the expense of other subjects and/or student interests.” “public scrutiny of everything I do is much greater than ever before,” “more focus on testing and data, less on what children really need to be rounded citizens.” “way more expectations for student/school performance imposed from the federal and state level,” “the rules set forth by government agencies often don’t reflect what can actually work in a school,” “too much time dealing with political correctness and not enough time spend on student achievement,” and “NCLB has created huge changes in accountability, demands for supervision, paperwork load, and personal responsibility to the school community.”

Comments related to task-based stress caused by management responsibilities and the overload of paperwork related to the federal and state mandates are described as follows: “more reports....constant pressure to complete paperwork rather than be in classes...they say be in the classroom but then they keep sending out the paperwork,” “what has changed is the ever increasing paperwork demands via legislative issues,” “more time spent on data, assessment, and accountability,” “more paper work and data collecting,” “accountability has largely increased and along with it the amount of paperwork,” “I wanted to be the instructional leader of the school but instead I spend too much time doing paperwork,” “I do not have the time to be the instructional leader,” “I spend a lot more time analyzing data and crunching numbers,” “I do much more paperwork and report writing now,” and to summarize, “new mandates are taxing on our time and impede our ability to be hands-on, instructional leaders.”

Survey question #16 asked participants to share metaphors that best represented the principalship today. The boundary-spanning and task-based stressors are exemplified throughout the metaphors. Although some of the responses were not true metaphors, there were 42 responses that included the task-based word “manager.”

When coded by theme, many of the responses fell into four themes with primarily task-based and boundary-spanning characteristics: circus references, Jacks, choreographers, and pawns. Metaphors denoting the circus, Jacks, and choreographer themes, revealed the task-based stress of principals managing the numerous responsibilities of the position. Circus metaphors included: magician, ball juggler, priority juggler, juggling acts, ringmaster, Bartholomew and the 500 Hats, a clown juggling china, keep all the plates spinning, mad hatter, firefighter, Gumby, hoop jumper,

and change artist. The Jacks theme numbered fifteen metaphors to Jack (or Jill) of all trades. The choreographer theme named metaphors, such as, orchestra director, coach, miracle worker, and architect. Pawn metaphors integrated the boundary-spanning stressors of federal and state mandates: district pawn, glorified testing coordinator, micromanager, personalities' manager, testing puppet, whipping boy/girl, whipping post, politician, agent of the district, data queen, data manager, paper manager, district vision implementer, accountability manager, and paper pusher. The following metaphor sums up the tone of the responses with a very visual image, "a feather merchant in a windstorm."

CHAPTER 5

DISCUSSION AND IMPLICATIONS

Discussion of Results

Principals are stressed! Is the stress a normal consequence of the position, or are there larger organizational pressures exacerbating the stressors? Stress, as defined by Lazarus (1995), is the transaction between the individual and the environment, perceived as challenging the individual's resources and posing potential harm or threat to their well being. The transactional stress created from the principals' interactions with their current work environment is evident in the findings of the study. Results illustrate that principals' highest perceived stressors are directly related to the current era of *No Child Left Behind* accountability reforms, reforms which reflect a Newtonian educational system that may no longer meet the needs of our complex, fast-paced, global networks of the 21st century (Morrison, 2002; Rettig, 2002; Snyder et al, 2008).

The results of this study concur with the research on the current reforms and principal stress. According to Mintrop & Sunderman (2009), the *No Child Left Behind* (NCLB) progressive sanctions-based accountability reform creates resentment, fear and negativity, and can be demoralizing to the educational stakeholders. The Center on Educational Policy's (2006) annual report surveyed educators in all 50 states and indicated that pressure on educators from *No Child Left Behind* led to high stress and low morale.

The highest perceived principal stressors reported in this study revealed the negative effects of *No Child Left Behind*, which included the principals feeling responsible for their schools not reaching the benchmarks for Adequate Yearly Progress (AYP), being publicly compared to other schools, and complying with state, federal, and organizational

rules and policies. These boundary-spanning stressors, created from external influences (Gmelch & Gates, 1998), were exemplified in both the quantitative data and qualitative comments of the principals. When asked about their highest stressors, principals most frequently used the terms, “AYP, NCLB, federal and state mandates, accountability, testing, and expectations/unrealistic expectations.”

With each new educational reform, new responsibilities have been layered on the existing ones (Portin & Williams, 1996), and based on the findings, *No Child Left Behind* is no exception. Highest perceived stressors in the task-based dimension of managerial and administrative responsibilities included too many meetings, completing reports and paperwork on time, and too heavy a workload. The principals’ most frequently used terms related to *No Child Left Behind* responsibilities including: time, meetings, reports, data, and paperwork.

The final task-based stressor in the highest stressor group, imposing excessively high expectations on myself, mirrored the literature which affirms that the pressures on school principals to meet the goals of the *No Child Left Behind* reforms can create unattainable challenges (Mintrop & Sunderman, 2009). These challenges can be demoralizing and may be contributing to the growing problem of nationwide shortages of qualified principal candidates and the retention of motivated principals (ERS, 2000; Hunt, 2008).

This study not only addressed the highest perceived stressors of principals in the current era of accountability, but also explored the premise that the current educational model, created for the industrial age, no longer meets the needs of the educational organization. The current model is creating extreme pressure on educational leaders who are caught between the limitations of the Newtonian machine model and what they

understand to be their primary responsibility of being effective instructional leaders in our dynamic, complex, technological society (Rettig, 2002; Wheatley, 2006). The Newtonian machine model is exemplified in the *No Child Left Behind* measurement driven reforms with graded benchmarks and associated sanctions for non-attainment. In the permanent structures of the bureaucratic Newtonian organization, school leaders' responsibilities have been to perform in efficient, predictable ways and creativity and innovation have been discouraged (Morrison, 2002; Rettig, 2002; Wheatley, 2006).

Study findings represent the conflicts principals are experiencing between complying within the current Newtonian educational model and the understanding that their primary responsibility is to be the dynamic instructional leaders in their schools. When asked about the ways their jobs differed from their expectations of the position, the emergent theme was overwhelmingly related to the frustrations that *No Child Left Behind* expectations and responsibilities did not provide time for them to do the job they considered the most important. As was summarized by one principal, "we are burdened by compliance documents, paperwork and managerial responsibilities that prevent administrators from becoming effective instructional leaders."

When asked about the changes principals have experienced in the principalship from the time prior to *No Child Left Behind* and the present, references to the federal and state mandates, the vast workload, the additional responsibilities, and the focus on data and accountability were predominant. Principals noted that the focus was no longer on the child but on the assessments and data. The collective voice of the principals was one of frustration and disillusionment in light of the reforms.

The Administrative Stress Index (ASI), which has served as an indicator of transactional stress (Gmelch & Chan, 1995), has been used to identify perceived principal stressors for over 25 years. Appendix VIII - Trends in ASI Stressors shows the trends of the highest stressors over a 20 year period. The highest stressors have changed from primarily task-based prior to *No Child Left Behind*, to the inclusion of boundary-spanning stress after the implementation. Appendix VIII supports the research which connects educational reform and principals' stress (Duke et al., 2003; Heinecke et al., 2003; Hunt, 2008). The findings from this study reflect the current trends with the highest stressors in both task-based and boundary-spanning dimensions.

This study explored the question of the possibility of the connections between the stressors principals are experiencing and the conflicting paradigms between the educational organization and the global community. Duffy and Chance (2007) noted that problems in school systems, considered to be complex open systems, often are influenced by the changes in the external environment. Paradigm shifts are necessary when dysfunction occurs and the organization can no longer respond effectively to problems created by the environment (Zohar, 1996). A paradigm shift has been occurring in the larger social system in which education is nested. Organizations outside of education have moved from Newtonian linear hierarchies, with an emphasis on segmentation, standardized procedures, and parts to whole problem solving, to the new science models of chaos and complexity with a focus on the interrelationships between people, communication, and the dynamic system (Crow, Hausman, & Scribner, 2001; Lewin & Regine, 2000; Snyder et al., 2007). New science organizations promote self-organizing systems, created through adaptation and growth; new science organizational leaders elicit

creativity and innovation and become facilitators of energetic networks (Lewin & Regine, 2000; Morrison, 2002; Porter-O'Grady & Malloch, 2007).

