Evidence of Wisdom-Related Knowledge in Public School Superintendent Problem Solving

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LOYOLA UNIVERSITY CHICAGO

EVIDENCE OF WISDOM-RELATED KNOWLEDGE IN PUBLIC SCHOOL SUPERINTENDENT PROBLEM SOLVING

A DISSERTATION SUBMITTED TO
THE FACULTY OF THE SCHOOL OF EDUCATION
IN CANDIDACY FOR THE DEGREE OF
DOCTOR OF EDUCATION

BY
SUSAN M. STOECKER-TERRONEZ

CHICAGO, ILLINOIS
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CHAPTER I
INTRODUCTION

The present study was inspired by the extensive research conducted by the Max Planck Institute for Human Development and Education in Berlin (The Berlin Group), in its pursuit of the potentiality of intellectual growth in the aging process. Their theoretical framework, formulated by combining key propositions of life-span psychology and cognitive psychology (Baltes & Smith, 1990; Dittman-Kohli & Baltes, 1990), ascertained that, despite decline in the cognitive mechanics of the aging mind, intellectual stability and growth can be found in cognitive pragmatics through the cultivation of certain domains of expertise (Featherman, Smith, & Peterson, 1990; Staudinger, Cornelius, & Baltes, 1989). Substantial research on expertise (Ericsson & Smith, 1991) suggests that in certain domains age-related maintenance and increase are evident.

The prototype offering promise for the Berlin Group’s systematic research program came from the ancient and continuing pursuit of wisdom. For centuries wisdom has been perceived as the epitome of knowledge, and largely attributed to the older segments of the population ( Heckhausen, Dixon, & Baltes, 1989). For this reason, the Berlin Group began their search for the positive indices of aging by examining the multiple definitions and conceptions of wisdom. In their research, wisdom is defined as “expert-knowledge in the domain fundamental pragmatics of life” (Staudinger,
Marsiske, & Baltes, in press, p. 16). Further, the Berlin Group’s “age-by-experience paradigm” (Baltes & Staudinger, 1993, p. 77) links wisdom acquisition with age and a number of facilitative conditions: (1) experience in work-related environments offering extensive exposure to characteristics and dilemmas of the human condition; (2) personality dispositions encouraging self-evaluation, openness, and generativity; and (3) mentored-practice in life matters (Baltes & Staudinger, 1993).

The expertise approach has garnered the attention of researchers in educational administration as well. In it they find possibilities for exploring the nature of expertise in public school leadership and school administration. This research is at an early stage of formulation. Cognitive Perspectives on Educational Leadership (Hallinger, Leithwood, & Murphy, 1993) and Expert Problem Solving (Leithwood & Steinbach, 1995) sample the most recent contributions along these lines.

The Berlin Group’s wisdom definition, enhancement conditions which lead to its acquisition, and growing interest in the study of school leadership through the lens of expertise, have suggested a possible convergence of these two bodies of knowledge. Towards this end, the introduction will set the stage for the present study by discussing the following: rationale for the study, statement of the problem, research questions, terminology, limitations, and the organization of the thesis.

Rationale for the Study

The role of the public school superintendent is undergoing dramatic change brought on by school reform, site-based management, and teacher professionalization (Crowson & Glass, 1991). Yet, Bridges (1982) conducted a
review of relevant dissertation research and journal articles in the past, and
came to the following conclusion:

The superintendent stands at the apex of the organizational pyramid in
education and manages a multi-million dollar enterprise charged with
the moral and technical socialization of youth, aged 6-18. Despite the
importance of this administrative role to education and society, less
than a handful of studies analyzed in this review investigated the
impact of the chief executive officer. This topic merits both reflection
and empirical examination since nothing of consequence is known
about the impact of the occupants of this role (p. 26).

Fortunately, a dramatic shift in superintendent research has occurred
in recent years. Crowson and Glass (1991) suggest that the role, training, and
implementation of the superintendent function is “hot stuff” (p. 2). They
attribute this transformation to four changes in the larger context in which
education operates:

1. The “graying” of its current occupants, and recent offers of generous
pension and retirement incentives (McCormick, 1987; Hess, 1988) forewarn
impending massive turnover. Younger, and more racially and gender diverse
prospects are expected to face greater diversity in the student population
(Glass, 1992). For this and other reasons, preparation programs are
undergoing reexamination.

2. The “impossible” nature of the urban school superintendent, a
dwindling pool of qualified candidates (Bradley, 1990), and a growing
dissatisfaction with city schools suggest that the superintendent’s future in
urban schools is at a crossroads. According to Newsweek, “The days of
searching for a visionary superintendent who will walk on water are over for
these disgruntled pols. Faced with shrinking resources and decades of mismanagement, impatient city officials are looking for some quick solutions they don't believe the shallow pool of current candidates will offer” (Hancock, Rhodes, Rogers, Lee, & Gordon, 1995, p. 52).

3. Decentralization and school-based management have riveted attention on the role of the superintendent in the organization. Accommodations needed to balance centralized and decentralized functions while preserving school effectiveness, have placed the superintendency in the center of the discussion.

4. Lilly suggests, “much of the strategic leadership tasks of the superintendent involve making decisions regarding the strategic positions of the school district relative to its environment” (1992, p. 3). Recently, research about student outcomes suggests a need to relate student learning with these same real-life contexts (Kennedy, 1987). As a result, the role of the chief executive in his interface with the social and political context has received considerable attention as efforts are made to connect that context with classroom instruction (Musella & Leithwood, 1988).

Potential vacancies, changing student environments, decentralization, and a need to connect classroom to community are not the only encouragements for a deeper understanding of the school superintendency and its occupants. Research has further suggested that administrative involvement in instructional planning and development does affect student outcomes (Rowan, 1983).

In examining the relationship between the instructional leadership of school superintendents and the effectiveness of school districts, Murphy and Hallinger identified four “technical core activities” (1986, p. 220), which have
impact on school district functioning and student outcomes:

1. Superintendents, in collaboration with school district board members, administrative teams, and faculty members, establish goals and set standards in relation to student learning and achievement. Clearly, document analysis indicates a greater emphasis on curriculum and instruction in school district mission and/or goal statements.

2. Superintendents are involved in the establishment of selection criteria and hiring procedures for administrative and teaching staff. Selection criteria increasingly include skills in classroom instruction and human relations.

3. A significant portion of superintendent time is devoted to the supervision and evaluation of district principals. The pattern and frequency of the superintendent’s school visits facilitates the development of school climate, provides a reality check about information from the community, and monitors progress of principals towards district goals.

4. Increased superintendent involvement in the establishment and oversight of curriculum and instruction is indicated by a tendency towards preferred instructional approaches and curricular expectations, and in the alignment of district goals and staff development activities with district spending (Murphy & Hallinger, 1986).

At base, these core activities imply a need for superintendent involvement in developing and maintaining educational programming in the public schools and imply significant requisite human relations knowledge.

Research indicates some push for new ways to study superintendent knowledge, role, and attributes. Greenfield (1986) suggests that "the world of
will, intention, experience, and value is the world of organizations and administration. The building of a new science of administration will depend on our ability to understand these realities” (p. 72). Additionally, Greenfield recommends that the study of administration focus on transforming methodology from oversimplified assessment of administrative problems to deeper analysis of substantive issues.

Observations of the school administrator’s daily activities indicate that problems are frequent, rapid, fragmented, complex, and derived from sources other than the administrator (McPherson, 1980). A problem process which begins with problem-identification and moves through several stages; such as, identifying desired goals, generating potential solutions and testing them, and selecting a solution that promises the best return, though promoted since the theory movement in the 1950’s, is unrealistic in this environment (McPherson, 1980). More likely than not this process presents difficulty in some or all of the problem situations that superintendents and other school leaders face.

According to Leithwood and Steinbach “much of the problem solving engaged in by educational administrators occurs in a social context, that is, with other people” (1995, p. 17). In fact, Isenberg (1984) suggests that the pooling of people and groups for the purpose of identifying and solving problems is a primary concern of senior managers in business environments. Selecting participants, mustering participant support, data-gathering, and assessing the market for indicators are part of a senior manager’s focus. Not only are the organization’s processes important, but the interpersonal processes are valued equally; the assessment of key players, their relative strengths and weaknesses, their values, their relationships, and their
priorities are continually being integrated into a larger educational context.

Finally, there is growing evidence that another type of leadership is needed in these changing times. A paper presented at the Annual Meeting of the Southern Regional Council for Administrators (Norris, 1986) suggests that superintendent problem-solving is deficient in the integration of "left-brain processes of analysis and judgment with right-brain processes of conceptual skills" (p. 1). According to the researcher, school reform measures call for leaders with a more "holistic approach" (p. 1) to problem-solving and the increased use of insight and intuition in assessing organizational needs.

The study of wisdom offers promise for assessing how knowledge of the human condition contributes to the expertise of school leadership personnel. The Berlin Group's study of wisdom has provided an avenue for assessing this knowledge. "For the empirical analysis of wisdom-related knowledge three topics of discourse about life have been singled out (Baltes, et al., 1984): life planning, life management, and life review" (Staudinger, 1989, p. 69). From their methodological perspective, the Berlin Group has suggested that research using their conceptualization of wisdom should continue to identify tasks that evince wisdom-related knowledge. They emphasize this by stating the following:

At the risk of redundancy, we would like to highlight again the point that the research framework presented and the method used to identify wisdom-related knowledge in terms of a family of five criteria is not restricted to the use of life dilemmas and the discourse products of individuals. As long as verbal protocols about the domain of wisdom related topics associated with the pragmatics of life are available they can be evaluated using the proposed set of five criteria (rich factual
knowledge, rich procedural knowledge, life-span contextualism, relativism, uncertainty) as a yardstick. Thus, we believe that the research analogue can be applied to a whole gamut of language-based documents ranging from interviews, diaries, and essays about life to historical documents such as religious documents or other texts on human conduct (Baltes & Smith, 1990, p. 114).

This study investigates wisdom and wisdom-related knowledge in the context of school superintendent problem solving. Following from the Berlin Group’s methods, thirty-one school leaders were asked to think aloud (Ericsson & Simon, 1984) about three problems (1 home problem and 2 work problems). Their think-aloud responses were transcribed and, subsequently, evaluated by raters on the five wisdom-related criteria (scales): “rich factual knowledge,” “rich procedural knowledge,” “life-span contextualism,” “value relativism,” and “uncertainty” (Staudinger, Smith, & Baltes, 1994, p. 5).

Statement of the Problem

The purpose of this study was to determine if wisdom and wisdom-related knowledge, as defined by the Berlin Group, is evident in the problem solving of public school leaders. Specifically, the study seeks to answer the following general research question: In a group of school leaders, what wisdom-related knowledge is evident in their discussion of home and work problems?

Specific Research Questions

1. In home and work problems is wisdom-related knowledge evident?
2. Is the level of wisdom-related knowledge different in home v. work problems?

3. Is the level of wisdom-related knowledge different in well-structured v. less-structured problems?

4. Is the level of wisdom-related knowledge different for male v. female school leaders?

Terminology

School leaders is defined as suburban public school superintendents who are males or females between 40 and 55 years of age. Their total tenure in education is ten or more years, including their superintendency. The stratified random sample consists of public school district superintendents (N=31) in elementary, secondary, or unit districts employed in DuPage, Cook, Kane, and Lake counties of Illinois during the 1994 - 1995 school year.

Wisdom is defined as “an expert knowledge involving good judgment and advice in the domain, fundamental pragmatics of life” (Baltes & Staudinger, 1993, p. 76). The family of five criteria which comprise wisdom by this definition are: “rich factual knowledge, rich procedural knowledge, life-span contextualism, relativism, and the ability to understand and manage uncertainty” (Baltes & Smith, 1990, p. 96).

A wise response is one which receives high scores on the five wisdom criteria, while “lower levels of knowledge on the family of five criteria” are referred to as wisdom-related knowledge (Staudinger, Smith, & Baltes, 1994, p. 5).

Expertise “is the acquisition of a high level of cognitive skill and knowledge involving the development of two separate, yet interrelated
cognitive structures. It has been demonstrated that experts possess a large, highly developed schema of domain-specific knowledge as well as the cognitive processes and procedures necessary to use this information effectively and efficiently” (Anderson, 1983; Yekovich, 1993; Doolittle & Yekovich, 1994).

**Well-structured problems** are those in which all the necessary elements for solution are included or are readily available to the solver. According to Fredriksen (1984), a well-structured problem is “clearly presented with all the information needed at hand and with an appropriate algorithm available that guarantees a correct answer” (p. 363).

**Ill-structured problems** are those in which the necessary elements for solution are either uncertain or not included in the available data (Kitchener, 1983; Wood, 1983; Churchman, 1971). Fredriksen defines ill-structured problems as those “that are not clearly stated, where the needed information is not all available, there is no algorithm, and there may not be a single answer that can be demonstrated to be correct” (Fredriksen, 1984, p. 363).

**Problem context** is defined as the primary “life space” (Reese & Smyer, 1983, p. 8) in which an event or problem occurs. According to Reese and Smyer, “Hultsch and Plemons (1979) identified four contexts of life events: community and society, family, occupation and career, and primary friendship network” (Reese & Smyer, 1983, p. 8).

**Home problem** is defined as a problem in which the primary problem context is family.

**Work problem** is defined as a problem in which the primary context is occupation and career.
Limitations of the Study

The following describes a number of limitations for the present study: the chosen wisdom definition; constructed problems; sample; and time.

The wisdom definition used in this study is only one conceptualization of wisdom found in the literature. Chandler and Holliday (1990) offer this critique of the Berlin Group's empirical work:

The focus of this group upon matters of practical knowledge and its emphasis upon the pragmatic resolution of life issues does go some important distance toward breaking forth with traditional psychometric conceptions of intelligence, consequently clearing some room for a possible reemergence of a viable conception of wisdom. In the end, however, this insight seems to devolve back into another only slightly modified species of other predominately technical accounts of possible knowledge according to which wisdom amounts to no more than the simple accumulation of esoteric information or expertise, where the good life is confounded with the prudent life and where standard psychometric ploys permit wise persons to be picked out of the crowd (p. 136).

Be that as it may, the wisdom definition used in this study offers a viable starting point for the researcher. It is used as a method to classify the content of school leader's problem solving, rather than as a measure of cognitive pragmatics. The Berlin Group has provided the materials and procedures to employ their definition with some precision and supports the use of the family of five criteria to rate written or oral samplings.