In the business arena, new science management models have made revolutionary changes, thriving on vibrant interactions of diverse networks of people working within flattened hierarchies. In these organizations, ongoing inquiry is expected, relationships and collaboration are valued, and global networks have become the norm (Murphy & Murphy, 2002; Porter-OGrady & Malloch, 2007; Lewin & Regine, 2000). As Hite (1999) states, "The view has shifted, from local to global perspectives and from Newtonian concentration on regularity and predictability to a quantum view of openness and potential" (p. 117).

Business leaders have begun to embrace new science concepts in response to the dynamic fast-paced technologically connected society (Baets, 2006; Lewin & Regine, 2000; Porter-O'Grady, 200; Wheatley, 2006), yet, school leaders are functioning amidst a universal paradigm shift where the larger system is moving toward a more fluid quantum perspective while the educational system is firmly immersed in the rationalistic Newtonian mindset (Morrison, 2002; Rettig, 2002; Snyder et al., 2008).

The isolated parts to whole mentality of the Newtonian organization is in direct contrast to the new science principles of chaos and complexity where the interactions of the components in the system create something that is more than the sum of its parts (Duffy & Chance, 2007; Lewin & Regine, 2000). Education has yet to recognize the paradigm shift and principals have become pawns caught between the two worlds. Metaphors are often used to represent the climate of the times. Study participants were asked to share metaphors they felt represented the principalship today. The emergent

themes of the metaphors reflected the principals' frustrations with the current Newtonian environment of *No Child Left Behind*. References to compliance responsibilities were exemplified by responses such as: data queen, whipping boy/girl, paper pusher, testing puppet, hoop jumper, and district pawn. References to the stress from layers of responsibilities included: Jack/Jill of all trades, Gumby, ringmaster, juggler, magician, orchestra director, coach and architect.

Across disciplines, new science theories have been adopted. Chaos theorists observed natural systems which had the ability to adapt to changing conditions and they noted that systems needed to change in order to survive (Gleick, 1987; Snyder et al., 2008). Prigogine (1993), a Nobel Prize winning chemist, explained that disequilibrium was necessary for systems to grow, giving up one form to create another. Mandelbrot (1990), a seminal mathematician, discovered that in natural systems each part contains the whole of the structure, and Kauffman (1995), an influential writer in the field of complexity, clarified that a system should be observed holistically through its dynamic relationship with the environment. Organizations that have adopted these new science principals have been able to adapt and grow with the fast-paced evolving external environment (Porter-O'Grady & Malloch, 2007). They have moved from machine-like institutions to fluid interrelated networks where leadership is shared and collaboration is key to problem solving and the creation of new ideas (Wheatley, 2006).

If principals are allowed to function within the new science organizational concepts, schools may emerge into complex adaptive systems, encouraging creativity and innovation from all stakeholders, and effectively preparing students for their future. Instead of being stressed by the overwhelming managerial tasks of the Newtonian

reforms, principals will be able to facilitate and stimulate change, promote a shared vision, and support staff and students as they engage in learning through dynamic networks (Lewin & Regine, 2000; Morrison, 2002, Rettig, 2002; Snyder et al., 2008).

In a new science school model, principals will become facilitators of self-organizing networks of staff and community members in a continuous mode of school improvement (Snyder et al., 2008). Schools will not be limited to classes within the walls of the building with scheduled periods and isolated classrooms, but instead will be expanded to the global learning community without the boundaries or the confines of the standardized Newtonian machine model (Snyder et.al, 2008). School leaders will be able to help their organizations adapt and respond to external influences as well as being able to influence the external environment (Morrison, 2002). Connected networks within the new science school model will enable shared vision and dynamic communication between stakeholders to shape the school community to meet the diverse needs of the learners (Morrison, 2002; Wheatley, 2006).

To conclude, study findings across a wide range of principal characteristics and school demographics demonstrate that *No Child Left Behind* reforms are consuming principals' time and energy with tasks that do not support the research for leading schools through positive school improvement in our global society (Fullan, 2001; Mintrop & Sunderman, 2009; Morrison, 2002). The educational system is currently trapped in the Newtonian paradigm, with its linear, mechanical processes and deterministic and reductionistic perspectives (Bohm, 1988; Rettig, 2002; Wheatley, 2006; Zohar, 1997). The highest perceived stressors related to boundary-spanning and task-based stress were primarily related to the emphasis on efficiency, segmentation and standardized

procedures of the Newtonian model. Principals are caught between the conflicting demands of the Newtonian style accountability system and the knowledge that they are responsible to move their schools forward to meet the needs of students in our globally interconnected society.

To practice effective instructional leadership in the 21st century, principals will need to break out of the status quo and engage their school communities in the dynamic networks of new science organizations, to embrace the possibilities and changes that will keep our students competitive and help them gain the skills they will need to be successful (Morrison, 2002; Rettig, 2002; Snyder et al., 2008).

Limitations of the Study

It should be noted that conclusions drawn from this research were limited to the study sample. Although principals may encounter similar stressors from state to state, it should not be assumed that the highest perceived stressors for public school principals in Nevada represent the stressors of principals in other states (Creswell, 2008; Wallen & Fraenkel, 2001).

For the purposes of this study, principal stressors were operationally defined through the Administrative Stress Index category descriptors. Care should be taken if this study is used to compare with other studies using other means to define stressors.

Survey data was collected from one point in time and due to various circumstances may have influenced the principals' responses (Creswell, 2008; Marshall & Rossman, 2006; Wallen & Fraenkel, 2001). The survey participants self-reported and therefore the responses only reflect the participants' perceptions (Marshall & Rossman, 2006). It was

assumed the survey participants interpreted each statement on the survey instrument as intended and answered honestly and accurately (Creswell, 2008; Marshall & Rossman, 2006).

All active principals in Nevada were invited to complete the survey, but the findings were based on those that choose to respond, therefore, a full complement of geographical locations and personal and professional demographics may not be represented (Creswell, 2008).

A final consideration is that response bias may have been a possibility if principals who perceived themselves to be under extreme pressure did not choose to take the time to complete the survey (Creswell, 2008).

Implications for Practice and Research

Study findings could have far reaching implications for educational practice and research in the areas of educational leadership, educational policy, and school reform in light of the growing concerns about shortages of qualified principal candidates and retention of motivated principals nationwide (ERS, 2000; Chirichello, 2000).

First, if the current system is not working efficiently, and school leaders are over stressed and frustrated by the system, new paradigms for how we conduct education may need to be examined (Lewin & Regine, 2000; Morrison, 2002; Snyder et al., 2007; Wheatley, 2006). Future research in the areas of changing paradigms and new science leadership would be required to pursue this endeavor.

Second, in order for principals to continue to be successful in leading our schools, an understanding of the relationships between principal stress, school reform, changing roles

and expectations, and leadership paradigms, is critical (Bredeson, 1993; Fullan, 2001; Porter-O'Grady & Malloch, 2007). Porter-O'Grady and Malloch (2007) noted that to understand their role in the quantum age, leaders must learn about new science principles and how they are relevant to their position. Fullan (2001) articulated that in order to be effective, school leaders must increase understanding of complexity science, explaining that schools as living organizations will thrive in the present culture of change when people are encouraged to be creative, to talk in terms of possibilities, and to create collaboratively. University and school district principal preparation and professional development programmers are encouraged to review their training curriculum and ensure this information is imbedded.

Third, this study focused on principals' perceived stressors, but did not address the coping skills and strategies principals utilize when stressed. Research on coping and stress relieving strategies could be included in principal preparation and ongoing professional development programs and classes could be offered for relaxation, exercise, and other stress relieving approaches (Metzger, 2006).

Fourth, the study demonstrated the extensive task-based stress related to paperwork, reports and meetings. This data could assist stakeholders in addressing ways to reduce the stress levels of principals by minimizing, sharing, or redirecting certain task-based responsibilities, allowing principals to focus on the most important areas of school leadership.

Lastly, the findings of this study will add to the body of research on principal stress with the additional focus on the impact of the current educational policies related to *No Child Left Behind*. Federal and state policy makers will be able to utilize the data to help

make informed decisions about policy revisions and future legislation.

If the principal's primary role in the 21st century is to facilitate instructional improvement within an ever-changing environment, leading from the new science will provide a fresh lens for school leaders working within self-organizing, creative social systems to emerge with networks of people collaborating, creating, adapting, and facilitating the types of learning students need for their future (Crow, Hausman, & Scribner, 2001; Lewin & Regine, 2000). Leading from a new science educational model may help reduce the task-based and boundary-spanning stress for school leaders who are currently trying to keep up with increasing layers of roles and responsibilities created by a Newtonian paradigm in the era of sanctions-based accountability.

This study demonstrated the high levels of principals' perceived stress related to the roles and responsibilities of *No Child Left Behind* reforms, and the perceived lack of time available to be an effective instructional leader. If the school principal is expected to be the instructional leader and change agent, and principals perceive themselves to be overstressed and unprepared to meet the new responsibilities and challenges, then it becomes more difficult to find people desiring to lead our schools, to keep us competitive in our global community, and to prepare our students for the future (Caldwell, Calnin, & Cahill, 2002; ERS, 2000; Maryland Task Force, 2000).

It is the researcher's hope that this study will provoke further inquiry into connections between principal shortages, administrator stress, and working within conflicting organizational paradigms from Newtonian to new science.

APPENDIX I

LETTER TO PARTICIPANTS

Dear Principal,

As a doctoral student in the Educational Leadership program at the University of Nevada, Las Vegas, I am writing to request your participation in a study on the stressors that principals are encountering in their jobs in light of the current accountability reforms. This study will add to the research on principal stress and hopefully will assist school districts and university preparation programs in addressing the needs of the principalship today.

In order for the research to be successful, I am asking for approximately 15 minutes of your time to complete the survey at the link below. The first part of the survey is a data sheet with demographic and school information. The second part includes a questionnaire that describes situations that may be stressful to administrators. You will rate these situations from “not applicable” to “frequently bothers me.” At the end of the section there are a couple of questions that will provide you with an opportunity to respond descriptively.

The study has been reviewed and approved by the University of Nevada, Las Vegas, Institutional Review Board (IRB). Your participation in this study is totally voluntary and your anonymity and the confidentiality of your responses are guaranteed. Submitting the completed survey indicates your understanding of the study and your willingness to participate.

Your participation in the study is much appreciated! I would be happy to send you the findings when the study is completed. You are welcome to email me at s-kresyman@cox.net if you have any questions about the study or would like the findings sent to you.

Thank you,

Shelley Kresyman
Doctoral Student
University of Nevada, Las Vegas

APPENDIX II

FOLLOW-UP LETTER TO PARTICIPANTS

Dear Principal,

This is a follow up letter to one sent last week. If you completed the principal survey discussed below, I thank you so much for assisting with the study. In case you wanted to complete the survey but have not yet been able to, for your convenience, I am resending the initial letter with the link to the survey below. Thank you so much for participating!

Original Letter:

As a doctoral student in the Educational Leadership program at the University of Nevada, Las Vegas, I am writing to request your participation in a study on the stressors principals are encountering in their jobs in light of the current accountability reforms. This study will add to the research on principal stress and hopefully will assist school districts and university preparation programs in addressing the needs of the principalship today.

In order for the research to be successful, I am asking for approximately 15 minutes of your time to complete the survey at the link below. The first part of the survey is a data sheet with demographic and school information. The second part includes a questionnaire that describes situations that may be stressful to administrators. You will rate these situations from “not applicable” to “frequently bothers me.” At the end of the section there are a couple of questions that will provide you with an opportunity to respond descriptively.

The study has been reviewed and approved by the University of Nevada, Las Vegas, Institutional Review Board (IRB). Your participation in this study is totally voluntary and your anonymity and the confidentiality of your responses are guaranteed. Submitting the completed survey indicates your understanding of the study and your willingness to participate.

Your participation in the study is much appreciated! I would be happy to send you the findings when the study is completed. You are welcome to email me at s-kresyman@cox.net if you have any questions about the study or would like the findings sent to you.

Thank you,

Shelley Kresyman
Doctoral Student
University of Nevada, Las Vegas

APPENDIX III

PERMISSION LETTER TO USE ADMINISTRATIVE STRESS INDEX

Message Monday, July 27, 2009 10:44:35 AM

From: "Walt Gmelch" <whgmelch@usfca.edu>
Subject: RE: Request for permission to use the ASI
To: Shelley Kresyman
Attachments: Attach0.html 11K

Dear Shelly:

I hereby grant you permission to use the ASI in your dissertation study. My only requests are that you send me a summary of your results and reflect the copyright (Walter H. Gmelch @ University of San Francisco). I do not have a current data base on the instrument at this time.

Best of luck,

Walt Gmelch

Walter H. Gmelch, Dean and Professor
School of Education
University of San Francisco
2130 Fulton Street
San Francisco, CA 94117
(415) 422-2108
[mailto:whgmelch@usfca.edu]whgmelch@usfca.edu

From: Shelley Kresyman [mailto:SKK414@interact.ccsd.net]
Sent: Sunday, July 26, 2009 9:25 AM
To: whgmelch@usfca.edu
Subject: Request for permission to use the ASI

Hello Dr. Gmelch,

Please see the attached request to use the Administrative Stress Index for my Doctoral Dissertation. Thank you, Shelley Kresyman

Shelley Kresyman, Principal
Garehime Elementary School
3850 N. Campbell Rd.
Las Vegas, NV 89129
(702) 799-6000
(702) 799-6012 (Fax)
[mailto:Shelley_Kresyman@interact.ccsd.net]Shelley_Kresyman@interact.ccsd.net

APPENDIX IV

PRINCIPAL STRESS SURVEY

Nevada Principal Stress (1)

Created: September 20, 2009, 12:04 PM

Last Modified: September 20, 2009, 12:04 PM

Principal Stress Survey 1

Part 1: Demographic Information

1. Position Title
 - Principal – Elementary
 - Principal – Middle Level
 - Principal – High School
 - Principal – Other Configuration

 2. What is your gender?
 - Male
 - Female

 3. What is your age?
 - 24 - 30
 - 31 - 40
 - 41 - 50
 - 51 - 60
 - 61 or older

 4. With which ethnic group would you identify yourself?
 - White
 - Black
 - Hispanic
 - American Indian/Alaskan Native
 - Asian/Pacific Islander
 - Other, please specify
-

5. Does your school have a unique program?
- No Unique School Program
 - Virtual/Online School
 - Magnet School
 - Charter School
 - Alternate/Behavioral School
 - Empowerment School
 - Career and Technical School
 - Other, please specify
-
6. How many students were enrolled in your school as of September 30, 2009?
- 0 - 300
 - 301 - 600
 - 601 - 900
 - 901 - 1200
 - 1201 - 1500
 - 1501 - 1800
 - 1801 - 2100
 - 2101 - 2400
 - 2401 - 2700
 - 2701 - 3000
 - 3001 or more
 - Other, please specify
-
7. How would you characterize the community served by your school?
- Urban
 - Suburban
 - Rural
 - Other, please specify
-
8. Does your school qualify for Title I funding (even if you are unfunded)?
- Yes
 - No

9. What was your school's No Child Left Behind designation for the 2008-2009 year?
- Exemplary
 - High Achieving
 - Adequate Yearly Progress
 - Hold
 - Watch
 - Needs Improvement Year 1
 - Needs Improvement Year 2
 - Needs Improvement Year 3
 - Needs Improvement Year 4
 - Needs Improvement Year 5 or more
10. What is the highest degree you have earned?
- Bachelor's
 - Master's
 - Educational Specialist
 - Doctorate
 - Other, please specify
-
11. How many years have you been a principal, including this year?
- One year
 - 2 - 4 years
 - 5 - 7 years
 - 8 - 10 years
 - 11 - 13 years
 - 14 - 16 years
 - 17 - 19 years
 - 20 - 22 years
 - 23 - 25 years
 - 26 or more years

12. On the average, how many hours a week do you work at your job as a principal?
- 40 - 44
 - 45 - 49
 - 50 - 54
 - 55 - 59
 - 60 - 64
 - 65 or more

Part 2: Principal Stress

13. School administrators have identified the following work situations as sources of job-related stress. It is possible that some of these situations bother you more than others. Please rate each item on a scale from 1 - 5, with 5 being the situations which bother you most frequently. (Items 1 - 35 are part of the Administrative Stress Index, copyrighted by Walter H. Gmelch at the University of San Francisco)