Ericsson and Simon (1984) have cautioned researchers about overinterpretation of protocol data. There is substantial debate about the
validity of thinking-aloud or “concurrent verbalization” to capture the cognitive processes in action (Ericsson & Simon, 1984; Nisbett & Wilson, 1977). The data collected in this study consists of the “think-aloud” responses of school leaders as they discuss assorted problems. Conclusions are based on the assumption that these utterances reflect the spontaneous thoughts of respondents as they discuss the problems of the study.

This study drew conclusions based on the specific sample of public school superintendents interviewed. Four counties in Illinois were used to draw the stratified random sample of thirty-one superintendents. This sample size limits the generalizability of findings to a larger population of public school superintendents. Furthermore, as this is an exploratory study, no effort was made to control for a number of variables: district type, biographical experiences, or years of teaching or administrative practice.

Content and face validity of constructed problems was achieved through a comprehensive review of the literature, and by consensus from the participants of the pilot study and the sample of superintendents. However, construct validity for the problems was not established.

Time has a significant impact on dissertation research. Often, the time constraints are integrally bound with issues of finances. In this study fiscal limitations did offer some challenge, but the impact of time on human resources was substantial. Superintendents exist in a world constrained by such things as the length of the school year, the work day, and the demands of competing contexts. Decisions about interview length and substance were dependent on their affordable time. Furthermore, the press of time is always right outside the office door. Superintendents volunteered adequate time for the interview and agreed to be spontaneous and candid in their discussions.
However, their ability to engage in the study may be affected by the demanding and political nature of the position.

Although the use of a rating panel was an interesting and unique aspect of this study, it imposed a number of limitations. In previous research, random selection through the newspaper, intensive screening, extended training, and recalibration, and considerable remuneration were possible, and recommended (Staudinger, 1989). For convenience and practicality, this study used a “purposive” (Bernard, 1994, p. 95) sample of raters, paid minimally for their participation. Time for training, recalibration and rating was limited. These factors in combination may limit the extent of interrater reliability.

Organization of the Thesis

The introduction has discussed the wisdom research which inspired this study. The facilitative conditions which enhance wisdom acquisition and their relevance to educational administration were described. A brief review of past and present superintendent research invited an exploration of the expertise of the public school superintendent or school leader. The problem engaged and the specific research questions posed were stated. Definitions of key terms were specified. Finally, the limitations of the wisdom definition and application, the sample, the method, time, and human resources were suggested.

Chapter II provides a foundation for the present study. In it, a review of the relevant literature on wisdom and expertise is amplified. The expertise of the superintendency is explored, and a justification is made for applying wisdom to assess what school leader's know. The stage is, ultimately, set for the present study which seeks to find evidence of wisdom-related knowledge
in superintendent problem solving. Chapter III provides an overview of the decisions made for methodology. A description of the choices available for ascertaining the wisdom of school leaders, and the resulting research design and data analysis are explored in detail. Chapter IV presents an analysis of the data derived from the survey, and from individual interviews of public school superintendents. Chapter V presents a set of conclusions and recommendations for further research.
CHAPTER II
REVIEW OF THE RELATED LITERATURE

The review of the literature is designed to provide the reader with an overview of the substantive areas of the study. To that end, the chapter will cover the following major topics: wisdom, public school superintendents, characteristics of expertise in educational matters, and the wisdom criteria and the public school leader.

Wisdom

Research and the wisdom definition

In the distant past, people allowed for a wide range of ways of "knowing." On this stage wisdom likewise found respect and familiarity (Habermus, 1970; Meacham, 1983; Chandler & Holliday, 1990). Then, for a time, cognitive psychology’s focus on intelligence and academic knowledge overshadowed the earlier respectability of wisdom investigation. A review of psychology and science histories indicates a virtual neglect of wisdom research in the late 19th and early 20th centuries (Holliday & Chandler, 1986; Birren & Fisher, 1990). Contemporary wisdom researchers attribute this inattention to the concept’s earliest association with philosophy (Baltes & Smith, 1990). In order to gain solid footing in the scientific arena, psychology distanced itself from concepts as ambiguous as wisdom. Furthermore, researchers were hesitant to apply the scientific method to the study of wisdom. According to Baltes and Smith, Wittgenstein’s 1953 Philosophical
Investigations admonished scientists to tread softly in studying "complex human experiences" (Baltes & Smith, 1990, p. 89) using empirical methods. Even today, those who stray into this unchartered territory may be considered unwise. Holliday and Chandler (1986) aptly describe the attitude of theorists toward those who study wisdom:

Pronouncements regarding the nature of wisdom not only seem smug, presumptuous, and smacking of self-announced connoisseurship, but carry with them a clear sense of the foolhardy. There are many shaggy-dog stories concerned with quests for the meaning of wisdom and they all end by exposing those who lay claim to such knowledge for the fool (p. 1).

For these and other good reasons talk of wisdom in today's intellectual atmosphere seems ill-advised. Yet, a number of conditions have heightened interest in the process and consequences of aging.

In the 1970's, several separate research endeavors began to look into the components, persons, and abilities associated with wisdom. A greater interest in the thinking processes of the elderly, combined with a search for unique aspects of adult thought, rekindled interest in the construct. In short, Holliday and Chandler (1986; Chandler & Holliday, 1990) speculate that wisdom would have continued to be an elusive, irrelevant, and fictional construct had it not been for an emerging mission to study the elderly and the competency markers of adulthood. According to Baltes and Smith (1990), "wisdom is important because it may represent the general direction of progressive personality change during adulthood" (p. 88). No other candidate has yet surfaced to foster and explore the potential advantages of aging. Researchers have not been idle, however, as interest and inquiry in wisdom
has gained momentum in recent decades. Along these lines, Sternberg’s 
*Wisdom: Its Nature, Origins, and Development* (1990) has helped to pull many contemporary thoughts and research efforts about wisdom together in one volume. In it, Sternberg highlights an important distinction between cognitive intelligence and wisdom. The elements of wisdom, its context and acquisition are speculated (1990).

To round out Sternberg’s (1990) compendium of wisdom research, Birren and Fisher provide a neatly organized overview of contemporary researchers using the following categories: (a) definitions of wisdom; (b) processes of wisdom; (c) development of wisdom; (d) traits of wise persons; (e) products of wisdom; and (f) research methodologies used to grapple with the construct (1990). This study will not attempt to provide a summary of such magnitude. The purpose of the following is to provide a basis for understanding the study’s chosen definition of wisdom and its operationalization. To this end, a discussion of these areas will be covered: definitions of wisdom, organization of contemporary wisdom study, some implicit and explicit approaches to the study of wisdom, and, finally, the particular explicit approach to wisdom chosen for this study.

**Definitions of Wisdom**

Despite a variety of methods used to extract the definition of wisdom from relevant sources, there is no consensus on a standard definition. In one comprehensive investigation of the construct, Parry (1986) suggests that wisdom is defined in two contradictory ways; as intellectual or academic knowledge or as socially-oriented, practical knowledge. Her analysis of relevant historical and cross-cultural literature provides convincing evidence
for this dichotomy. Indeed, The Oxford English Dictionary (1970) defines wisdom as follows:

1. Capacity of judging rightly in matters relating to life and conduct; soundness of judgement in the choice of means and ends; sometimes, less strictly, sound sense, especially in practical affairs; opp. to folly.

2. Knowledge (esp. of a high or abstruse kind); enlightenment, learning, erudition; in early use often = philosophy, science. Also, practical knowledge or understanding, expertness in an art. Now only Hist. (p. 191-192)

Parry also found frequent reference to a relationship between wisdom and old age. In her review of relevant literature, two pathways lead to wisdom: intuition or rationality.

Quotations which reference wisdom in The Home Book of Quotations indicate that those things considered wise are often situational or culturally-based. Honesty, goodness, nobleness, consistency, sobriety, and a respect for present and past are the attributes frequently associated with wisdom. Wisdom is borne of suffering, transcends both common sense and insanity, and is tested by the extremes of fortune. Quotations reflect that wisdom is more hindsight than foresight, in that right action is easier to assess retrospectively. Wisdom is derived from an understanding of matters of this world and the other world, the divine and the human, and life and death. Finally, the decisions of the wise are measured and founded on what is right judgment. Recognizing the value of universal daily existence, wise persons revel in the moment. A wise person is not commonly a rich one and is satisfied with his lot in life (Stevenson, 1967, pp. 2162-2169).

Covey, Merrill, and Merrill (1994) have attempted to develop a
compendium of wisdom literature described as "that portion of the classic, philosophical, proverbial, and religious literature that deals specifically with the art of living" (p. 343). The oldest examples have come from Egyptian literature of approximately 2500 B.C. In their view, this literature is characterized by a set of recurring themes: (a) the power of choice; (b) the value of reflection; (c) the importance of right living; (d) the existence of fundamental truths or laws which govern humanity; (e) the importance of basic human needs; (f) the relationship of humankind to nature; (g) the importance of giving; (h) and the value of humility (Covey, et al., 1994). Accordingly, Birren and Fisher (1990) state that the words wisdom and wise, since ancient times, have always suggested "high or elevated behavior" (p. 318).

In essence, various efforts to define wisdom suggest that wisdom, viewed as a respected and desirable way of thinking and behaving, implies a deeper understanding and experience of life. Wisdom may be found through rational or intuitive means, but, more likely, involves the integration of both. Wisdom involves balancing the needs of humanity and the needs of nature in pursuit of survival. What follows are various avenues which contemporary research has taken to investigate wisdom.

Organization of Contemporary Wisdom Study

Sternberg (1990) asserts that both implicit and explicit theories have guided the contemporary research agenda on wisdom. Accordingly, he defines "implicit theories" as those that emanate from the minds of people and result in "folk psychology" (p. 142). Their discovery involves a kind of comprehensive review of both ancient and contemporary historical accounts
of wisdom. "Explicit theories" are developed by psychologists and social scientists, and are "based or at least tested on data collected from people performing tasks presumed to measure psychological functioning" (Sternberg, 1990, p. 142-143). Inquiry into intellectual functioning has provided countless examples of explicit theory-testing. Explicit and implicit theories are not mutually exclusive. Explicit theories may have implicit etiology; for example, many theories are based on some implicit account of a phenomenon which is then later elaborated and tested (Sternberg, 1990).
Without delving into the specifics of implicit or explicit theory development, the following is a brief account of a few implicit theories associated with the study of wisdom. These will lead to the explicit theory which is central to the present study.

**Implicit Approaches to the Study of Wisdom**

Certain concepts have endured throughout history because they have adaptive value for humankind. *Evolutionary hermeneutics*, a methodology adopted to study the concept of wisdom (Csikszentmihalyi & Rathunde, 1990), uses an implicit approach to examine previous writers' thoughts about a concept, and then subjects these to an analysis of the concept's adaptive significance. This methodology is taken from the works of Campbell, who was one of the first psychologists to "observe that changes in knowledge systems - including 'hardware' as well as 'software' - obey the evolutionary laws of variation, selection, and transmission" (Csikszentmihalyi & Rathunde, 1990, p. 26). If a concept's meaning has changed over time, inquiry into the circumstances and purposes behind the change continues. From there, the present value of the concept is explored.
Accordingly, ideas are transmitted across cultures and eras and can be seen as memes, which, passed on, protect people and contribute to their survival (Boyd & Richerson, 1985; Csikszentmihalyi and Massimini, 1985). For 80 generations the meme of wisdom has been transmitted. Across time and culture, writers have come to think of wisdom as a specific way in which information is collected and processed. Thus, wisdom is perceived as an enduring something that embraces an integrative view of reality and implies a way of prioritizing ideas and actions in terms of their relative value (Csikszentmihalyi & Rathunde, 1990). This idea is supported by Rowles (1993) who suggests that contemporary scholars conceptualize wisdom in one of three ways: “cognition, action, or integration” (p. 25). Other research suggests that the unification of the emotional and the cognitive domains is the essence of wisdom (Kramer, 1990; Pascual-Leone, 1990).

Labouvie-Vief (1990) proposes that a search for wisdom indicates the “emergence of a new paradigm within which to discuss intellectual and cognitive functions and their development over the course of life” (p. 52). Her own search was inspired by the continued complexity of describing adult development theoretically. Harking back to Piaget’s (1976, 1980) descriptions of an inner and outer reality, Labouvie-Vief describes a progression, throughout history, in the conceptualization of mind and body as separate entities. She chooses to define wisdom as the maturing of intellectual operations by the unification of two ways of organizing experience suggested by early Greeks: “mythos” and “logos” (Labouvie-Vief, 1990, p. 76). Mythos means speech, dialogue, narrative; logos means explanation or discoverable rule or principle. Her view “squarely rejects the position that the abstract and theoretical and the concrete and practical constitute incommensurable.
domains of mental functioning. Instead it accepts the position that a theory of mind, self, and reason for better or worse also implies a prescription for how to conduct and evaluate one’s life” (p. 77). In so doing, she takes issue with cognitive theories of expertise as constituting wisdom because they lack an important emphasis on integration and organismic knowledge. She suggests that this knowledge includes morals, ethics, and the ability to understand self and other: “using such understanding reflectively in the striving for a rational attitude that unites the search for objective validation with that for subjective significance” (p. 78).

Sternberg’s own implicit approach to understanding people’s conceptualizations of wisdom involved asking his subjects, lay persons and professors of art, business, philosophy and physics, to list descriptors of persons considered ideally wise, intelligent, or creative. A second sample rated the 100 descriptors identified on how characteristic of wisdom, intelligence, and creativity they were. Six components of wisdom emerged. In brief, wise people are able to: (1) analyze problem situations and solve them; (2) display concern about others and offer advice when needed; (3) learn from people, ideas, and the environment; (4) understand their own strengths and weaknesses, as well as, the inherent limitations in situations; (5) integrate experience into future decision-making; and (6) use intuition in interpreting their environment (1990).

Research on implicit theories of wisdom have produced interesting and overlapping descriptors of wisdom and have distinguished it from other concepts. According to Orwoll and Perlmutter (1990) descriptors have included: understanding of self and others; knowledge derived from experience, age and maturity; keen perception into the essence and accuracy
of decision-making; and deep embedding empathy (1990).

An Explicit Approach to the Study of Wisdom

Explicit approaches to study wisdom are rare. The explicit approach used for this study was developed utilizing research conducted at the Max Planck Institute. Their study of wisdom as an expert knowledge system or expertise was motivated by several interests: (1) the direction of human development and a study of peak performance; (2) a search for the potentialities of aging; and (3) recent attempts to redefine measures of intelligence. By integrating several areas of psychological inquiry, they have developed their own conceptualization of wisdom and have provided options for its operationalization (Baltes & Smith, 1990).

The Max Planck Institute's Definition of Wisdom

Baltes and Smith (1990), developed a psychological definition of wisdom based on the principles of life-span psychology, cognitive psychology and the study of expertise, and the philosophical consistent with these general characteristics: "an expert knowledge involving good judgment and advice in the domain, fundamental pragmatics of life" (Baltes & Staudinger, 1993, p. 76). Five criteria that comprise wisdom emerged from this: (1) "rich factual knowledge, (2) rich procedural knowledge, (3) life-span contextualism, (4) relativism, and (5) the ability to understand and manage uncertainty" (Baltes & Smith, 1990, p. 96). The criteria are elaborated as an ideal set of descriptors potentially visible in a body of knowledge that exhibits wisdom (Barsalou, 1985; Chaplin, John, & Goldberg, 1988). Rich factual and procedural knowledge, universal dimensions that characterize expertise, are taken from
general theories of expert systems (Ericsson & Smith, 1991). According to Baltes (1993), the other three dimensions are considered to be meta-criteria which organize factual and procedural knowledge, and are derived from research on adult cognition and personality development (Alexander & Langer, 1990; Erickson, Erickson, & Kivnick, 1986; Sternberg & Berg, 1992).

Clearly, all adults spend some time thinking about life issues, such as these, as they participate in their daily activities and evaluate decisions about past and future (Baltes & Smith, 1990). According to Baltes and Smith (1990), wisdom refers to expertise in all five criteria and rests on several basic assumptions: knowledge is gained from the development of individuals across their life spans; it evolves from observation and experience about human nature and human conduct in social and inter-generational aspects of life; and individuals' goals and activities increase this knowledge.

The domain fundamental pragmatics of life encompasses knowledge about important matters of life, their interpretation and management. Included is knowledge about the variations, conditions, and historicity of life span development, human nature and conduct, life tasks and goals, social and intergenerational relationships, and life's uncertainties. Knowledge about one's self and one's own life biography and goals is also part of the domain. (Baltes & Smith, p. 96)

To embed their definition in a solid framework, three lines of inquiry will follow: life-span psychology, the historical and philosophical accounts of wisdom, and cognitive psychology and the study of expertise.

**Life-Span Psychology**

Life-span developmental psychology encompasses the study of the life
course and the maintenance and change of behaviors from birth to death. Information is collected about interindividual and developmental differences and similarities, and the conditions through which these are modified (Baltes, Reese, & Nesselroade, 1977). An aging world population, interest in the field of gerontology, and the age of subjects in longitudinal studies conducted early in the 19th century have resulted in effort and enthusiasm in interdisciplinary human developmental research (Verdonik & Sherrod, 1984; Staudinger, 1989). A pattern of prototypical beliefs or "family of perspectives" (Baltes, 1987, pp. 612-614) found in psychological and sociological writings (Baltes & Reese, 1984; Featherman, 1983) constitute the life-span approach, and are summarized here:

1. **Life-span development**: Intellectual development is a life-long process characterized by patterns of developmental change dependent on the achievement of specific tasks. According to Baltes (1987), biological, social, and personal challenges and opportunities, first suggested by Havighurst in 1973, entail the developmental age-related tasks. These interact with historical and non-typical influences to impact human development.

2. **Development is multidimensional and multidirectional**: The aging process is characterized by variations in the "level, rate, and the direction of change" (Baltes & Baltes, 1990, p. 8). Differences in individuals' life experiences, and the direction of their social, familial, personal, and professional lives contribute to the development of varying skill levels. Concurrently, genetics, cumulative environmental conditions, and pathology can affect growth and intensify individual variability.

3. **Life-span development involves both losses and gains in intellectual functioning**: The decline in cognitive mechanics observed in
performance tasks for reasoning, short-term memory, and spatial abilities have been observed as early as age 30 (Botwinick, 1984). Problem solving shows a marked decline in solution strategies that involve logical classification and the formulation of new concepts (Denney, 1985). Furthermore, evidence of decline increases as tasks become more complex (Cerella, 1985).

At the same time, there is growth or maintenance in intellectual functioning which involves cognitive pragmatics. On tests that require high levels of knowledge, in the solution of practical problems in everyday life (Cornelius & Caspi, 1987), and in reasoning about dilemmas between persons which involve emotional content (Blanchard-Fields, 1986) growth is observable. Furthermore, in domains of expertise or professional performance, no declines are evident and increases in performance with age have been documented (Charness, 1985).

Most importantly, the research shows that growth in cognitive pragmatics can balance out age-related declines in cognitive mechanics. In essence, the decline in cognitive mechanics is offset by the development and enhancement of pragmatic knowledge in the declarative sense, or in improvement of procedural strategies that simplify tasks (Salthouse, 1985).

4. Plasticity, Latent Reserve and Limits: An understanding of the process of the mind in aging is optimally studied at the limits of performance (Baltes, 1987; Kliegl & Baltes, 1987). Near these boundaries the potentialities and limits may be more clearly ascertained. Baltes and Kliegl have identified three levels of performance: (a) "baseline performance," (b) "baseline reserve capacity," and (c) "developmental reserve capacity" (Baltes, 1987, p. 618). Baseline performance is a person's initial level of performance on a task.
Baseline reserve capacity is the top range of a person's performance potential when all resources are devoted to optimizing performance. Finally, developmental reserve capacity refers to additional conditions that enhance baseline reserve capacity through some type of development (Baltes, 1987). According to Staudinger, Cornelius, and Baltes (1989), the range of intraindividual plasticity (change potential) or modifiability is great (Staudinger, Cornelius, & Baltes, 1989). Older individuals have a sizable reserve capacity in cognitive functioning modifiable through methods of enrichment: cognitive training, instruction, and practice. Yet, these interventions are successful only when the skills to be addressed are new or reactivated and/or cognitive training is combined with affective training (Staudinger, et al., 1989). Two prototype experimental designs are used to grasp the full range of cognitive growth: one focuses on memory and the other on wisdom.

5. Historical embeddedness: Historical and cultural contexts can dramatically impact individual development. Furthermore, age-associated development is affected by the characteristics and demands of sociocultural historical periods. Schaie (1979) has provided empirical evidence that found disparities between age cohorts in cross-sectional studies are attributable to historical time periods in which subjects live. Nesselroade and Baltes (1974) provide additional evidence that direction of change can be explained by historical context.

6. Contextualism as paradigm: Baltes argues that a person's functioning cognitively is impacted by culture and socialization. "A trifactor model has been proposed (Baltes et al., 1979; Baltes et al., 1980. In this model, three categories of influences, which developing individuals need to deal with (i.e.,
process, react to, act on) as their lives progress, are identified: age-graded influences, history-graded influences, and nonnormative influences” (Baltes, 1987, p. 621).

7. Field of development as multidisciplinary: With influences on development coming from several directions, no single discipline has been able to provide enough detail to embrace a full understanding of their multiple impact. An understanding of and collaboration with other disciplines is essential (Baltes & Nesselroade, 1984).

According to Baltes, Dittman-Kohli, and Dixon (1984), “... these concepts reflect the viewpoint that the development of adult intelligence is not a monolithic and highly regularized phenomenon with a fixed and unitary trajectory” (p. 37). Adult intelligence embraces (1) a combination of many mental abilities and architectural properties “(multidimensionality)”; (2) “distinct change patterns (multidirectionality)”; (3) “large differences in the life course patterns of individuals (interindividual variability)”; and (4) “clear evidence for modifiability (interindividual plasticity)” (Baltes, et al., 1984, p. 37).

**Historical and Philosophical Descriptions of Wisdom**

The Berlin Group reviewed literature and cultural-historical accounts of wisdom and ascertained five meta-level characteristics: 1) wisdom is used in important and difficult situations of life and the human condition; 2) it is a high level or “expert” knowledge specifically in advice-giving and judgment-making; 3) it includes depth, scope and balance when considering specific situations; 4) it involves virtue and character when put into motion; 5) it is developed and utilized for the well-being of self and humankind; and
6) though difficult to achieve, it is recognized by individuals in cultures around the world (Baltes, 1993). They explain the concept as follows:

This term refers to a system of knowledge about the variations and conditions of human development across the life course, human nature and conduct, life tasks and goals, social relationships, and the dynamics of intergenerational relations. In addition, this domain of knowledge encompasses various kinds of abilities: for example, to integrate contradictory evidence, to deal with uncertainty, to simplify complexity without becoming too restrictive in one’s considerations, and to revise earlier decisions and admit mistakes. Furthermore, the knowledge system is characterized by strong emotional and interpersonal content. The attainment of sophisticated knowledge about the fundamental pragmatics of life appears to require an integration of emotion and cognition (Staudinger, Cornelius, & Baltes, 1989, p. 53-54).

Their conceptualization of wisdom indicates that it is exceptional performance or expertise in this domain.

**Cognitive Psychology and the Study of Expertise**

The knowledge that humans acquire seems to be divided between that which is learned easily and naturally and that which requires sustained interest, concentration, and experience (Ericsson & Smith, 1991). According to Dittman-Kohli and Baltes, the former involves fluid functioning in elementary cognitive operations (1990; Kossakowski & Otto, 1977). These operations are part of human capacities in general; such as, walking, language development and perception. They develop very early, and may form the
basis for a more elaborated development of knowledge (Dittmann-Kohli & Baltes, 1990). The latter expertise is more difficult to attain. At base, research has confirmed that the activities and behavior of experts are the result of “stable individual characteristics” (Ericsson & Smith, 1991, p. 2), discoverable when individuals demonstrate them in “a series of outstanding achievements under similar circumstances” (p. 2).

An understanding of cognitive processes is rooted in cognitive psychology’s theory about information processing. According to Norman Fredricksen, a summary of information processing theory depends on an understanding of the function of memory which he explains in detail in Implications of Cognitive Theory for Instruction in Problem solving (1984).

Declarative and Procedural Knowledge

Long-term memory is composed of two types of acquired knowledge: declarative and procedural (Anderson, 1983, 1990, 1993). Declarative knowledge consists of conceptual and factual information about something. It is initially used in conjunction with procedural knowledge to solve problems in a specific domain. As time elapses it becomes broader, increasingly well-organized, and cross-referenced. According to Doolittle and Yekovich, procedural knowledge consists of information on how “to do” (1994, p. 3) something. They summarize that the end result is an elaborate organization of domain-specific declarative knowledge in a complex and layered “production system” (p. 3) of procedural knowledge.

Three Stages of Domain Specific Knowledge

In Anderson’s theory, three domain-specific stages of development are

Doolittle and Yekovich (1994) summarize these stages as follows:

In the **declarative stage**, the accumulation of declarative and procedural knowledge results in storage of factual information of the domain and the relationships between the facts. They are, as yet, at a rudimentary level. In any domain, in the earliest stages, the mere magnitude of information that must be learned results in very simple connections and representations of problem-solving procedures.

In the **associative stage**, greater refinement of the declarative network and of procedural strategies allows for more efficient learning of new information as it is embedded into an already existing knowledge structure. Strengthening of connections is possible with repeated exposure to situations and information. Larger groupings of related knowledge and a more organized representation of domain-specific knowledge is possible.

In the **autonomous stage**, procedural knowledge, which is developed more slowly, begins to take on automatic features. Therefore, this stage is characterized by a rich content of domain knowledge and a complex and interconnected set of procedures. Accordingly, Doolittle and Yekovich describe this stage as follows:

- productions are made more efficient by automating their execution. Originally productions are algorithmically based; they are performed by executing a series of instructions. This algorithmic execution is very cognitive resource intensive. During the autonomous stage these algorithms are automated such that little or no attentional and cognitive resources are needed. This gradual improvement in both declarative and procedural knowledge may continue almost
In short, information processing theory explains the development of expertise in a specific domain. A domain's knowledge system is subjected to greater refinement through practice and exposure, and results in three distinguishable stages of development which can lead to greater finesse in the domain area.

**The Shared Characteristics of Experts**

Since the development of information processing theory and the elaboration of a theory of expertise, many studies have been conducted in a variety of domains. Ericsson and Smith (1994) suggest that experts, whether chess players, professional athletes, or mathematicians, accrue and utilize knowledge in their respective domains in similar fashion. Bereiter and Scardamalia have grouped characteristics of domain expertise as follows: skill complexity, extent of knowledge, structure of knowledge, and representations of problems (1986). The general characteristics of expertise emerging from a comprehensive review of the literature are (Bereiter & Scardamalia, 1986; Glaser & Chi, 1988; Day & Lord, 1992; Dumdum, 1993; Doolittle & Yekovich, 1994; Leithwood & Steinbach, 1995):

1. Experts are able to see patterns in a problem space more rapidly and efficiently than non-experts.
2. Experts have better short and long term memory developed as a function of their rich domain-specific knowledge.
3. Experts can perform basic skills of a domain more efficiently than novices.
4. Experts' representation of problems are more complex, multileveled,
and multi-faceted.

5. Experts spend a greater amount of time interpreting a problem and defining its representation before attempting to solve it.

6. Experts monitor their own thinking processes better.

**Empirical Studies of Wisdom**

Dittmann-Kohli and Baltes (1990) suggest that the “products and cognitive activities of adults (e.g., parents, educators, executives, therapists, scientists, artists, politicians) are difficult to judge by criteria of fluid intelligence alone, nor can they be judged adequately by existing means of crystallized intelligence” (p. 58). Fortunately, investigations of cognitive processes (Anderson, 1983; Sternberg, 1986), and debate on the validity and relevance of intelligence tests have opened the door for redefining intelligence. Along these lines, Staudinger, Cornelius and Baltes (1989) cite research on “everyday intelligence” (Cornelius, Kenney, & Caspi, 1989), “mature thought” (Labouvie-Vief, 1985), “social intelligence” (Cantor & Kihlstrom, 1987), and “wisdom” (Holliday & Chandler, 1986). Wisdom has been explored for several reasons, but mostly because: it has been perceived as the epitome of knowledge for centuries and it been attributed to older segments of the population (Heckhausen, Dixon & Baltes, 1989).

Thus, the translation of the concept wisdom into empirical tasks is still recent. Wisdom is not found in the working of all tasks and is not required in all problem situations. According to Dittman-Kohli and Baltes (1990) likely candidates that evince wisdom reside in major life events, crises, and problems, but particularly those dilemmas that touch on age, history, non-normative situations, and which call for an evaluation and consideration of
life goals and tasks. The fundamental pragmatics of life entails knowledge about life adjustment and is found in the tasks of life planning, life management, and life review (Baltes, 1987). To access knowledge in the domain, fundamental pragmatics of life two of these have been utilized in previous research: life planning and life review (Staudinger, 1989; Smith & Baltes, 1990; Staudinger, Smith, & Baltes, 1992).