		Never Bothers Me	Rarely Bothers Me	Occasionally Bothers Me	Often Bothers Me	Frequently Bothers Me	N/A
1	Being interrupted frequently by telephone calls	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	Supervising and coordinating the tasks of many people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	Feeling staff members don't understand my goals and expectations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	Feeling that I am not fully qualified to handle my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	Knowing I can't get information needed to carry out my job properly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	Thinking that I will not be able to satisfy the conflicting demands of those who have authority over me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	Trying to resolve differences between/among students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	Feeling not enough is expected of me by my superiors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9	Having my work frequently interrupted by staff members who want to talk	0	0	0	0	0	0
10	Imposing excessively high expectations on myself	0	0	0	0	0	0
11	Feeling pressure for better job performance over and above what I think is reasonable	0	0	0	0	0	0
12	Writing letters, memos, and other communications	0	0	0	0	0	0
13	Trying to resolve differences with my superiors	0	0	0	0	0	0
14	Speaking in front of groups	0	0	0	0	0	0
15	Attempting to meet social expectations (housing, clubs, friends, etc.)	0	0	0	0	0	0
16	Not knowing what my supervisor thinks of me, or how he/she evaluates my performance	0	0	0	0	0	0
17	Having to make decisions that affect the lives of individual people that I know (colleagues, staff members, students, etc.)	0	0	0	0	0	0
18	Feeling I have to participate in school activities outside of the normal working hours at the expense of my personal time	0	0	0	0	0	0
19	Feeling that I have too much responsibility delegated to me by my supervisor	0	0	0	0	0	0
20	Trying to resolve parent/school conflicts	0	0	0	0	0	0
21	Preparing and allocating budget resources	0	0	0	0	0	0
22	Feeling that I have too little authority to carry out responsibilities assigned to me	0	0	0	0	0	0
23	Handling student discipline problems	0	0	0	0	0	0

24	Being involved in the collective bargaining process	0	0	0	0	0	0
25	Evaluating staff members' performance	0	0	0	0	0	0
26	Feeling that I have too heavy a workload, one that I cannot possibly finish during the normal workday	0	0	0	0	0	0
27	Complying with state, federal, and organizational rules and policies	0	0	0	0	0	0
28	Feeling that my progress on the job is not what it should or could be	0	0	0	0	0	0
29	Administering the negotiated contract (grievances, interpretations, etc.)	0	0	0	0	0	0
30	Being unclear on just what the scope and responsibilities of my job are	0	0	0	0	0	0
31	Feeling that meetings take up too much time	0	0	0	0	0	0
32	Trying to complete reports and other paperwork on time	0	0	0	0	0	0
33	Trying to resolve differences between/among staff members	0	0	0	0	0	0
34	Trying to influence my immediate supervisors' actions and decisions that affect me	0	0	0	0	0	0
35	Trying to gain public approval and/or financial support for school programs	0	0	0	0	0	0
36	Feeling it is my responsibility if the school does not make Adequate Yearly Progress (AYP)	0	0	0	0	0	0
37	Publicly being compared to other schools	0	0	0	0	0	0

38 Possessing the instructional leadership skills necessary to raise student achievement O O O O O O

14. What do you feel are currently the five highest stressors in your position?
1. _____
2. _____
3. _____
4. _____
5. _____

15. How does your job differ from your expectations of the position?

16. In the past, metaphors have been used to represent the role of the principal, for example, “bureaucratic executive, values broker, and scientific manager.” What metaphor(s) do you believe best exemplify the principalship today?

17. If you have been a principal for 8 years or more, what are the most significant ways in which your experiences and responsibilities have changed during that period?

18. If you are willing to answer a couple of follow-up questions through email, please complete the information below.
Name: _____
Email: _____

Thank you so much for taking the time out of you busy day to respond to the survey!

APPENDIX V

FREQUENCIES AND PERCENTAGES OF PRINCIPAL AND

SCHOOL DEMOGRAPHICS

Demographic	Frequency	Percent
Position		
Elementary School Principal	164	64.1
Middle School Principal	44	17.2
High School Principal	33	12.9
Other Configuration	15	5.9
Gender		
Male	106	41.4
Female	150	58.6
Age		
24-30 years	1	.4
31-40 years	47	18.4
41-50 years	89	34.8
51-60 years	92	35.9
61 or more years	27	10.5
Ethnicity		
American Indian/ Alaskan Native	4	1.6
Asian/Pacific Islander	6	2.3
Black	8	3.1
Hispanic	9	3.5
White	228	89.1
Other	1	.4
Highest Degree Earned		
Bachelors	0	0
Masters	191	74.6
Educational Specialist	20	7.8
Doctorate	38	14.8
Other	7	2.7
Years of Experience		
1 year	18	7.0
2-7 years	145	56.6
8-13 years	55	21.5
14-19 years	22	8.6
20 or more years	16	6.3

Hours Worked Weekly		
40-49 hours	46	18.0
50-59 hours	147	57.4
60 or more hours	63	24.6
Enrollment		
0-600	89	34.8
601-1200	123	48.0
1201-1800	30	11.7
1801 or more	14	5.5
Community		
Urban	127	49.6
Suburban	74	28.9
Rural	47	18.4
Other	8	3.1
Title 1		
Yes	111	43.4
No	145	56.6
NCLB Designation		
Exemplary	2	.8
High Achieving	8	3.1
Adequate Yearly Progress	112	43.8
Hold	16	6.3
Watch	38	14.8
Needs Improvement Year 1 (NI1)	22	8.6
NI2	9	3.5
NI3	14	5.5
NI4	17	6.6
NI5 or more	18	7.0

APPENDIX VI

ADMINISTRATIVE STRESS INDEX MEANS AND STANDARD DEVIATIONS IN
RANKED ORDER FROM HIGHEST STRESSOR TO LOWEST STRESSOR

Stressor	Mean*	Standard Deviation
Feeling it is my responsibility if the school does not make Adequate Yearly Progress	3.99	1.10
Trying to complete reports and other paperwork on time	3.33	1.16
Publicly being compared to other schools	3.21	1.30
Imposing excessively high expectations on myself	3.19	1.20
Complying with state, federal, and organizational rules and policies	3.15	1.23
Feeling that meetings take up too much time	3.14	1.15
Feeling that I have too heavy a workload , one that I can not possibly finish during the normal workday	3.13	1.25
Having to make decisions that affect the lives of individual people that I know (colleagues, staff members, students, etc.)	2.88	1.07
Trying to resolve parent/school conflicts	2.84	1.05
Feeling pressure for better job performance over and above what I think is reasonable	2.83	1.21
Feeling staff members don't understand my goals and expectations	2.77	1.03
Feeling that my progress on the job is not what it should or could be	2.72	1.10

Feeling I have to participate in school activities outside of the normal working hours at the expense of my personal time	2.64	1.17
Being interrupted frequently by telephone calls	2.63	0.76
Thinking that I will not be able to satisfy the conflicting demands of those who have authority over me	2.62	1.15
Trying to gain public approval and/or financial support for school programs	2.61	1.18
Trying to resolve differences between/among staff members	2.59	1.07
Knowing I can't get information needed to carry out my job properly	2.54	1.14
Writing letters, memos, and other communications	2.52	0.99
Having my work frequently interrupted by staff members who want to talk	2.52	1.05
Evaluating staff members' performance	2.49	1.01
Possessing the instructional leadership skills necessary to raise student achievement	2.47	1.17
Attempting to meet social expectations (housing, clubs, friends, etc.)	2.47	1.10
Preparing and allocating budget resources	2.45	1.03
Feeling that I have too little authority to carry out responsibilities assigned to me	2.42	1.15
Supervising and coordinating the tasks of many people	2.41	0.92
Administering the negotiated contract (grievances, interpretations, etc.)	2.36	1.10

Not knowing what my supervisor thinks of me, or how he/she evaluates my performance	2.23	1.18
Feeling that I have too much responsibility delegated to me by my supervisor	2.18	1.12
Handling student discipline problems	2.14	0.94
Trying to resolve differences between/among students	2.04	0.91
Trying to influence my immediate supervisors' actions and decisions that affect me	2.03	1.02
Speaking in front of groups	1.84	0.97
Feeling that I am not fully qualified to handle my job	1.84	0.90
Being unclear on just what the scope and responsibilities of my job are	1.80	0.91
Being involved in the collective bargaining process	1.76	0.98
Trying to resolve differences with my superiors	1.74	0.95
Feeling not enough is expected of me by my superiors	1.51	0.78

*All scores had a minimum of 1 and a maximum of 5

APPENDIX VII

ADMINISTRATIVE STRESS INDEX FOUR DIMENSIONS OF STRESS WITH ORIGINAL 25 CLUSTERED ITEMS

Dimension 1: Task-based

1. Being interrupted frequently by telephone calls
2. Supervising and coordinating the tasks of many people
3. Having my work frequently interrupted by staff members who want to talk
4. Imposing excessively high expectations on myself
5. Writing letters, memos, and other communications
6. Feeling I have to participate in school activities outside of the normal working hours at the expense of my personal time
7. Feeling that I have too much responsibility delegated to me by my supervisor
8. Feeling that I have too heavy a workload , one that I can not possibly finish during the normal workday
9. Feeling that meetings take up too much time
10. Trying to complete reports and other paperwork on time