**Life Planning**

Research designed to determine if life planning could be used as a method to study wisdom was conducted by Smith and Baltes (1990). Based on a cognitive research procedure involving planning a days errands (Hayes-Roth & Hayes-Roth, 1979) and a think-aloud methodology (Ericsson & Simon, 1984), the Berlin researchers asked subjects to think aloud about the life of a fictitious person confronted with a complex decision. With limited information about this person, subjects were asked to develop a plan which considered two stated options and to generate potential hypothetical future events. The results indicated that life planning was a useful method to study the domain of wisdom (Smith & Baltes, 1990). However, Smith and Baltes (1990) reported that non-normative problems were more effective in stimulating this knowledge. Rich knowledge, life-span contextualism, and relativism received higher ratings than exceptional insight and uncertainty. Older subjects in the study had an equal number of top performances, suggesting that older individuals are able to produce such responses. The results were promising, and the researchers suggested that other problems should be used to tap wisdom (Smith & Baltes, 1990).
Life Review

Life review, involving the reconstruction of a life, was suggested as another potential pathway to wisdom-related knowledge (Staudinger, 1989; Staudinger, Smith, & Baltes, 1992). Researchers were interested in finding whether age and/or engagement in structured practice, as a function of one’s profession, might produce higher levels of this knowledge. Comparisons were made between four groups: old and young clinical psychologists and old and young professional controls. Think-aloud protocols in response to two problems were analyzed by a rating panel. Results indicated that the rich protocols could be reliably rated using the five wisdom criteria. Protocol length did not appear to influence raters' evaluations, and a moderate level of interrater consistency was found for criterion scales, except for management of uncertainty. Subjects with a match between their own age and that of the target person performed better in life review than persons of different ages. Finally, older adults performed as well as young adults, and there was a significant correlation between professional training and practice and level of wisdom-related knowledge. Finally, although “human-services professionals outperformed the control group,” (Staudinger, Smith, & Baltes, 1992, p. 271) they received average scores, substantiating an argument that “a coalition of several personal and contextual factors is necessary to produce advancement in wisdom-related knowledge” (p. 279).

According to Baltes and Staudinger (1993), in a third unpublished study by Maercker & Smith, wisdom nominees were similar to old clinical psychologists and young and old controls on wisdom-related tasks. More than half of the top responses were generated from subjects over 60 years of age.

This section has provided an overview of contemporary research on
wisdom, and the explicit approach employed in this study. Three areas of research which underlie this approach were presented: life-span psychology, historical and philosophical accounts of wisdom, and cognitive psychology and the study of expertise. In the next section, the historical background, demographics, role and responsibilities of the superintendent will be discussed. Expertise attributed to teachers and administrators will be outlined. Finally, the wisdom definition chosen here will be applied to the superintendency.

Public School Superintendents

In an era when school reform and outcome based education has raised the questions "What it is that students should know?" and "What should they be able to do?", it seems reasonable to extend the question to encompass administrators, faculty and staff. Thus, "what knowledge and competencies are vital for the position of superintendent?" is a timely question. An understanding of this expertise may lie in the evolution of the position and the persons who come to be public school superintendents. Accordingly, the following discusses the historical foundation of the public school superintendency, current demographics, role and requirements. In a subsequent section, two expert knowledge domains that superintendents might possess are elaborated.

History of the Superintendency

Brief histories of the public school superintendency in Educational Administration Today (Orlosky, McCleary, & Shapiro, 1984) and The Superintendency in the Nineties (Konnert & Augenstein, 1990) indicate that
the position of public school superintendent emerged gradually and of necessity. The state's constitutional responsibility in education, American citizens' desire for a general education, and the passage of legislation authorizing public education occurred in approximately the same time period of American history - in late 1800 and early 1900 (Wilson, 1960; Konnert & Augenstein, 1990). Monies were allocated to encourage the development of local schools, while volunteer committees were appointed to provide some sort of regulation and accounting for these funds. These ad hoc volunteer committees later evolved into state boards of education. As management became increasingly more burdensome, the identification of the first paid state officers was necessary. Oversight of funds was a substantial part of the state officer's role. Consequently, as funded communities increased, oversight responsibility developed into a full-time job. The establishment of state superintendencies began in New York in 1812 and the popularity of the position spread rapidly. The state superintendent's primary function was to collect data and oversee funding. In present times, the state department of education continues to establish and enforce standards and has a role in educational equity (Orlosky, McCleary, Shapiro, & Webb, 1984; Konnert & Augenstein, 1990).

As local school systems continued to proliferate, the state superintendent's role in oversight activities and inspection became overwhelming. Geographically accessible committees at the county level were desired. Continued growth and expansion eventually led to the development of the county superintendent. The county superintendent's office now serves as a central clearing house between the local school district and the state department of education (Murphy & Hallinger, 1986).
Local school superintendencies evolved in a parallel fashion from school committees which were selected by the local councilman or “selectmen” (Konnert & Augenstein, 1990, p. 5). The earliest local superintendencies were established in large urban areas like Buffalo and Louisville in 1837 (American Association of School Administrators, 1952). Boston, Cincinnati, Chicago, Detroit, Milwaukee, New York, and San Francisco followed suit by the 1850’s. By the 1890’s most cities with populations over twenty-five thousand had a school superintendent. The impact of the industrial revolution seemed to increase the need for such a role (Orlosky, et al., 1984) and, according to Knezevich (1975), lay boards had difficulty administering the schools.

Citizen’s committees, in conjunction with school administrators, directed the policy-making, business, and management aspects of local schools. While principals at the secondary level became increasingly overwhelmed with bureaucratic responsibilities, a need for leadership at the elementary level became obvious. In 1874 the first major court case related to public schooling (Stuart v. School District No. 1, 30 Mich. 69, 1874) was decided. Boards of education had already begun appointing superintendents to assume responsibilities, but no statutory authority existed to support these decisions. Eventually, a conflict arose over the use of public funds to support these administrative positions. Finally, the Michigan Supreme Court held that when responsibility and control over the operation of the public schools had been delegated to local school boards, implied statutory authority allowed them to appoint school superintendents or other administrators (Orlosky, et al., 1984).

The superintendent’s earliest role responsibilities were controlled by
school boards. Vigilant about retaining powers to employ personnel, control finance, and oversee school facilities, the superintendent was delegated the role of instructional leader. However, “the superintendent was perceived as the assistant of the board and expected to do their bidding. Faced with overwhelming educational problems, superintendents turned to the development of a uniform, coherent, highly organized system of education; punctuality, order, system, morality, and industrious effort became the guiding concepts” (Orlosky, et al., 1984, p. 53).

The nature of public school education has changed dramatically since those early days. Accordingly, Arthur and Phyllis Blumberg (1985) suggest that the educational setting of today is characterized by additional demands:

1. The school has changed from a place of instruction to an agency of “social policy, deriving its mandates either from the courts or from the various state and federal legislatures” (Orlosky, et al., p.29).

2. The teaching force has become increasingly unionized.

3. The use of media technology has had a decisive impact.

4. The ability to produce "hard data" (Blumberg & Blumberg, p. 30) has increased the demand for informed decision-making and for changes in student assessment practices.

Demographics

An unprecedented number of school superintendents, approximately three-quarters of all U. S. superintendents, were eligible to retire in 1994 (Konnert & Augenstein, 1990). Between now and the turn of the century a large number of new superintendents will take their place. In The Study of the American School Superintendency (1992), Glass reports that most
superintendents serve in one superintendency which they typically attain after age 35. In 1992, about one quarter of the nation’s superintendents had served in two superintendencies, and one tenth in three (Glass, 1992). Glass disputes the common misconception of the superintendent as occupying the position for an average of three years. He reports that tenure in the position is actually closer to 6 years (Glass, 1992).

According to Glass, the landscape of the school superintendency has remained consistent. His 1992 study described superintendents as an age typical of those who administrate large public organizations (48.7 years). Their roots are primarily blue-collar, most are college-educated, and, overwhelmingly, white and male. Most superintendents spend about five years in the classroom teaching before moving into administration. A large number of superintendents have been secondary teachers in social studies, science, and math, or taught at the elementary level. Many were coaches at one time. Superintendents spend about 15 years in three or fewer school districts, and their mobility is primarily attributed to offers of higher pay or greater responsibility. Superintendents perceive that school boards hire them for their personal characteristics because of the level of interaction between board and superintendent. Indeed when superintendents are fired or encouraged to leave, the departure is often due to disintegration in board/superintendent relationships (Glass, 1992).

**Role and Requirements**

Current superintendent job responsibilities reflect a changing environment. School boards are increasingly interested in superintendents as instructional leaders (Glass, 1992, xi). Four primary superintendent functions
have been identified (Griffiths, 1966): (a) improving educational opportunities by directing and developing a detailed program of instruction; (b) hiring, firing, developing, and managing personnel; (c) fostering a relationship with the community by assembling a public relations program, investigating the community's needs and wants, and interpreting the work of the schools to the public; and (d) procuring and allocating funding and school facilities (p. 70-71). To prepare superintendents for these functions, the Illinois State Board of Education requirements for the superintendent endorsement include: a minimum of 30 semester hours of credit beyond the master's degree in an approved graduate program of study; verification of two years teaching, supervising, and administrative experience; possession of the general supervisory or general administrative certificate; and successful completion of required certification exams (Illinois State Board of Education, 1994).

Research

Parallels can be found between the research on school leadership and research in psychology. According to Greenfield (1986), in the years following the publishing of Simon's *Administrative Behavior* in 1945 (1965), the study of educational administration was dominated by empirical science and an emphasis on an objective view of reality. This hold on the science of school administration denied the realities of the field and the values that are everywhere visible in daily experience. The earliest proponents of the science of administration claimed the existence of a value-free, rational, efficiency-bound process of decision-making. The consequence of Simon's work focused attention on the methods of inquiry rather than on the nature of
administrative practice. Knowledge about administration could only be known through empirical means. In Greenfield's view, "Simon's achievement was to overthrow the past wisdom of the field—a wisdom that derived from the experience, observation, and reflection of writers who were administrators, not scientists" (1985, p. 58). Scholars that emphasized practical knowledge and principles extracted from insight, such as Taylor and Fayol, were condemned as superficial and unrealistic. Although Barnard, Simon's contemporary, viewed administration through a different lens, he expressed confidence that through empiricism his own view of cooperation and commitment to people would eventually be validated. Simon's focus on decision-making emphasized the "factual basis of choice" (Greenfield, p. 59) at the expense of the "value and sentiment as springs of human action" (p. 59). He disregarded all influences on choice that could not be controlled or manipulated through empirical means.

Because of this type of thought, trait research gained popularity with the notion that successful managers or leaders possessed a certain configuration of attributes (Yukl, 1989). These attributes (traits and/or skills) were perceived as identifiable through empirical means and could inform decisions about selecting administrators. At the same time, psychological methodologies were developing which fueled the movement toward testing for potential leadership characteristics.

According to Yukl (1989), several researchers provided substantive reviews of a proliferation of studies of this kind. Using approximately 124 trait studies, many comparing leaders and non leaders, Stogdill (1948) found that leaders facilitated goal attainment in their work groups. Traits, such as, leader's intellect, sensitivity to member needs, task understanding,
motivation, persistence in problem solving, responsibility, assertion of control, and self-confidence were identified. This review revealed a situational contingency in which some traits were more effective in one situation and some in others. Stogdill's summation was that "a person does not become a leader by virtue of the possession of some combination of traits...the pattern of personal characteristics of the leader must bear some relevant relationship to the characteristics, activities, and goals of the followers" (1948, p. 64). In sum, Yukl asserts that the implication from these studies indicated that there was no pattern of characteristics which ensured leader success in all situations.

Stogdill's earliest review may have discouraged some research on traits and skills, but others persisted in identifying leader characteristics, so much so, that Stogdill published a second review in 1974 from a review of 163 traits studies conducted between 1949 and 1970 (Yukl, 1989). An even broader array of instruments were used during this period, but greater consistency and methodological rigor were evident. Leader traits that surfaced over and over included: adaptability, alertness, ambition, cooperation, decisiveness, energy, confidence, and stress-tolerance. Intelligence, conceptual and diplomatic ability, refined oratory, sensitivity to group processes and social cues, and organizational, and political adroitness were skills leaders should possess.

Subsequently, Bridges (1982) found an excessive dependence on survey research designs in a review of educational administrative research between 1967-1980. Accordingly, he suggested that these questionnaires had questionable reliability and validity and used simplistic statistical analyses. Research problems were mostly ad hoc rather than programmatic. Most of the research was atheoretical and, sometimes, had little practical utility: "In short,
there is no compelling evidence to suggest that a major theoretical issue or practical problem relating to school administrators has been resolved by those toiling in the intellectual vineyards since 1967" (Bridges, 1982, p. 25). This study seeks to go beyond the superficial aspects of superintendent and leadership traits and skills to the deeper knowledge that informs their problem solving. Furthermore, the methodology goes some distance to break away from survey research designs.

Superintendent Expertise: What is it?

Education must be concerned with research on expertise because: (a) the mission of education, even at the earliest stages, is to move individuals towards expertise, (b) education is essentially to be expert at how one becomes an expert, and (c) education teaches individuals how to learn the things that will result in expertise (Bereiter & Scardamalia, 1986). In this section, the expertise required for the profession of teaching and that required in the superintendency will be discussed. Finally, the expertise of wisdom will be fully defined and it’s relevance to expertise in the superintendency will be advanced.

By virtue of years of practice in the field, the public school superintendent may be considered an expert: in theory, the ideal (Ericsson & Crutcher, 1990). The career path for many superintendents is that of teacher, principal, central office administrator, and superintendent (Glass, 1992), therefore, their tenure in education is often beyond ten years. Estimates indicate experts serve 10 years as a minimum and have been exposed to a well-designed program of practice, training, and mentorship (Baltes & Smith, 1990; Ericsson & Crutcher, 1990; Ericsson & Smith, 1991).
Superintendents have often spent the earlier part of their careers in the classroom. Their tenure there may be short-lived; as many remain in this position less than ten years (Glass, 1992). As a result, many do not reach expert level as teachers. It is assumed, however, that they are familiar with pedagogical expertise at some time in their career. Superintendents must, subsequently, acquire or adapt earlier training to another type of expertise to be successful. Their expertise may more closely resemble that of CEO’s or managers in corporation management. Several studies have attempted to draw parallels between these positions (Zeigler, Kehoe, & Reisman, 1985; Raun & Leithwood, 1993; Wagner, 1993). The superintendent’s role is, in part, to facilitate the development of expert teachers and expert students in large educational institutions devoted to learning.