Dimension 2: Boundary-spanning

11. Preparing and allocating budget resources
12. Being involved in the collective bargaining process
13. Complying with state, federal, and organizational rules and policies
14. Administering the negotiated contract (grievances, interpretations, etc.)
15. Trying to gain public approval and/or financial support for school programs

Dimension 3: Conflict-Mediating

16. Trying to resolve differences between/among students
17. Trying to resolve parent/school conflicts
18. Handling student discipline problems

Dimension 4: Role-based

19. Knowing I can't get information needed to carry out my job properly
20. Thinking that I will not be able to satisfy the conflicting demands of those who have authority over me
21. Trying to resolve differences with my superiors
22. Not knowing what my supervisor thinks of me, or how he/she evaluates my performance
23. Feeling that I have too little authority to carry out responsibilities assigned to me
24. Being unclear on just what the scope and responsibilities of my job are
25. Trying to influence my immediate supervisors' actions and decisions that affect me

(Koch et al., 1982)

APPENDIX VIII

TRENDS IN ADMINISTRATIVE STRESS INDEX (ASI) STRESSORS FROM THE PERIOD PRECEDING AND FOLLOWING NO CHILD LEFT BEHIND IMPLEMENTATION

Researcher Name	Year	Administrators' Position and School Locations	ASI highest stress dimensions (based on top three stressor items)
William and Campbell	1987	400 Secondary Principals in TX	Task-based
Cooper	1988	212 Secondary Principals	Task-based
Allison	1995	643 in Canada	Task-based
Czernaikowski	1995	91 Elementary Principals in PA	Task-based
Atwood	1997	236 High School Principals in CA	Task-based
Richardson	1998	109 Superintendents in CT	Task-based
Kilgore	1999	295 Principals in TN	Role-based
Shumate	2000	221 High School Principals	Task-based
Ryan	2001	1,156 Secondary Principals in MA	Task-based Boundary-spanning
Weber-Sorice	2002	116 Principals in FL	Task-based Boundary-spanning
Halling	2003	221 Principals in SD	Boundary-spanning Task-based
Bradley	2004	130 Principals in MS	Role-based
Welters	2005	300 Principals in NC	Task-based Boundary-spanning
Clash	2006	195 Elementary Principals in VA	Task-based Boundary-spanning
Redfox	2006	Elementary Principals in CA	Task-based Boundary-spanning
Monroe	2007	55 High School Principals in AZ	Boundary-spanning Task-based
Buss	2008	109 Female Middle Level Principals in CA	Role-based Task-based

Allison, 1995; Atwood, 1997; Bradley, 2004; Buss, 2008; Czernaikowski, 1995; Clash, 2006; Cooper, 1988; Halling, 2003; Kilgore, 1999; Monroe, 2007; Redfox, 2006; Richardson, 1998; Ryan, 2001; Shumate, 2000; Weber-Sorice, 2002; Welters, 2005; Williamson & Campbell, 1987

BIBLIOGRAPHY

- Aldwin, C. M. (1994). *Stress, coping, and development: An integrative perspective*. New York: The Guilford Press.
- Allison, D. G. (1997). Coping with stress in the principalship. *Journal of Educational Administration*, 35(1), 39-55.
- American Heritage College Dictionary*. (2002). New York: Houghton-Mifflin.
- American Institute of Stress. (2009). *Stress, definition of stress, stressor, what is stress?*
Retrieved from www.stress.org/topic-definition-stress.htm
- American Psychological Association. (2008). *Stress in America*. Retrieved on May 8, 2009 from www.apahelpcenter.org.
- Atwood, W. S. (1997). Stress among high school principals in California high schools. *Dissertation Abstracts International*, 58(1), 0035, (UMI 9720179).
- Baets, W. (2006). *Complexity, learning, and organizations: A quantum interpretation of business*. New York: Routledge.
- Beck, L., & Murphy, J. (1993). *Understanding the principalship: A metaphorical analysis from 1920-1990*. New York: Teachers College Press.
- Bedrosian, K. (2004, April 29). *An oral history with Kenneth Bedrosian*. Oral History of the Public School Principalship, 490, [Interview Transcript]. Retrieved from the University of Nevada, Lied Library website:
<http://library.unlv.edu/faculty/research/principalship>.

- Bertalanffy, L. von. (1950). An outline of general system theory. *British Journal for the Philosophy of Science*, 1(2), pp. 134-165. Retrieved on July 12, 2009 from <http://www.jstor.org.ezproxy.library.unlv.edu/stable/685808?seq=1>
- Bertalanffy, L. von. (1976). *General systems theory: Foundations, developments, application* (Rev. ed.). New York: George Braziller.
- Bertalanffy Center for the Study of Systems Science (2009). *General systems theory*. Retrieved July 12, 2009 from http://www.bertalanffy.org/c_8.html
- Biddle, B. J. (1979). *Role theory: Expectations, identities, and behaviors*. New York: Academic Press.
- Bohm, D. (1988). *Wholeness and the implicate order*. New York; Routledge.
- Boyd, W. L. (1992). The power of paradigms: Reconceptualizing educational policy and management. *Educational Administration Quarterly*, 28(4), 504-528.
- Bradley, W. L. (2004). A study of the stress-related behaviors of elementary and secondary school administrators in the southern region of Mississippi. *Dissertation Abstracts International*, 64(9), 3142 (UMI 3103644).
- Bredeson, P. V. (1993). Letting go of outlived professional identities: A study of role transition and role strain for principals in restructured schools. *Educational Administration Quarterly*, 29(34), 34-68.
- Brief, A. P., & George, J. M. (1995). Psychological stress and the workplace: A brief comment on Lazarus' outlook. In R. Crandall & P. L. Perrewe (Eds.), *Occupational Stress: A handbook* (pp. 21-28). Washington, DC: Taylor & Francis.

- Buchen, I. H. (2004). *The future of the American school system*. Lanham, MA: Scarecrow Education.
- Buss, R. (2008). Administrative stress and coping preferences among female middle school principals of California and Los Angeles, Orange, and San Bernardino counties. *Dissertation Abstracts International*, 69 (07). (UMI No. 3322838).
- Caldwell, B. J., Calnin, G. T., & Cahill, W. P. (2002). Mission possible? An international analysis of training for principals. In M. S. Tucker & J. B. Coddling, *The principal challenge: leading and managing schools in an era of accountability* (pp. 203-243). San Francisco, CA: Josie Bass.
- Cannon, B. 1994. Walter Bradford Cannon: Reflections on the man and his contributions. *International Journal of Stress Management*, 1(2), 145-158.
- Center on Education Policy Center on Education Policy. (2006, March). *From the Capital to the Classroom: Year 4 of the No Child Left Behind Act*. Retrieved on July 26, 2009 from <http://www.cepdc.org/index.cfm?fuseaction=Feature.showFeature&CategoryID=22&FeatureID=7&noheader=1>.
- Chirichello, M. (2003). Reinventing the principalship: From centrist to collective leadership. In F. C. Lunenburg & C. S. Carr, *Shaping the future* (pp.355-376). Lanham, MD: Scarecrow Education.
- Cilliers, P. (1998). *Complexity & postmodernism: understanding complex systems*. New York: Routledge.
- Clash, G. S. (2006). Perceived levels of elementary principals' stress in relationship to responsibilities and demographics. *Dissertation Abstracts International*, 66 (12), 4249A. (UMI No. 3199636)

- Cooley, V., & Shen, J. (2003). School accountability and Professional job responsibilities: A perspective from secondary principals. *NASSP Bulletin*, 87(634), 10-25.
- Cooper, L. (1988). Stress coping preferences of principals. *NASSP Bulletin*, 72, 85-87.
- Council of Chief State School Officers. (2007). *Educational leadership policy standards: ISLLC 2008*. Retrieved on June 24, 2009, from www.ccsso.org/content/pdfs/elps_isllc2008.pdf
- Council of Chief State School Officers. (2007). *Interstate School Leaders Licensure Consortium: Standards for all leaders*. Retrieved on June 24, 2009, from <http://www.ccsso.org/content/pdfs/isllcstd.pdf>
- Creswell, J. W. (2008). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Upper Saddle River, NJ: Pearson.
- Crow, G. M., Hausman, C. S., & Scribner, J. P. (2002). Reshaping the role of the school principal. In J. Murphy's, *The Educational leadership challenge: redefining leadership for the 21st century* (pp. 189-210). Chicago, IL: University of Chicago Press.
- Czerniakowski, J. J. (1995). Stress, burnout, and coping strategies among elementary school principals in Pennsylvania. *Dissertation Abstracts International*, 56/12. (UMI No. 9612718)
- Daly, A. J. (2009). Rigid response in an age of accountability: The potential of leadership and trust. *Educational Administration Quarterly*, 45, 168-216.
- Delisio, E. R. (2008). It's time to reinvent the principalship. *Education World*. Retrieved from www.education-world.com/a_admin/admin/admin452.shtml.