But what is the nature of superintendent expertise? What do the experiences in the classroom offer to the superintendent’s accumulated knowledge? Further, what does the training and practice in school administration contribute to this expertise?

The following will explore two areas of expertise that have been researched in connection with educators and educational administrators: pedagogical expertise and administrative expertise. If superintendents become experts in each of these, they surely have a repertoire which serves them well in a variety of contexts. However, this study suggests that their expertise might serve them better if it is connected to wisdom. As a final section, the Berlin Group’s definition will be revisited and integrated with what is known about the environment and skill demands of the public school superintendency, and, thereby, offered as a viable alternative.
Expertise in Pedagogy

Berliner (1988) suggests that there are two domains of knowledge with which classroom teachers must be familiar: “subject matter knowledge and knowledge and management of classrooms” (p. 9). To be an expert teacher, these domains of knowledge must be learned and refined. Dreyfus and Dreyfus (1986) have identified five stages of skill development in pedagogy: “novice” (beginning first-year teachers), “advanced beginners” (second and third year teachers), “competent” (third and fourth year teachers), “proficient” (fifth year and beyond), and “expertise” (Berliner, 1988, p. 1). In their view, not all teachers will reach the stage of expertise, and only some of the proficient teachers will reach it. Berliner (1986, 1988) has adapted these five stages to the field of education and provided descriptions of the skills and behaviors of each stage as follows:

Stage 1: Novice: The names and actions which constitute concrete tasks to be performed are learned at this stage. Rules which guide actions, but free of specific situations or contexts are taught to the novice. The meaning and application of pedagogical jargon and the principles of effective teaching must be acquired. The novice is exposed to rules; such as, waiting time for student response; techniques of questioning; classroom management; and the meaning and use of positive and negative reinforcement. Behaviorally, the novice is rational, inflexible, and dependent on rules and procedures that are taught. Facts and surface features of the classroom situation are mastered, and greater value is placed on in-class experiences than on verbal information provided.

Stage 2: Advanced beginner: The integration of verbal knowledge with experience increases in Stage 2. Experiences gleaned across situations are
recognized and specific instances of experience, called "episodic knowledge" (Berliner, 1988, p. 3), is accumulated. As specific contexts are more highly valued, timing and suitability of interventions, called "strategic knowledge" (p. 3), frequently guide action; yet the relative value of specific knowledge is not fully understood (Benner, 1984).

Stage 3: Competent: Although in Stage 1 and 2 personal involvement and attention to detail is evident, personal responsibility for decision making and actions are, as yet, episodic. In stage three, formal action plans are developed which outline specific actions to be taken and priorities to be set. Rational decision-making and path-goal connections are characteristic. The competent teacher is able to understand the comparative value of situational events and elements, and take responsibility for decisions of timing, instruction, and curriculum.

Stage 4: Proficient: Intuition and the ability to adjust smoothly to perceived environmental changes is characterized by a smoother performance in the proficient teacher. Experience has added a "holistic" (Berliner, 1988, p. 4) perspective integrating previous experience and knowledge with current perceptual cues. Prediction, integration, analysis, and decision-making are made possible by an acute sensitivity to similarities across situations.

Stage 5: Expert: The expert teacher uses intuition frequently in assessing and responding to situations. The fluid performance which results is characterized by impeccable timing and an absence of observable steps to action. Behavior does not appear to involve deduction or analysis and is better described as "knowledge-in-action" (Schon, 1983, p. 59). When anomalies are perceived, thoughts become more deliberate and analytical,
triggering an internalized trouble-shooting mechanism (Berliner, 1986, 1988).

Empirical Support for Expertise in Teaching

Empirical support for these stages was provided in research conducted by Sabers, Cushing, and Berliner (1988). Three groups of subjects were used: “expert” (secondary mathematics and science teacher nominees chosen after classroom observation); “novice” (first year teachers with excellent evaluations); and “postulant” (individuals with subject matter expertise and no teaching experience) (Berliner, 1988, p. 7). According to Berliner (1988) data collected in a number of related studies revealed five pedagogical skills which grew with practice: “interpreting classroom phenomena,” “discerning the importance of events,” “using routines,” “predicting classroom phenomena,” and “judging typical and atypical events” (pp. 7-19).

1. Interpreting classroom phenomena: One experimental condition (Sabers, Cushing, & Berliner, 1988) involved the viewing of three television screens each having a different perspective of a single classroom: the left side view of the students, the right side view of the students, and the teacher instructing to the middle segment of students. Interpretations from the subject group showed that novices had difficulty in monitoring all three screens simultaneously, and in bringing the information together in a clear and integrated fashion. They appeared to be confused about the observations and could not make even simple explanations for the activities observed. Students’ attitudes were a mystery to most of the novices, and postulants were overwhelmed by the stimuli. These teachers were able to observe and make interpretations about one screen at a time. When reporting what was seen, both novices and postulants gave step-by-step accounts. Inference,
conclusion, and evaluation were absent from these reports. Experts, on the other hand, experienced little confusion or difficulty in interpreting what they observed. They made lengthier observations, seemed more comfortable monitoring three screens simultaneously, and distinguished the verbalizations of students and teachers more accurately than less experienced teachers. Events were interpreted rapidly and with little observable effort.

2. **Discerning the importance of events**: To assess this aspect of teaching, slides of a classroom scene were shown rapidly, and subjects were asked to report what they observed. Postulants and novices were detailed and accurate. Expert teachers went beyond the observations and attended to different aspects of what was seen. Data substantiated that expert teachers weigh the significance of elements in a situation, and attend to those that are valued most.

3. **Using routines**: The fluid performance of expert teachers is attributed to the use of routines which make some aspects of the situation smooth and effortless. In a study by Leinhardt and Greeno (1986), mathematics teachers were brief in classroom management interventions and homework instructions because they stream-lined these more mundane aspects of the teaching situation. As a result, assessments about students' homework completion and need for assistance were made while teaching.

4. **Predicting classroom phenomena**: Expert teachers recognize patterns in student performance with accuracy and plan interventions accordingly (Stein, Claridge, & Berliner, 1988). Frequent exposure to students cognitions (e.g., typical student errors and thinking patterns) facilitates predictions about students' needs for assistance.

5. **Judging typical and atypical events**: Expert teachers pay greater
attention to and intervene more intensely when things are atypical. Their attention is more focused than less skilled novices. Expert teachers merge information about students into a group picture, while novices see them as individual cases or situations. Also the knowledge experts glean from situations of student interaction provide mental models which can be used in subsequent teaching episodes (Ropo & Keihela, 1987).

In summary, pedagogical expertise involves acquisition of two knowledge domains and movement through five stages of development in which select skills improve: “interpreting classroom phenomenon,” “discerning the importance of events,” “predicting classroom phenomenon,” “using routines,” and “judging typical and atypical events” (Berliner, 1988, pp. 7-19).

Expertise in Educational Administration

A substantial body of research applying cognitive psychology, expertise, and problem solving to school administration has been conducted at the Ontario Institute for Studies in Education. One such study (Allison & Allison, 1993) examined school principals’ think-aloud (Ericsson & Simon, 1984) responses to a case study. Building on previous research (Allison & Nagy, 1991; Nagy, 1990; Allison & Allison, 1991), the study was designed to examine the relationship between problem-solving expertise and experience. A range of administrative experience levels were represented: “aspirant” (classroom teachers with no administrative experience, but recently qualified for administration); “rookies” (first and second year principals); “seasoned” (ten to fifteen year principals); “veteran” (twenty or more year principals); and “entrant” (postgraduate student teachers with no teaching or administrative
experience) (Allison & Allison, 1993, pp. 134-135). Professors of administration examined case study transcriptions for evidence of: (a) “quality of response”; (b) “attention to detail;” and (c) goal abstraction” (pp. 135-136). Although the relationship between experience and performance was complex, an important finding was that any experience in an administrative role increased subjects’ levels of abstraction and attention to detail. Problem-solving expertise seemed to be connected to experience level and cognitive ability; “Our analyses showed that subjects whose performance was highly rated were likely to have seen both the forest and the trees: They paid more attention to detail and gave evidence of being able to entertain and plan for the accomplishment of more transformative goals.” (Allison & Allison, 1993, p. 141).

In another series of studies (Leithwood, 1988; Leithwood & Stager, 1989; Leithwood & Steinbach, 1995), basic components of a problem-solving model were extracted from data, and applied as a framework to examine superintendent problem solving. The categories that emerged were (Leithwood & Steinbach, 1995, p. 46):

1. “Problem interpretation”: Evidence suggested that the position of the superintendent in the hierarchy impacted problem-solving processes. Frequency of occurrence, completeness of information, number and nature of participants, philosophical opinions represented, and persistence of a problem situation were used to identify a problem’s complexity. Superintendents used a variety of ways to understand and interpret encountered problems: (a) previous experience; (b) reframing or restating the problem; (c) analysis of problem etiology; (d) assembly of factual information; (e) determination of problem ownership; and (f) identification of policies,
procedures, standards or other existing structures to simplify decision-making.

2. "Goals": Superintendent's problem solving showed a generation of two types of goals: "process goals" (solution oriented) and "product goals" (outcome oriented) (Leithwood & Steinbach, 1995, p. 78). In more ill-structured problems, process goals were more frequent. Furthermore, superintendents perceived problems as complex when decisions or actions by others were needed to resolve situations.

3. "Values": A classification system developed by Leithwood, and based on the works of Hodgkinson (1978) and Beck (1984) was used in the analysis of value statements collected from superintendents. The values were classified into four categories: "(1) basic human values (freedom, happiness, knowledge, respect for others, survival); (2) general moral values (carefulness, fairness, courage); (3) professional values (general responsibility as educators, specific role responsibilities, consequences for immediate clients, consequences for others); and (4) social and political values (participation, sharing, loyalty, solidarity and commitment, and helping others)" (Leithwood & Steinbach, 1995, p. 81). These values helped superintendents prioritize problems.

4. "Constraints": Anticipated impediments to problem solution were not as frequently mentioned as were predicted. They were viewed as an inevitable facet of the problem-solving process. Specific constraints identified were: limits of superintendent authority, deficiency in background information, personalities of key players, and absence of guidelines for problem management. Contingency plans were used to alleviate constraints.

5. "Solution processes": Problem resolution seemed to be characterized
by “strategic opportunism” (Isenberg, 1987). “This model combines a clear understanding of one’s general or long-term purposes and how a person takes advantage of opportunities that arise to achieve these goals. Senior managers show signs of using this model, claims Isenberg, as they move back and forth between relatively abstract strategies, goals, and policies and quite specific thinking about specific people and organizational problems” (Leithwood & Steinbach, 1995, pp. 88-9).

Leithwood and Steinbach (1995) have recently studied how effective nominee superintendents solve problems in groups. They suggest that superintendents possess the characteristics associated with expert problem-solvers: (a) they ensure everyone’s participation while helping colleagues see the larger problem involved; (b) spend time in deep reflection; and (c) intervene only when processes in groups appear to be stalled.

Finally, results of one dissertation study (Miller, 1993), based on Leithwood and Steinbach’s work, assessed problem-solving skills of superintendents. Her sample of “outstanding” superintendent nominees were more skilled in solving ill-structured problems than randomly selected superintendents. The author concluded that while both groups shared a knowledge of problem-solving skills, outstanding superintendents “exhibited expert problem-solving characteristics and domain-related problem-solving strategies.” (Miller, 1993, p 2).

**Problem solving In Structured and Ill-structured Domains**

There is growing evidence that more research is needed on thinking and problem solving in ill-structured domains, such as teaching and educational administration. Though many other researchers have presented
similar terminology, Simon (1978) suggests that the essence of problem solving research is related to two types of problems: well-structured and ill-structured (p. 287). Well-structured problems like those in mathematics and physics have different characteristics than ill-structured problems like conservation, divorce, etc. The specifics on how they vary is determined by their "completeness" (Wood, 1983, p. 249) and the certainty by which one can recognize a "correct" or "optimal" (p. 249) solution.

Byrne (1977) suggests that tasks which successfully tap world knowledge are ill-structured or "messier" (p. 288). According to Dumdum (1993), these problems have certain characteristics. They (a) consist of smaller problems which are interrelated in a somewhat complex network (Ackoff, 1974); (b) consist of events and details whose significance is difficult to ascertain and whose reliability or validity is questionable; (c) involve several persons or groups who may have conflicting value orientations, perceptions of situations, levels of motivation to change, or goals for the outcome; (d) and, finally, are not easy to classify in terms of the expertise or content knowledge required for their solution (Dumdum, 1993).

Perhaps Arlin (1990) is correct in her assertion that the essence of contemporary wisdom is in the problem-finding process. According to Arlin wisdom and problem-finding have much in common: (a) a match between questions and answers; (b) ability to find asymmetry in the face of symmetrical propositions; (c) an openness to modify or change perspectives; (d) an ability to extend or redefine the limits or boundaries of a situation; (d) a sensitivity to the comparative consequence of particular problems; and (e) the presence of preferred conceptual moves to resolution. Accordingly, wisdom is not the solution to problems, but the generation of profound insight:
Wisdom may be the means by which one discovers, envisages, or goes deeper into deeper questions (Arlin, 1990, p. 230).

Wisdom Criterion and the Public School Superintendent

The wisdom criteria and the categories generated by Leithwood and Stager (1989) are surprisingly similar. Yet, only one study (Rowles, 1993) has attempted to use the wisdom criteria (scales) in an investigation of school personnel. The researcher explored the nature of teacher expertness and its attainment by examining teachers' implicit and explicit descriptions of their teaching practice. Although wisdom-related knowledge in problem solving was not the focus of the study, it is interesting that the researcher adapted the Berlin Group's method of identifying and sorting wisdom criteria. In any event, she concluded that administrative officers in secondary schools were not perceived to increase the expertness of teachers through supervision of their instruction (Rowles, 1993). Other recent dissertation research explores the role, the leadership characteristics, the selection process, gender differences, problem-solving ability, and a number of key relationships of the superintendent. The following will briefly integrate the Berlin Group's definitions of the five wisdom criteria with recent dissertation research on the public school superintendency.

Life-Span Contextualism - The Educational Community

"Life-span contextualism" (Staudinger, Smith, & Baltes, 1994, p. 5) subsumes the knowledge and understanding that comes to us from life-span development and the many life contexts in which individuals navigate; this includes awareness and sensitivity to cultural distinctions, the many contexts
in which we function, and the varied conflicts between competing loyalties to these contexts.