- DiPaola, M., & Tschannen-Moran, M. (2003). The principalship at a crossroads: A study of the conditions and concerns of principals. *NASSP Bulletin*, 87(634), 43-65.
- DuFour, R., & Eaker, R. (1992). *Creating the new American school: A principal's guide to school improvement*. Bloomington, IN: National Educational Service.
- Duffy, F., & Chance, P. (2007). *Strategic communication during whole system change*. Lanham, MD: Rowman & Littlefield Education.
- Duke, D.L., Grogan, M., Tucker, P.D., & Heinecke, W.F. (2003). *Educational leadership in an age of accountability*. NY: State University of New York Press.
- Educational Research Service. (2000). *The principal, keystone of a high-achieving school: Attracting and keeping the leaders we need*. Arlington, VA: National Association of Elementary School Principal and National Association of Secondary School Principals.
- Edwards, Jeffrey, R., Caplan, R. D., & Van Harrison, R. (1998). Person-environment fit theory: Conceptual foundations, empirical evidence, and directions for future research. In C. L Cooper's (Ed.), *Theories of organizational stress* (pp. 28-41). NY: Oxford University Press.
- Farlex Online@ <http://www.thefreedictionary.com/STRESS>
- Fraenkel, J., & Wallen, N. (1999). *How to design and evaluate research in education*, (4th ed.), New York: McGraw-Hill.
- Fullan, M. (2000). *The role of the principal in school reform*. Retrieved on April 16, 2009 from http://www.michaelfullan.ca/Articles_00/11_00.htm
- Fullan, M. (2001). *Leading in a culture of change*. San Francisco, CA: Jossey-Bass.

- Getzels, J. W., & Guba, E. G. (1957). Social Behavior and the Administrative Process. *The School Review*, 65(4), 423-441.
- Glass, G., Peckham, P., & Sanders, J. (1972, Summer). Consequences of failure to meet assumptions underlying the fixed effects analyses of variance and covariance. *Review of Educational Research*, 42(3), 237-288.
- Gleick, J. (1987). *Chaos: Making a new science*. London: Sphere Books Ltd.
- Gmelch, W. H. & Chan, W. (1995). Administrator stress and coping effectiveness: Implications for administrator evaluation and development. *Journal of Personnel Evaluation in Education*, 9(3), 275-285.
- Gmelch, W. H., & Gates, G. (1998). The impact of personal, professional, and organizational characteristics on administrator burnout. *Journal of Educational Administration*, 36(2), 146-159.
- Gmelch, W. H., & Swent, B. (1984). Management team stressors and their impact on administrators' health. *The Journal of Educational Administration*, 22 (2), 192-205.
- Gmelch, W. H., & Swent, B. (1981). Stress and the principalship: strategies for self-improvement and growth. *NASSP Bulletin*, 65(449) , 16-19.
- Goldring, E., & Greenfield, W. (2002). Understanding the evolving concept of leadership in education: Roles, expectations, and dilemmas. In J. Murphy (Ed.), *The Educational leadership challenge: redefining leadership for the 21st century* (pp. 1-19). Chicago, IL: University of Chicago Press.

- Gooch, H. P. (2002). Human resource capitalization: The impact of Florida school principals' time on task on principal retention. *Dissertation Abstracts International*, 63 (05), 1643A. (UMI No. 3054593)
- Gray, J. (2003, April 4). *An oral history with Joan M. Gray*. Oral History of the Public School Principalship, 459, [Interview Transcript]. Retrieved from the University of Nevada, Lied Library website:
<http://library.unlv.edu/faculty/research/principalship>.
- Gregory, R.J. (2000). *Psychological testing, history, principles, and applications* (3rd ed.). MA: Allyn & Bacon.
- Griffith, J. (2004). *Ineffective schools as organizational reactions to stress*. *Social Psychology of Education*, 7, 257-287.
- Gross, C.G. 1998. Claude Bernard and the Constancy of the Internal Environment, *The Neuroscientist*, 4(5), 380-385.
- Grubb, N.W., & Flessa, J. J. (2006). A job too big for one: Multiple principals and other nontraditional approaches to school leadership. *Educational Administration Quarterly*, 42(4), 518-550.
- Halling, M. A. (2003). Stress and stress management strategies among elementary school principals. *Dissertation Abstracts International* 64 (08), 2721A. (UMI No. 3100596)
- Hallinger, P., & Heck, R. (2000). *Exploring the principal's contribution to school effectiveness, 1980-1995*. Washington, D.C.: Institute for Educational Leadership.

- Hallinger, P., Murphy, J. & Hausman, C. (1992). Restructuring schools: Principal's perceptions of fundamental education reform. *Educational Administration Quarterly*, 28(3), 330-349.
- Hansen, P. G. (2009). Quote retrieved from http://www.finestquotes.com/select_quote-category-Stress-page-0.htm.
- Harris, J. R. (1995). An examination of the transaction approach in occupational stress research. In R. Crandall & P. L. Perrewe (Eds.), *Occupational Stress: A handbook* (pp. 21-28). Washington, DC: Taylor & Francis.
- Heifetz, R., Grashow, A., & Linsky, M. (2009). *The practice of adaptive leadership: Tools and tactics for changing your organization and the world*. Boston, MA: Harvard Business Press.
- Heinecke, W. F., Curry-Corcoran, D., & Moon, T. R. (2003). U.S. schools and the new standards and accountability initiative. In Duke, D., Grogan, M. Tucker, P.D., & Heinecke (Eds.), W.F., *Educational leadership in an age of accountability: The Virginia experience* (pp. 7-35). New York: State University of New York Press.
- Hertert, L. (1996). Systemic School Reform in the 1990s: A local perspective. *Educational Policy*, 10(3), 379-398.
- Hill, P. (2002). What principals need to know about teaching and learning. In M. S. Tucker & J. B. Coddling (Eds.), *The principal challenge: leading and managing schools in an era of accountability* (pp. 43-76). San Francisco, CA: Josie Bass.
- Hinkle, D., Wiersma, W., & Jurs, S. G. (2003). *Applied statistics for the behavioral sciences*. New York: Houghton Mifflin.

- Hite, J. (1999). *Learning in chaos: Improving human performance in today's fast-changing, volatile organizations*. Houston, TX: Gulf Publishing.
- Holmes, T., & Rahe, R. (1967). The social readjustment rating scale. *Journal of Psychosomatic Research*, 12, 213-233.
- Holte, J. (1993). *Chaos: The new science*. Saint Peter, MN: University Press of America.
- Humphrey, J. H. (2005). *Women and stress research*. New York: Novinka Books.
- Hunt, J. (2008). A nation at risk and *no child left behind*: Deja vu for administrator? *Phi Delta Kappan*, 89(8), 580-589.
- Indik, B., Seashore, S.E., & Slesinger, J. (1964). Demographic correlates of psychological strain. *Journal of Abnormal and Social Psychology*, 69, 26-38.
- Institute for Educational Leadership. (2000). *Leadership for student learning: Reinventing the principalship*. Washington, DC: Author.
- Institute of Educational Leadership. (2000). *Leadership for student learning: Reinventing the principalship. A report of the task force on the principalship*. Washington, DC: Author.
- Kaestle, C. F. (1983). *Pillars of the republic: Common schools and American society 1780-1860*. New York: Hill and Wang.
- Kauffman, S. (1995). *At home in the universe: The search for the laws of self-organization and complexity*. New York: Oxford University Press.
- Katz, M.H. (2006). *Study design and statistical analysis: A practical guide for clinicians*. MA: Cambridge University Press.