The Berlin Group's elaboration of contextualistic thinking explores knowledge required for good judgment in life matters related to the human condition. Richly elaborated and embedded contexts are understood in their age-related, sociohistorical, cultural, and biographical dimensions (Staudinger, Smith, & Baltes, 1994). This knowledge is essential to the political relationship that the superintendent shares with the school board, the nature of the superintendent's relationship with the teaching staff, the number and diversity of community and governmental stakeholders in the educational process, and the superintendent's consistent visibility and easy accessibility to the public (Blumberg & Blumberg, 1985).

Superintendents are acutely aware that "people skills" increase effectiveness in school relationships. The importance of the superintendent's ability to interact with significant individual, group, and institutional players is reflected in recent dissertation research. Studies are rich with lists of selection criteria, behaviors, attitudes, and skills which are considered important (Genge, 1993). Studies between 1993 and 1994, for example, emphasize communication skills as vital (McGrane, 1993; Kleinsmith, 1993; Stainer, 1993; Wilson, 1993). Several focus specifically on the superintendent's relationship and communication with the school board, leadership team, administrative council, and other significant internal/external groups (McGee, 1993).

Konnert and Augenstein (1990) graphically depict the milieu in which the superintendent functions as a series of concentric circles or systems. At the core is the educational organization comprised of the Board of Education,
administrative personnel, staff, teachers, non-certified personnel, and the student body. These five subpublics have overlapping duties and responsibilities. The school system is embedded in a broader circle of constraining forces which, through a variety of means, attempt to dictate how the organization will operate. Policies handed down by the U. S. Office of Education and the departments of education, legislation at the federal, state, and local levels, judicial decisions, and special interest groups act directly or indirectly on the school system through their influence and activity. Finally, the local community represents another circle or system of values, expectations, and cultural characteristics to which the school system is accountable and from which the school system receives input. The nation and the world through their political, social, and cultural influence can also impact indirectly on the educational system (Konnert & Augenstein, 1990). The superintendent is acutely aware of these impacts by virtue of his/her position in the organization. Political savvy and an extensive, well-articulated knowledge of each context and its relationship with other contexts is required.

Value Relativism

"Value-relativism" (Staudinger, Smith, & Baltes, 1994, p. 5) involves the assessment of situations based on one's own values and the acknowledgement of the value systems and viewpoints of others. According to Staudinger, Smith, and Baltes (1994), "this implies the knowledge that within a society, there are goals and values which differ from one's own, and that these differences are embedded in different personalities, priorities, and relevant cultural and social expectations and evaluations" (p. 58). This
criterion also includes problem-solving behaviors that weigh information against core values.

A qualitative difference exists between the role of the school superintendent and that of other chief executive officers in private organizations. The public perceives the superintendent as the “guardian of a sacred public enterprise, the education of the community’s children...” (Blumberg & Blumberg, 1985, p. 188).

Nevertheless, Hodgkinson (1978) has been critical of the dominance of rational values in administration believing that basic human values are superior and should be a “hallmark of the ethical educational leader” (Leithwood & Steinbach, 1995, p. 178). However, theoretical attention to the role of values in administrative problem solving has been less than impressive. Greenfield implicates positivism as the reason: “Because positivistic science cannot derive a value from a fact or even recognize values as real, we have a science of administration which can deal only with facts and which does so by eliminating from its consideration all human passion, weakness, strength, conviction, hope, will, pity, frailty, altruism, courage, vice, and virtue” (Greenfield, 1986, p. 61). According to Ashbaugh and Kasten (1991) administrators report a lack of developed habits of reflection and little in preparation programs for the ethical and moral dimensions of the superintendent job.

Fortunately, there is evidence that values are assuming new significance in administrative research. Defined as a “broad and relatively enduring preference for some state of affairs” (Hambrick and Brandon, 1988) values are suggestive of enduring beliefs about desirable outcomes (p. 5). They become internalized in some fashion so that they influence future decisions.
and judgments about self and other’s actions or thoughts (Leithwood & Steinbach, 1995). Since Murphy and Hallinger (1986) contend that public school superintendents in effective (high student achievement) districts assert direct or indirect control over methods of instruction; monitor and enforce preferred teaching models; have a hand in staff development activities, curriculum guidelines, textbook and test adoption policies and teacher evaluation, their value influence is of fundamental concern (Murphy, & Hallinger, 1986). At base, “the development and testing of one’s own convictions about the values that should shape life in schools are too important to be left to chance and too critical to be first undertaken in real decisions that impact the lives of others” (Ashbaugh & Kasten, 1991, p. xiv). Applying this knowledge to educational situations while remaining true to universal human and educational values is part of the superintendent’s duty (Kleinsmith, 1993).

**Recognition and Management of Uncertainty**

The “recognition and management of uncertainty” (Staudinger, Smith, & Baltes, 1994, p. 5) implies an individual’s acceptance of the unpredictability of life; an understanding that a person can never know or control everything in relation to life situations or events. With this perspective, individuals are able to evaluate different trajectories of problems. The management of uncertainty includes the ability to identify and predict the likelihood of events and plan for a variety of outcomes (Baltes & Smith, 1990; Baltes & Staudinger, 1993).

Superintendents occupy positions that appear to wield influence, authority, power, and even prestige. In reality, the position allows for little or
no control in a great many matters. Interestingly, this substantiates the connection between the wisdom literature and the superintendency. Blumberg and Blumberg (1985) suggest that for a superintendent, situations are largely "unpredictable" (p. 189) and wrought with "uncertainty." (p. 189). A rational, sequential decision-making process in educational decisions is, at times, impossible. Because explosive events may intervene unpredictably, the superintendent's stance in relation to conflict must be, at times, reactive. At other times the role of the superintendent is invisible, relegated to maintenance of peace and order to expedite the educational process. Even in this function the superintendent is a catalyst for organizational change which may result in disharmony. At base, the superintendent must possess the ability to uncover and flush out conscious and unconscious community interests and address them (Blumberg and Blumberg, 1985).

Isenberg's (1984) research suggests that senior managers tolerate ambiguity and, at the same time, have ways to view these inconsistencies which reduce their dissonance. To counteract conservatism, senior managers are sensitive and alert to serendipity. They often highlight inconsistencies and incongruities so as to bring them to the attention of their colleagues. They do not deny dissonance, but perceive it as a surprising and interesting turn of events which provides data for further examination. A knowledge of life's uncertainty prepares individuals for the unexpected so that they can plan for the future (Staudinger, Smith, & Baltes, 1994).

Rich Factual Knowledge

"Rich factual knowledge" (Staudinger, Smith, & Baltes, 1994, p. 5) is encyclopedic knowledge which provides a comprehensive cross-referenced
data bank about the human condition. This data bank offers an individual a foundation of general knowledge to interpret the actions and motivations of others on the basis of shared experience of being human (Schank & Abelson, 1977). Dissertation research indicates that the trend towards larger and more diversified multi-school districts demand personnel who possess greater knowledge and skill than the classroom experience alone can provide (Marsillio, 1993). Information with which superintendents must be familiar include: educational leadership and public policy, school and personnel management, educational planning, and school governance (ISBE, 1994). The superintendent needs rich factual knowledge about human nature as well (Staudinger, Smith, & Baltes, 1994). Overseeing the teaching of students of all ages to prepare for education, career, and family life involves a thorough understanding of life events. Furthermore, the balancing of inter and intra-school interests in educational planning requires knowledge of the human resource potential in schools.

**Rich Procedural Knowledge**

“Rich procedural knowledge” (Staudinger, Smith, & Baltes, 1994, p. 5) refers to the heuristic or mental procedures used in processing the data bank of factual knowledge about the “fundamental pragmatics of life” (Smith & Baltes, 1994, p. 45). Strategies for decision-making, problem solving, assessing and monitoring human emotions, systematizing and analyzing past experiences, setting goals, and evaluating consequences are examples (Staudinger, Smith, & Baltes, 1994). A knowledge of strategies and heuristics in everyday problem solving is a necessity for school superintendents. When school leaders begin to process, weigh and apply relevant information their
use of data is critical (Glasman, 1986). Three situations which frequently demand their attention and require procedural skills are: (1) when student data are chosen for analysis and transmitted; (2) when theory is analyzed and integrated; and (3) when relevant social data are collected and factored into decision making (Wissler & Ortiz, 1988). According to Wissler and Ortiz, direct involvement by the superintendent is essential in these circumstances as his/her strategic centrality provides the big picture. Procedural knowledge involves other strategies as well: "cost-benefit analysis"; "flexible planning of alternative options"; systematizing and analyzing "past experiences"; selecting goals and "the corresponding means to achieve them"; deciding on relevant participants; and "strategies of giving advice" (Staudinger, Smith, & Baltes, 1994, pp. 45-46). An emphasis on efficiency and the assessment of legal and governmental impacts with the balancing of human resources provides public school superintendents' opportunities in the collection, organization, and distribution of information for the greater good.

Summary

The review of the relevant literature suggests that wisdom is a valuable contribution to understanding the potentials of aging and the accumulation of knowledge about the pragmatics of life. Perceived as a high level of knowledge or expertise, wisdom is accumulated through several enhancement conditions, and involves: rich procedural and factual knowledge about the human condition; the ability to understand and navigate the embedded contexts and value systems in which we live; and a recognition of and ability to manage the uncertainty of life. The Berlin Group's definition has provided a crystallization of the characteristics that
certain data may possess which allow for these products to be evaluated for their wisdom content. At the same time, a review of research on the superintendency indicates that cognitive psychology has inspired a reexamination of the expertise of school leadership. The changes in world demographics in the form of an aging population and the expansion of world knowledge through technology suggest that leaders in education should possess deeper and broader knowledge of the human condition. The domain of wisdom is offered here as one content of knowledge which may serve school leadership personnel in the call for changing involvement. What follows is a method by which this study evaluated the content of public school leader's problem solving using the wisdom definition and its five criteria.
CHAPTER III
METHODOLOGY

Chapter III provides an overview of the decisions made for methodology. A description of the choices available for ascertaining the wisdom of school leaders, and the resulting research design and data analysis are explored in detail. It includes a discussion of subject selection, materials for data collection, and procedures. The rating panel, methods for their selection, training, and protocol scoring will be explained. Finally, plans for data analysis are presented.

Design of the Study

The research design for this study was modeled after the wisdom research conducted at the Max Planck Institute (the Institute) in Berlin, Germany (Baltes & Smith, 1987). A letter (Appendix A) requesting information about research on wisdom was sent in April, 1994. In response, the Institute sent a letter (Appendix B) and the Manual for the Assessment of Wisdom-Related Knowledge (Staudinger, Smith, & Baltes, 1994) which has been adapted for these exploratory purposes. Subsequently, an in-person interview with one the researchers was requested (Appendix C) and was held in July of 1994. To investigate potential differences in school leaders' "expert knowledge system dealing with the fundamental pragmatic of life" (Staudinger, Smith, & Baltes, 1994, p. 4) in home and work environments,
subjects were asked to discuss three problems. Problems suitable to a population of school leaders and simulating the characteristics of the life-planning problems used by the Berlin Group (Sorensen & Smith, in press; Staudinger, 1989; Smith & Baltes, 1990) were developed. Specifically, each subject was given three scenarios, in random order, designed to stimulate the planning and problem solving of a fictitious target person.

Subjects and Selection Criteria

Time, expense, and the operational definition of school leaders resulted in a comparatively small sample for this exploratory study (N = 31). The small sample expedited the intensive, individual interview sessions with subjects. From The Directory of Illinois Public School Districts and Other Education Units (ISBE, 1994), a population of public school superintendents in elementary, secondary, and unit districts in DuPage, Cook, Kane, and Lake counties of Illinois (N = 206) was identified. This population was stratified into two groups to include gender as a design variable: male (N = 172) and female (N = 34). Type and size of district were not used as further design variables. Using a table of random numbers (Bernard, 1994) a total sample of 57 public school superintendents were targeted (M = 42, F = 15). Their participation was solicited by mail in late May, 1995, in a letter (Appendix D) delineating the nature and purpose of the study and potential dates and times for interviews. A second identical letter was sent to non-respondents in late June, 1995. A total of 46 superintendents responded to the letter, with a response rate of 81%. The letter was accompanied by a brief questionnaire designed to collect the additional biographical information which was needed to identify the subjects (Appendix E). Of the respondents, 31 superintendents
met the criteria as school leaders. Selection criteria included: position (suburban public school superintendents); age (40-55 years); gender (male and female); total years of tenure in public school education (ten or more); and years in their current superintendency (> 1). The final stratified random sample (Bernard, 1994) was composed of female (N = 9) and male (N = 22) suburban public school superintendents from the Chicago metropolitan area.

Subjects were informed about the researcher's intent to tape-record, transcribe, and analyze responses, and were guaranteed anonymity. All participants who met the selection criteria as school leaders were interviewed. Follow-up phone calls were made to superintendents to schedule interview times within their respective districts. Interviews were completed by September 15, 1995.

**Professional and Educational Background**

The target population was cohort-comparable as to relative education (Masters degrees, CAS, or Doctoral degrees) and work experience based on the minimal requirements to occupy the position of superintendent in the State of Illinois (Table 1). In 1992, The Illinois State Board of Education specified the minimal requirements for a school superintendent endorsement to include: (a) a minimum of 30 semester hours of credit beyond the master’s degree in an approved graduate program of study; (b) two years of school supervisory or administrative experience; (c) possession of the general supervisory or general administrative certificate; (d) successful completion of required certification exams; and (e) verification of two years teaching, supervising and administrative experience (ISBE, 1994). Twenty-six subjects (83%) had an earned EdD or PhD degree.
TABLE 1
SAMPLE CHARACTERISTICS

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>22</td>
<td>71.0</td>
</tr>
<tr>
<td>Female</td>
<td>9</td>
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<tr>
<td>Total N</td>
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<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
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<tr>
<td>40 - 45</td>
<td>6</td>
<td>19.4</td>
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<tr>
<td>46 - 50</td>
<td>18</td>
<td>58.1</td>
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<tr>
<td>51 - 55</td>
<td>7</td>
<td>22.6</td>
</tr>
<tr>
<td>Education</td>
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<td></td>
</tr>
<tr>
<td>Masters</td>
<td>4</td>
<td>12.9</td>
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<tr>
<td>PhD, EdD</td>
<td>26</td>
<td>83.9</td>
</tr>
<tr>
<td>Other</td>
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<td>3.2</td>
</tr>
<tr>
<td>Age entering first full-time administrative position other than superintendent</td>
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<td></td>
</tr>
<tr>
<td>25 - 30</td>
<td>16</td>
<td>51.6</td>
</tr>
<tr>
<td>31 - 35</td>
<td>7</td>
<td>22.6</td>
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<tr>
<td>36 - 40</td>
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<tr>
<td>Type of School District where held first full-time administrative position</td>
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<td></td>
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<tr>
<td>Junior High/</td>
<td></td>
<td></td>
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<tr>
<td>Middle School</td>
<td>7</td>
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<td>High School</td>
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<td>25.8</td>
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<tr>
<td>Parochial</td>
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<td>3.2</td>
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<tr>
<td>Other</td>
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<tr>
<td>Number of years as a (part-time or full-time) classroom teacher</td>
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<td></td>
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<tr>
<td>0 - 4</td>
<td>10</td>
<td>32.3</td>
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<tr>
<td>5 - 9</td>
<td>14</td>
<td>45.2</td>
</tr>
<tr>
<td>10 - 14</td>
<td>5</td>
<td>16.1</td>
</tr>
<tr>
<td>15 - 19</td>
<td>2</td>
<td>6.5</td>
</tr>
<tr>
<td>Characteristics</td>
<td>N</td>
<td>(%)</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Nature of first administrative/supervisory position</td>
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<td></td>
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<tr>
<td>Assistant principal</td>
<td>6</td>
<td>19.4</td>
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<tr>
<td>Principal</td>
<td>13</td>
<td>41.9</td>
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<tr>
<td>Director/Coordinator</td>
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<td>29.0</td>
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<tr>
<td>Assistant Supt.</td>
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<td>3.2</td>
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<tr>
<td>Other</td>
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<td>6.5</td>
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<td>Number of public school superintendencies held including current</td>
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<td></td>
</tr>
<tr>
<td>1</td>
<td>19</td>
<td>61.3</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
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<td>1</td>
<td>3.2</td>
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<tr>
<td>Number of years in current superintendency</td>
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<tr>
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<td>64.5</td>
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<td>&gt; 5</td>
<td>11</td>
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<td>Number of years total served as a superintendent</td>
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<tr>
<td>0 - 4</td>
<td>14</td>
<td>45.2</td>
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<tr>
<td>5 - 9</td>
<td>6</td>
<td>19.4</td>
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<tr>
<td>10 - 14</td>
<td>6</td>
<td>19.4</td>
</tr>
<tr>
<td>&gt; 15</td>
<td>5</td>
<td>16.1</td>
</tr>
<tr>
<td>Number of total districts worked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>9.7</td>
</tr>
<tr>
<td>2 - 3</td>
<td>14</td>
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<td>4 - 5</td>
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<td>25.8</td>
</tr>
<tr>
<td>&gt; 6</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>Had mentor for the superintendency</td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>17</td>
<td>54.8</td>
</tr>
<tr>
<td>No</td>
<td>14</td>
<td>45.2</td>
</tr>
</tbody>
</table>
Originally, superintendents with more than five years in the superintendency and a minimum of ten years of teaching were sought, but these restrictions severely limited the potential sample in the population. The results indicated that 24 (77.5%) had been in the classroom for less than ten years. A number of school superintendents are in their first superintendency with less than four years total public education experience. In the sample, 19 (61.3%) have been in one superintendency and 14 (45.2%) have less than five years experience as a superintendent. Many of these are women. Although recent educational research indicates that women occupy an increasing proportion of public school superintendencies (Glass, 1992), the number of women is still comparatively small (Shakeshaft, 1989). Approximately 34 (13%) of the total study population were women. Ultimately, the sample was biased towards men (71%). Stratification of the population by gender was specifically designed to deal with this imbalance and to consider this as a design variable. Finally, a decision was made to allow all superintendents with greater than one year experience in the superintendency, and who possessed a total of ten or more years of experience in public education to be included in the sample.

Additional Sample Characteristics

The questionnaire requested additional information about the study population. Because of its exploratory nature, this study did not collect information considered in previous wisdom research. For example, Staudinger (1989) collected information on number of children, marital status, verbal intelligence, fluid intelligence, and neuroticism. Although the present study collected information that would explore the Berlin Group's
contention that “a rare coalition of favorable conditions acting together is needed to move people toward wisdom” (Baltes & Staudinger, 1993, p. 77), these characteristics were not used as design variables. The literature review suggests that, in conjunction with age, three categories of conditions enhance the development of wisdom: “personality-related dispositions such as openness to new experiences or generativity a` la Erickson, and also experience-related factors such as good mentorship in matters of life, extensive training, and well-structured experience with the human condition” (Baltes & Staudinger, 1993, p. 77). Along these lines, subjects were asked the number of years they practiced in the profession of teaching and whether they had a mentor for the superintendency. The results indicated that 24 (79.5%) had been in the classroom less than ten years. While 17 (54.8%) of the subjects had a mentor for the superintendency. One superintendent clarified that he had negative mentors: “role models which I did not want to emulate.” Because living and working in a number of different contexts might facilitate an individual's breadth of knowledge about the human condition, subjects were asked about the number of districts in which they worked. Twenty-three (74.2%) of the respondents worked in more than one school district.

The characteristics of the study sample are similar to demographics of the public school superintendency as described by Glass in The Study of the American School Superintendency (1992).

Materials for Data Collection

Instrument

An instrument was developed to tap ways in which school leaders
might demonstrate wisdom-related knowledge. Careful planning informed by a pilot study, research by the Berlin Group, and a review of the related literature was used to construct three problem scenarios (Appendix F). Two types of validity were established for the three problems constructed: content validity and face validity. The following will discuss how the content and wording of the problems was chosen.

According to Ary, Jacobs, and Razavieh, the content validity of an instrument depends on how representative the instrument’s problems are to the area of interest. To achieve a high level of content validity a research instrument “must adequately sample both the topics and the cognitive processes included in the content universe under consideration” (Ary, Jacobs, Razavieh, 1985, pp. 214-215). Content validity was established by an exhaustive review of the literature in three areas: life-span psychology, cognitive psychology, and research studies about the problems faced by school administrators.

According to life-span psychologists (Reese & Smyer, 1983), life is comprised of major and minor transitions which vary in terms of the “life space” or “context” (p. 8) affected (Hultsch & Plemons, 1979) and the subjective or objective impact of events (Brim & Ryff, 1980). Considerable debate about the most precise classification system for life events and their impacts has ensued. This has included discussion of terms such as normative and nonnormative (Datan, 1983). Reese and Smyer suggest that “...ambiguities would be avoided if desirability (or social desirability), prevalence, age relatedness, and cohort specificity were substituted for the normative-nonnormative distinction” (1983, p 12). More recently Baltes and Baltes assert:
In summary, an encompassing definition of successful aging requires a value-based, systemic, and ecological perspective. Both subjective and objective indicators need to be considered within a given cultural context with its particular contents and ecological demands. However, both the objective aspects of medical, psychological, and social functioning and the subjective aspects of life quality and life meaning seem to form a Gordonian knot that no one is prepared to untie at the present time. Our suggested solution is to use multiple subjective and objective criteria and to explicitly recognize individual and cultural variations (1990, p. 7).

Four contexts are often discussed in life-span research: family, primary friendship, occupation, and career (Berger, Berger, & Kellner, 1973; Hultsch & Plemons, 1979). Likely candidates that evince wisdom reside in major life events, crises, and problems that relate to age, historical context, and nonnormative situations (Baltes & Nesselroade, 1984; Dittman-Kohli & Baltes, 1990). In defining crises, Reese and Smyer (1983) cite Lieberman (1975) who “conceptualized life crisis as involving three elements - a loss or disruption of some kind, a demand for behavioral change, and a particular meaning attached to the event” (Reese & Smyer, 1983, p. 4).

Life-planning and life-review problems, used in earlier wisdom research, were used as models to capture the wording, the themes and dilemmas which would elicit wisdom (Staudinger, 1989; Smith & Baltes, 1990; Staudinger, Smith, & Baltes, 1992). In particular a life-planning problem developed by Smith and Baltes (1990) was used as a model to develop one of the problems of this study:

Elizabeth, 33 years old and a successful professional for 8 years, was
recently offered a major promotion. Her new responsibilities would require an increased time commitment. She and her husband would also like to have children before it is too late. Elizabeth is considering the following options: She could plan to accept the promotion, or she could plan to start a family (p. 497).

Incidents, such as this, which cause a person to evaluate and consider life goals are particularly useful (Danish, Smyer, & Nowack, 1980). For all three problems, then, the vignettes include situations which might have significant impact for the characters of the story.

The content of the two work problems was derived from several sources. In 1991 Bryant and Grady developed a taxonomy of incidents which underlie and are interpreted as critical in school governance by public school superintendents: (a) family and friends; (b) personal agendas; (c) hiring and firing; (d) and role uncertainty. Critical incidents were labeled as such because of their inherent ethical questions, issues of fairness, and/or unpredictability. Heading the list were the many issues of the school board: its relationships with faculty, staff, and children; individual board members personal agendas; inexperience, and/or role confusion; and disagreements about the hiring and firing of employees. In addition, six case studies developed for a dissertation (Miller, 1993) and relevant to public school superintendents were content-analyzed, and four themes were extracted: (a) moral dilemmas; (b) personal crises that impact on work; (c) relationships between the superintendent, school board, and faculty; and (d) events impacting on the school’s relationship with the community and the media. The content of the three problems of the present study simulated some of these themes.

A second aspect of each problem was its problem structure. Leithwood
and Steinbach (1995) conducted a problem-sort with superintendents to ascertain types of problems they face. In subsequent rank-ordering of selected problems in terms of definition, clarity, and complexity, they found that superintendents “demonstrated a reasonably high level of consistency in the choices of problems considered most and least difficult and complex (Leithwood & Steinbach, 1995, p. 74). Drawing on their taxonomy, superintendents in the pilot study and the subjects of the study were asked to rank-order the three problems using similar guidelines: frequency and familiarity; superintendent role responsibility; procedures guiding future action; and facts available. These characteristics were used to classify the three problems as “well-structured” and “ill-structured” (Fredricksen, 1984). Superintendents perceived problem X as a more structured problem than problem Z, and problem Y as the least structured problem (by all but two participants).

Finally, choices about the content of problems were informed by the researcher’s own ten-year experience in a suburban public school environment and were validated by consultation with the pilot participants, and an Illinois public school district superintendent. As an added content and face validity check, each superintendent’s comments after working the problems were noted. Each participant indicated that all three problems had been experienced in some form by themselves and/or other superintendent friends and/or colleagues.

Think-Aloud Methodology

A “think-aloud” (Ericsson & Simon, 1984) framework was used to tap the subjects’ conscious cognitive processes (Staudinger, 1989), and to provide a
consistent interview format. According to Ericsson and Simon, thinking aloud or "concurrent verbalization" (1984, p. xiii) involves the verbalization of information that is immediately accessed while producing an answer, reflects cognitive processes as they occur, and is more accurate than retrospective reporting. While subjects are verbalizing their answers, interaction with the interviewer is limited.

The three problem scenarios were meant to stimulate a modified short-term and long-term planning by the subjects. Each scenario described a protagonist who faced a problem situation in which subjects could define their own problem-space with several limitations: (a) specific details and a stated problem situation provided a problem space; (b) the role of the protagonist vis-a-vis the problem situation was suggested (e.g., the spouse, the principal, or the superintendent of a nearby school district); and (c) two prompt questions at the end of each problem were used to stimulate discussion. The prompt questions were taken from the Manual for the Assessment of Wisdom-Related Knowledge (1994) and were the same for each problem:

1. What should X do and consider in making his plans?
2. What additional information is needed? (Staudinger, Smith, & Baltes, 1994)

The Pilot Study

In preparation for interviewing the study sample population, a pilot study was conducted in April and May, 1995. Eight persons were interviewed using the proposed research design. The participants consisted of four current public school superintendents, one retired public school superintendent, two
assistant superintendents, and one assistant principal. When interviewed, these participants were asked questions about the clarity and sequence of procedures and the content and structure of the practice and study problems. The results of the pilot study indicated:

1. Forty-five minutes was sufficient for practice problems and the three problems of the study.

2. Differences were found between the recommended practice problems included in the Manual for the Assessment of Wisdom-Related Knowledge and their ability to elicit information and prepare subjects for think aloud.

3. Two practice problems reasonably prepared and trained subjects for the think-aloud methodology.

4. Rapport-building helped to establish a subject's comfort with the interview.


6. Problem scenarios for problem X, Y, and Z were familiar to the participants and produced rich protocols.

7. The sequence of problems, prompt questions, and the instructions in think aloud were critical to producing rich protocols.

Given these results, a number of modifications were made in the interview format: (a) since the interview could include only two practice problems as a function of time, practice problems which produced rich responses were chosen from those recommended in previous research; (b) the interview was divided into two parts: 15 minutes was devoted to rapport-
building, training in think aloud, and practice problems; and 30 minutes was devoted to the explanation of the study proper and the main study problems; and (c) the wording of the study problems was revised.

Procedures

The subjects were interviewed on one occasion for forty-five minutes. They were blind to the nature of the study and the concept, wisdom. The text of the interview (Appendix G) draws liberally from that of previous research (Staudinger, 1989; Smith & Baltes, 1990) and is summarized here. The interview consisted of three parts: (a) rapport-building; (b) two practice problems; and (c) three randomly selected study problems (X, Y, Z).

Subjects were not expected to be familiar with the methodology; therefore, fifteen minutes was set aside for rapport-building and practice problems. Since the candor of the subjects and the spontaneity of their verbalizations was considered essential to the richness of the protocols, a brief informal discussion was designed to build a minimal level of rapport. The pilot study and previous research indicated that rapport-building was important for several reasons: (a) the think-aloud procedure, a potentially revealing interview, requires a minimal level of comfort to be effective; (b) subjects expect a more qualitative interview in which they talk at length about themselves (Staudinger, 1989); and (c) subjects need time to get prepared for the study problems. Because superintendents exercise care and caution in communication to others, concerns about confidentiality were also addressed. This portion of the interview was used to sign a written consent (Appendix H).

The second part of the interview consisted of two practice problems
selected from the Manual for the Assessment of Wisdom-Related Knowledge (1994) and recommended by Ericsson and Simon (1984) to enhance thinking aloud. Subjects were given index cards on which each practice problem was typed. They were instructed to read each problem aloud, and then begin solving the problem. According to Ericsson and Simon (1984), reading the problem aloud improves retrieval and problem solving. The first practice problem asked the subject to name 20 animals (Staudinger, Smith, & Baltes, 1994, p. 7). Subjects were instructed to think aloud and include the process of their thinking. When subjects were silent for any length of time, they were reminded to keep speaking. Typically, subjects omit details of their problem-solving processes despite initial instructions. For this reason, they were told to verbalize their search for information and the results of this search. A second practice problem, less structured than the first, followed:

Imagine that you have to organize a move to another city. What matters would you have to pay attention to? (Staudinger, Smith, & Baltes, 1994, p. 8)

Following each practice problem, subjects were given feedback about their progress in learning to think aloud.