- Kelley, C., & Peterson, K. D. (2002). The work of principals and their preparation addressing critical needs for the twenty-first century. In M. S. Tucker & J. B. Coddling (Eds.), *The principal challenge: leading and managing schools in an era of accountability* (pp. 247-312). San Francisco, CA: Josie Bass.
- Kiel, L. D. (1994). *Managing chaos and complexity in government*. San Francisco, CA: Jossey-Bass.
- Kilgore, L. G. (1999). The relationship between school principals' perceived levels of stress and selected demographic variables. *Dissertation Abstracts International*, 60(6), 1849 (UMI 9935697).
- Killoran, M. (2009) Quote retrieved from http://www.finestquotes.com/select_quote-category-Stress-page-0.htm
- Kinley, K. (2007, December 13). *An oral history with Kathleen Kinley*. Oral History of the Public School Principalship, 551, [Interview transcript]. Retrieved from University of Nevada, Las Vegas, Lied Library website: <http://library.unlv.edu/faculty/research/principalship>.
- Koch, J. L., Tung, R., Gmelch, W., & Swent, B. (1982). Job stress among school administrators: Factorial dimensions and differential effects. *Journal of Applied Psychology*, 67(4), 493-499.
- Kuhn, T. S. (1996). *The Structure of Scientific Revolutions*. Chicago, IL. University of Chicago Press.
- Lambert, R., & McCarthy, C. (2006). *Understanding teacher stress in an age of accountability*. Greenwich, CT: Information Age Publishing.

- Lapan, M. T., & Houghton, R. W. (2003). *Education on the brink: Reform reconsidered*. New York: Nova Science Publishers.
- Lazarus, R. S. (1966). *Psychological stress and the coping process*. New York: McGraw-Hill.
- Lazarus, R. S. (1995). Psychological stress in the workplace. In R. C. Crandall & P. L. Perrewe, *Occupational Stress* (pp. 3 -14). Washington, DC: Taylor & Francis.
- Lazarus, R. S., & Folkman, S. (1984, 1996). *Stress, appraisal, and coping* (9th ed.). New York: Springer.
- Leavitt, C. L. (2002, October 28). *An oral history with Carol L. Leavitt/Interviewer: Nathan Miller*. Oral History of the Public School Principalsip, 452, [Interview Transcript]. Retrieved from the University of Nevada, Lied Library website: <http://library.unlv.edu/faculty/research/principalsip>.
- Leithwood, K., & Duke, D. L. (1999). A century's question to understand school leadership. In J. Murphy and K. S. Louis (Eds.), *Handbook of research on educational administration*. San Francisco: Jossey-Bass.
- Leithwood, K., Seashore-Louis, K., Anderson, S., & Wahlstrom, K. (2004). *How leadership influences student learning: Learning from the leadership project*. The Wallace Foundation.
- Lewin, K. (1936). *Principles of topological psychology*. New York: McGraw-Hill.
- Lewin, R. (1992). *Complexity*. New York: Macmillan Publishing.
- Lewin, R., & Regine, B. (2000). *The soul at work: Listen, respond, let go*. New York: Simon & Schuster.

- Livingston, L. P., Nelson, D. L., & Barr, S. H. (1997). Person-environment fit and creativity: An examination of supply-value and demand-ability versions of fit. *Journal of Management*, March-April 1997. Retrieved on June 13, 2009, from http://findarticles.com/p/articles/mi_m4256/is_n2_v23/ai_19498951/
- Lovallo, W. (2005). *Stress and health: biological and psychological interactions*. Thousand Oaks, CA: SAGE Publications.
- Lyon, B. L. (2000). Theories of stress and relationship to health. In V. H. Rice, *Handbook of stress, coping, and health* (pp. 27-46). Thousand Oaks, CA: Sage Publications.
- Mace-Matluck, B. (1987). The effective schools movement: Its history and context. [Monograph]. *Southwest Educational Development Laboratory*.
- McCoy, S.D. (2001, November 27). *An oral history with Stephen D. McCoy/Interviewer: Hope Vigil-Delgado*. Oral History of the Public School Principalship, 428, [Interview Transcript]. Retrieved from the University of Nevada, Lied Library website: <http://library.unlv.edu/faculty/research/principalship>.
- McEwen, B. S. (2004) Allostasis and allostatic overload and relevance to the pathophysiology of psychiatric disorders. *Annuals New York Academy of Sciences*, 1032, 1-7.
- McGrath, J. E. (1976). Stress and behavior in organizations. In M. Dunnette, *Handbook of Industrial Organizational Psychology* (pp. 1351-1395), Chicago, IL: Rand McNally.

- McGrath, J. E. & Beehr, T. A. (1990). Time and the stress process: Some temporal issues in the conceptualization and measurement of stress. *Stress Medicine*, 6, 93-104.
- Mandelbrot, B. (1993). Fractals. In J. Holte (Ed.), *Chaos: the new science*, (pp. 1-34). Saint Peter, MN: University Press of America.
- Marshall, C., & Rossman, G. B. (2006). *Designing Qualitative Research*. Thousand Oaks, CA: Sage Publications.
- Maryland Task Force on the Principalship. (2000). *Recommendations for redefining the role of the principal; recruiting, retaining, and rewarding principals; and improving their preparation and development*. Baltimore, MD: Maryland State Department of Education.
- Mason, J. W. (1975). A historical view of the stress field. *Journal of Human Stress*, 1, 6-27.
- Mathison, S., & Freeman, M. (2006). Teacher stress and high stakes testing. In R. Lambert & McCarthy, *Understanding Teacher Stress in an Age of Accountability* (pp. 43-64). Greenwich, CN: Information Age Publishing.
- Merriam-Webster's Unabridged Dictionary*. (2005). New York: Random House Inc.
- Metzger, C. (2006). *Balancing leadership and personal growth: The school administrator's guide*. Thousand Oaks, CA: Corwin Press.
- Mintrop, H., & Sunderman, G.L. (2009). Predictable failure of federal sanctions-driven accountability for school improvement - and why we may retain it anyway. *Educational Researcher*, 38(5), 353-364.

- Mintrop, H., & Sunderman, G. L. (2009). *Why high stakes accountability sounds good but doesn't work--and why we keep doing it anyway* (pp.1-32). Los Angeles, CA: The Civil Rights Project/Proyecto Derechos Civiles at UCLA.
- Monroe, G. J. (2007). The administrative stress and job satisfaction levels of Arizona high school principals. *Dissertation Abstracts International*, 68(3), 823 (UMI 3257738).
- Morrison, K. (2002). *School leadership and complexity theory*. New York, NY: Routledge Falmer.
- Murphy, J. (1989). Educational reform in the 1980s: Explaining some surprising success. *Educational Evaluation and Policy Analysis*, 11 (3), 209-221.
- Murphy, J. (2002). *The educational leadership challenge: Redefining leadership for the 21st century*. Chicago, IL: University of Chicago Press.
- Murphy, J., & Louis, K. S. (1999). *Handbook of research on educational administration*. San Francisco: Jossey-Bass.
- Murphy, J., & Louis, K. S. (1994). *Reshaping the principalship: Insights from transformational reform efforts*. Thousand Oaks, CA: Corwin Press.
- Murphy, E., & Murphy, M. (2002). *Leading on the edge of chaos: The 10 critical elements for success in volatile times*. Paramus, NJ: Prentice Hall.
- National Association of Elementary School Principals. (2004). *Leading learning communities: Standards for what principals should know and be able to do*. Alexandria, VA: Author.

- National Commission on Excellence in Education. (1983, April). *Nation at risk*. United States Department of Education. Retrieved on June 24, 2009 from <http://www.ed.gov/pubs/NatAtRisk/risk.html>
- Nevada Department of Education (2009). The Nevada adequate yearly progress technical manual. Retrieved on February 20, 2010 from http://www.doe.nv.gov/2009_AYP_Technical_Manual.pdf
- Nevada Department of Education (2009). *Schools/districts*. Retrieved from <http://nde.doe.nv.gov/SD.htm>
- Norman, N. (2004). *An oral history with Norma Norman*. Oral History of the Public School Principalship, 499, [Interview Transcript]. Retrieved from the University of Nevada, Lied Library website: <http://library.unlv.edu/faculty/research/principalship>.
- Olsen, B., & Sexton, D. (2009). Threat rigidity, school reform, and how teachers view their work inside current education policy contexts. *American Educational Research Journal*, 46(9), 9-44.
- Oral History of the Public School Principalship Collection. (2009). *Lied Library, University of Nevada, Las Vegas*. Retrieved on June 24, 2009, from <http://library.unlv.edu/faculty/research/principalship/introduction.html>
- Owens, R. G., & Valesky, T.C. (2007). *Organizational behavior in education*. Boston, MA: Pearson Education.
- Palmer, S. (1981). *Role stress: How to handle everyday tension*. Englewood Cliffs, NJ: Prentice-Hall.

- Porter-O'Grady, T., & Malloch, K. (2007). *Quantum leadership: A resource for health care innovation*. Boston, MA: Jones and Bartlett Publishers.
- Portin, B. S., & Williams, R.C. (1996). *The changing role of the principal: A survey of Washington State's principals and assistant principals*. Olympia, WA: Association of Washington School Principals.
- Portin, B. S. (2000). *Principal distinctives in the United States: The intersection of principal preparation and traditional roles between education reform and accountability*. (2000, April). Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.
- Posner, R. A. & Rasmusen, E. B. (1999). Creating and enforcing norms, with special reference to sanctions. *International Review of Law and Economics*, 19, 369-382.
- Pounder, D. G., & Merrill, R. J. (2001). Job desirability of the high school principalship: A job choice theory perspective. *Educational Administration Quarterly*, 37(1), 27-57.
- Prirogine, I. (1993). Time, dynamics, and chaos: Integrating Poincare's "non-integral systems." In J. Holte (Ed.), *Chaos: the new science*, (pp. 54-84). Saint Peter, MN: University Press of America.
- Redfox, M. S. (2006). Sources of occupational stress as perceived by elementary principals in Orange County, California. *Dissertation Abstracts International*, 66(8), 2798 (UMI 3184785).
- Rettig, P. R. (2002). *Quantum leaps in school leadership*. Lanham, MD: Scarecrow Press.

- Richardson, L. (1998). Perceived sources of stress among Connecticut superintendents: An exploratory study. *ETD Collection for University of Connecticut*. Retrieved from <http://digitalcommons.uconn.edu/dissertations/AAI9906560>.
- Roza, M. (2003). *A matter of definition: Is there truly a shortage of school principals?* Seattle, Washington: University of Washington Center on Reinventing Public Education, Dale Evans School of Public Affairs.
- Ryan, T. (2001). A comparison of the reported stress levels of Massachusetts secondary principals and their schools' scores on the 1999 MCAS. *Dissertations Abstracts International*, 62(1), 44.
- Sapolsky, R. M. (2004). *Why zebras don't get ulcers*. NY: Henry Holt and Company.
- Sauter, S. (2009). Stress...at work. *National Institute for Occupational Safety and Health*. Retrieved on June 15, 2009, from <http://www.cdc.gov/niosh/docs/99-101>
- Schwartz, J. (2004, September 5). Always on the job, employees pay with health. *New York Times*. Retrieved June 13, 2009, from <http://www.nytimes.com/2004/09/05/health/05stress.html>
- Selye, H. (1974). *Stress without Distress*. New York: Lippencott.
- Shumate, J. I. (2000). Stress, burnout, and coping strategies among Washington state high school principals. *Dissertation Abstracts International*, 60(8), 2760 (UMI 9942736).
- Snyder, K. J., Acker-Hocevar, M., & Snyder, K. (2008). *Living on the edge of chaos: Leading schools into the global age*. Milwaukee, WI: ASQ Quality Press.

- Sorenson, C. G. (2002, November 11). *An oral history with Carol G. Sorenson/Interviewer: Andre Yates*. Oral History of the Public School Principals, 453, [Interview Transcript]. Retrieved from the University of Nevada, Lied Library website:
<http://library.unlv.edu/faculty/research/principals>.
- Staw, B. M., Sandelands, L.E. & Dutton, J. E. (1981). Threat-rigidity effects in organizational behavior: A multilevel analysis. *Administrative Science Quarterly*, 26(4), 501-524.
- Sterling, P., & Eyer, J. (1988). Allostasis: A new paradigm to explain arousal pathology. In S. Fisher, & J. Reason, *Handbook of life stress, cognition and health* (pp. 629-649). John Wiley & Sons, New York.
- Taber's Cyclopedic Medical Dictionary, 21st Edition*. (2009). Philadelphia, PA: F.A. Davis Co.
- Taylor, J. R. (2007). Job satisfaction among high school assistant principals in seven Florida counties. *Dissertation Abstracts International*, 68 (04). (UMI No. 3260095).
- Tirozzi, G. N. (2001). The artistry of leadership: The evolving role of the secondary principal. *Phi Delta Kappan*, 82(6), 434-439.
- Torelli, J.A., & Gmelch, W. H. (1992, April). Occupational stress and burnout in educational administration. Paper presented at the annual meeting of the American Educational Research Association, San Francisco: CA.

Trail, K. (2000, October). Taking the Lead: The role of the principal in school reform.

CSRD Connections, 1(4), pp.1-4. Austin, TX: Southwest Educational

Development Laboratory.

Tucker, M. S., & Coddling, J. B (2002). Preparing principals in the age of accountability.

In M. S. Tucker & J. B. Coddling (Eds.), *The principal challenge: leading and*

managing schools in an era of accountability (pp. 1-42). San Francisco, CA: Josie

Bass.

Tyack, D. & Cuban, L. (1995). *Tinkering toward utopia: A century of public school*

reform. Cambridge, MA: Harvard University Press.

Urduan, T. (2001). *Statistics in plain English*. Mahway: NJ: Lawrence Erlbaum

Associates.

U.S. Department of Education. (2002). *No child left behind: A desktop reference*.

Washington, D.C.: Office of Elementary and Secondary Education. Retrieved on

June 23, 2009 from

<http://www.ed.gov/admins/lead/account/nclbreference/reference.pdf>

U.S. Department of Education (1998, April). *Goals 2000: Reforming education to*

improve student achievement. Retrieved on July 26, 2009 from

<http://www.ed.gov/pubs/G2KReforming/index.html>.

Waldrop, M. (1992). *Complexity: The emerging science at the edge of order and chaos*.

New York: Simon & Schuster.

Wallen, N. E., & Fraenkel, J. R. (2001). *Educational research: A guide to the process*.

Mahwah, NJ: Lawrence Erlbaum.

- Weber-Sorice, C. A. (2003). The relationships among principal characteristics, school demographic variables, preventive coping resources, and stressors of public school principals in Florida. *Dissertation Abstracts International : Humanities and Social Sciences* 64 (3A). (UMI 3084060).
- Welmers, J. (2005). Predicting principal stress. *Dissertations Abstracts International*, 66(10), 3535 (UMI No.3193130).
- Wheatley, M. J. (2001) Bringing schools back to life: Schools as living systems in creating successful school systems: In F.M. Duffy & J. D. Dale (Eds.), *Creating successful school systems: Voices from the university, the field, and the community*. Norwood, MA: Christopher-Gordon Publishers. Retrieved July, 26, 2009 from <http://www.margaretwheatley.com/articles/lifetoschools.html>.
- Wheatley, M. (2006). *Leadership and the new science: Discovering chaos in a chaotic world*. San Francisco, CA: Berrett-Koehler.
- Whitaker, K. (2003). Principal role changes and influence on principal recruitment and selection: An international perspective. *Journal of Educational Administration*, 41(1), 37-54
- Williamson, J., & Campbell, L. (1987). Stress in the principalship: What causes it? *NASSP Bulletin*, 71, 109-112.
- Winter, P. A., & Morgenthal, J. R. (2002). Principal recruitment in a reform environment: Effects of school achievement and school level on applicant attraction to the job. *Educational Administration Quarterly*, 38(3), 319-340.

- Winter, P. A., Rinehart, J. S., & Munoz, M. A. (2001, November). *Principal certified personnel: Do they want the job?* Paper presented at the Annual Meeting of the University Council for Educational Administration, Cincinnati, OH.
- Wiseman, A. W. (2005). *Principals under pressure: The growing crisis*. Lanham, MD: Scarecrow Education.
- Worsham, D. (2007, June 28). *An oral history with Doretta Worsham/Interviewer: Sheila Scarborough*. Oral History of the Public School Principalship, 549, [Interview Transcript]. Retrieved from the University of Nevada, Lied Library website: <http://library.unlv.edu/faculty/research/principalship>.
- Zohar, D. (1997). *Rewiring the corporate brain: Using the new science to rethink how we structure and lead organizations*. San Francisco, CA: Berrett-Koehler.

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