Finally, the three study problems (X, Y, and Z) were given in random order. The three cards were shuffled and the subject selected a card from the researcher's hand. This procedure was repeated a second time, and, finally, the remaining card was drawn. Subjects were instructed to read the problem aloud; to think aloud while solving the problem; to continue speaking until finished solving the problem; and to indicate when they were finished. Subjects were told that they should verbalize their options and the possible consequences of these options, and weigh these alternatives against each
other. In keeping with research conducted by Arlin (1984), respondents were told to ask as many or as few questions as they liked; questions could be used to assess cognitive levels.

Data Preparation and Scoring

Responses to the three problem scenarios were audio-recorded and transcribed. Coombs (1964) suggested that transcribing data can drain its emotional tone and content (Ericsson & Simon, 1984), yet the rating procedures employed indicated that transcriptions would be more practicable and convenient in the long run. The pilot study indicated that transcribed protocols were most readable for raters when double-spaced and typed in a font that was "easy on the eyes." Further, utterances other than words were deleted in the editing process so that rater decisions were based on content rather than these typical characteristics associated with think-aloud produced data. A code number serving several functions was assigned to each protocol and typed at the top of each page. All references to names of subjects or school districts were deleted from the transcripts. Audio-tapes were maintained for the purpose of editing and consultation.

An essential feature of this study was the use of a trained rating panel to read through and rate the main data set. Two data analysis options were considered (Staudinger, 1989): (a) segmenting the protocol (Newell & Simon, 1972) and, then, analyzing verbal data using content analysis (Sorensen & Smith, In press), or (b) evaluating the whole protocol on the five wisdom dimensions (Langer & Schulz v. Thun, 1974). Pilot study protocols were read to determine if the methodology used in previous studies was possible. Rich protocols suggested that the wisdom criteria could be used to evaluate total
protocols (Staudinger, 1989; Baltes & Smith, 1990). Raters were asked to highlight sentences or clauses illustrating their criterion while making encoding decisions.

The Rating Panel

The expert knowledge system that constitutes wisdom is considered a "latent construct" (Smith & Baltes, 1990, p. 495) in society, in that there appears to be agreement across cultures and individuals about its characteristics (Holliday & Chandler, 1986; Chandler & Holliday, 1990). In other words, persons might recognize yet may not need to possess wisdom. Consequently, a number of different methods for selecting raters were considered: (a) professional educators or nominees of persons considered wise; (b) the construction and administration of a wisdom scale (Benham, 1985; Martin-Halpine, 1991; Terrini, 1994); or (c) the administration of the problems of the study to a random sample whose responses would be screened for wisdom (Baltes & Smith, 1990). Time, budget, and practicality suggested that the members of the rating panel would have to be selected in a purposive fashion.

In purposive sampling, the researcher uses field experience, review of the literature, or other relevant experiences "to select the units of analysis...that will provide the information" (Bernard, p. 95) that is needed. A ten-member panel of raters was chosen to evaluate subjects' transcribed responses in the five wisdom criteria. It was important to assure that the raters were similar to the subject population in age and experience. According to Sheehy (1995) persons aged 30-50 belong to the same cohort, "people who will always share a common location in history... born within the same few
years, but ... have experienced defining events when they were the same age” (p. 23). Therefore, the selected persons were: (a) 36 - 51 years of age (M = 41); (b) accustomed to analyzing written text or writing psycho-social histories; (c) possessed a post-graduate degree; and (d) potentially had wisdom-related knowledge (Smith and Baltes, 1990).

A further guide to rater selection was that “certain educational careers as well as certain professional specializations may contain a higher likelihood of wisdom-enhancing factors, both by initial selection into these professions and by training and work-related experiences” (Baltes, 1993, p. 588). Professions of this type are education, psychology, social work, and the human sciences. These professions are populated by persons who have the experience in working with the human condition and the ability to suspend judgment and tolerate ambiguity. The final panel of raters consisted of: three school social workers, one school guidance counselor, one school psychologist, one former school guidance counselor in private clinical practice, one graduate student preparing for teaching in higher education, one teacher, one foreign language department chair, and one school administrator. Finally, the panel had nine females and one male who had entered the public school system between ages 21 and 38 (M = 28.8). Only five had classroom experience. Paid a minimal stipend ($25) for their time, raters’ willingness to be involved for the duration of the study was an important consideration.

Once selected, raters were sent a letter (Appendix I) and were asked to complete a biographical questionnaire (Appendix J). Each rater was asked to evaluate protocols in only one of the five wisdom criteria to prevent “halo effects” (Saal, Downey, & Lahey, 1980). Furthermore, raters were randomly
assigned to criterion scales and were kept blind to the origins of the protocols and to the overall construct - wisdom (Staudinger, Smith, & Baltes, 1994). The methods used to accomplish these goals are described in the following section.

Rater Training and Evaluation

The method of training and evaluation detailed in the Manual for the Assessment of Wisdom-Related Knowledge was adapted in this study (Staudinger, Smith, & Baltes, 1994). Training (Appendix K) consisted of one training session with all raters present and one additional session for rater pairs assigned to one of the five criteria. Each sessions lasted 3 - 5 hours.

Following from the Berlin Group, raters were trained about typical rater errors (i.e., “leniency,” “avoiding extremes,” “changing the assessment standards from text to text,” and “interaction between rater and protocols” [Staudinger, Smith, & Baltes, 1994, p. 21-22]); the use of a seven-point scale; and rating against an ideal. Participants applied this knowledge by rating fairy tales on complex criteria using materials from the Manual for the Assessment of Wisdom-Related Knowledge. At the end of session one, raters were randomly placed in pairs by the following method: each rater selected a card from a hat on which there were two numbers written: one large number corresponding to one of the five wisdom criteria (i.e., factual knowledge, procedural knowledge, life-span contextualism, value relativism, or uncertainty); one small number corresponding to the primary rater (i.e., 1, 3, 5, 7, 9) or secondary rater (i.e., 2, 4, 6, 8, 10) of a criterion. Rater assignment to primary and secondary positions determined which raters would rate all of the study protocols and those rating only 29 protocols (32%). Later, primary
rater scores and secondary rater scores were used to calculate interrater reliability.

Session two was conducted at the convenience of rating pairs within one month of initial training. Ideal responses in the assigned criterion were defined in detail to provide clear guidelines for the rating of protocols. Several methods were used to achieve consensus: (a) raters were asked to discuss the information provided by the Max Planck Institute in the Manual for the Assessment of Wisdom-Related Knowledge (Staudinger, Smith, & Baltes, 1994), (b) raters read responses to a previous study conducted by the Berlin Group, and (c) raters were asked to discuss their scores of pilot study protocols in detail. An interesting side-finding involved the different methods by which rater pairs attempted to achieve interrater reliability (e.g., Appendix L).

When training was complete, raters had reached an acceptable level of interrater reliability using the protocols of the pilot study. An acceptable level was determined by the number of protocols that both raters scored identically. When three protocols (one of each problem type) were rated identically, training was complete. At the end of training, raters had in their possession: (a) a booklet composed of pages from the Manual for the Assessment of Wisdom-Related Knowledge (Staudinger, Smith, & Baltes, 1994) about their assigned criterion; (b) an abbreviated version of this material for quick reference; (c) examples of protocols from the manual which illustrated a high level, medium level, and low level score on all wisdom criteria; and (d) several protocols which they had rated during practice sessions to achieve interrater agreement. The protocols provided by the Institute were responses to life-planning problems, yet their content was similar enough to the
problems of this study to provide examples of ideal responses for raters. The ideal instrument would include protocols representing the anchor points (i.e., 1, 4, 7) specifically designed for problems used.

The Rating Criteria

The rating criteria explicitly detailed in the Manual for the Assessment of Wisdom-Related Knowledge (Staudinger, Smith, & Baltes, 1994) were used (Baltes & Smith, 1987). Adapting the criteria, such as that done by Staudinger (1989), was considered. Potential subjectivity on the part of the researcher suggested that a distillation of the criteria might severely contaminate the study. To allow for as accurate a conceptualization of the criteria as possible, the exact descriptions found in the Manual for the Assessment of Wisdom-Related Knowledge (Staudinger, Smith, & Baltes, 1994) were used by the raters. (A summary of the five wisdom criteria and anchor points are in Appendix M.) In sum, the five wisdom-related dimensions are: “(a) rich factual knowledge about fundamental pragmatics of life; (b) rich procedural knowledge about dealing with life problems; (c) life-span contextualism: understanding of life contexts and their temporal (developmental) relations; (d) value-relativism: knowledge about the differences in values and life goals; (e) uncertainty: knowledge about the relative uncertainty of life and its management” (Staudinger, Smith, & Baltes, 1994, p. 5).

The Rating Scale

According to Staudinger (1989), Langer and Schulz v Thun suggest that scales that allow for "concept-oriented" rating rather than "intuitive rating" (Langer & Schulz v Thun, 1974, p. 127) have significant impact on raters'
decisions. They recommend that accurate rating is dependent on (1) the 
degree a dimension is described in detail; (2) the anchoring provided to raters 
with rules and scale points; and (3) examples of segments of a protocol which 
illustrate a particular aspect of the dimension. The manual provides all of 
these. Training allowed for expanded discussion about the characteristics of 
ideal responses to the three study questions.

Decisions about the rating scale to be utilized in the study were limited 
to either a seven-point or five-point scale. A seven-point scale was chosen for 
several reasons. The Berlin Group used a seven-point scale and found that 
raters were able to distinguish between the scale points (Staudinger, 1989; 
Staudinger, Smith, & Baltes, 1990; Smith & Baltes, 1990). Further, research on 
rating scales indicates that "an investigator ... will pay the smallest penalty 
(optimize the odds of producing a more reliable scale) if he/she employs 
about 7 categories of response" (Cicchetti, Showalter, & Tyrer, 1985, p. 35).

Raters were asked to rate protocols on the degree that a specific protocol was 
similar to an ideal response with regard to their assigned criterion. Anchor 
points were provided for three scores on the scale (e.g., 7 = "a great deal," 4 = 
"moderately," and 1 = "very little") (Staudinger, Smith, & Baltes, 1990, p. 276).

Protocol Preparation

The main data set consisted of subjects' responses to three problems 
labeled X, Y, and Z. Responses were transcribed by a paid transcriptionist 
($2.50/page) and by the researcher. The main data set consisted of 93 
transcribed protocols. The average number of words spoken ranged from M = 
769 (problem Y) to M = 1054 (problem X). All transcribed responses were 
proof-listened by the main researcher. Problems and sample numbers were
typed at the top of each page. A rating sheet (e.g., Appendix N) which specifically stated the criterion being rated, the protocol number, and problem type (X,Y, or Z) was affixed to the front of each protocol. It included a place for rater’s name, protocol score, rating time, and any comments about the protocol. All raters were asked to highlight segments of the protocol which exemplified their criterion, and return the packet to the researcher for data analysis.

Protocol Scoring

Packets of protocols were distributed four times between September and November, 1995. Each packet contained 12 to 30 protocols depending on a rater’s primary or secondary status. Rating was done at home and at each rater’s convenience. The final packet was to be completed no later than December 1, 1995. All ten raters met the deadline. The order of protocols was counterbalanced between each pair of raters, and the sequence of protocols within each set was randomized. Although in random order, protocols for each problem type were grouped together. Grouping problem types together increased the likelihood of rating error due to rank-ordering, but raters found grouping protocols helped provide a mind-set about particular problem types.

A four week deadline was given for the first packet of protocols after which scores of rating pairs were examined for interrater reliability. The protocols used for rater calibration were selected randomly. Rater calibration is defined here as (1) computing correlation coefficients on a sample of protocols using the Cronbach a and Pearson-product moment correlations, and (2) meeting with the pair of raters to discuss the scale points and rating decisions. The Berlin Group recommends that recalibration be done when
scores of rating pairs are found to be wide apart (Staudinger, 1989; Smith & Baltes, 1990). Ultimately, the pace of each rater in rating protocols and each rater’s willingness to meet in-person was impossible to control. In the final analysis, rater recalibration was not feasible except for raters five and six. However, regular phone contact was kept with raters to discuss difficulties and to determine each rater’s progress. Once all rated protocols were received and scores analyzed a meeting was planned so that raters could be debriefed.

Operational Definitions

School leaders are those public school superintendents who are 40-55 years of age, who have a total tenure in public school education of 10 years or more, and tenure in the position of superintendency of (> 1) year.

A wise response is one which receives a high mean score (M ≥ 5.5) for a problem (i.e., X, Y, Z) (Staudinger, Smith, & Baltes, 1994, p. 5).

Wisdom-related knowledge is a response which receives a lower mean score on the five criteria (M = 1 - 5) (Staudinger, Smith, & Baltes, 1994, p. 5).

Data Analysis

To investigate the extent of interrater agreement in the scoring of the wisdom-related criteria, correlation coefficients (Cronbach α and the Pearson r) were computed for the five pairs of raters. To answer the questions of the study, mean scores were calculated for each protocol for the five wisdom-related criteria. The number of wise responses in the sample was determined, and frequencies of top ratings for the five criteria for each problem type (i.e., work v. home; structured v. less-structured) were calculated. Then, wisdom criteria were kept as independent scales and the mean scores and standard
deviations were computed for each problem type. T-test scores for paired samples were used to calculate mean differences between the criteria and t-test scores for independent samples were used to analyze the differences between the levels of wisdom-related knowledge for males and females.

Summary

Two types of data were available from the subjects in this study: the responses to a brief survey about the school leader's work life, and the transcribed protocol responses to three randomly administrated research problems. Concurrently, a ten-member rating panel was trained using materials provided by the Max Planck Institute's Manual for the Assessment of Wisdom-Related Knowledge (Staudinger, Smith, & Baltes, 1994). They were employed to rate the transcriptions of the 31 subjects' problem-solving episodes using a seven-point rating scale and assigning each protocol one number. Interrater reliability was calculated for five rating pairs who each rated only one criterion and were blind to the overall concept - wisdom. In the following chapter interrater reliability and an analysis of the data set are presented. The number of wise responses and the subjects who produced them will be analyzed. The results of t-test comparisons between life/work problems and well-structured/ill-structured problems will be displayed. Finally, differences between male and school leaders and their mean levels of wisdom-related knowledge will be discussed.
Chapter IV will discuss the level of interrater agreement. Subsequently, the levels of wisdom-related knowledge evident in the protocols will be displayed. The number of wise protocols and a profile of the subjects who produced these protocols will be presented. Following this, the level of wisdom-related knowledge produced for different problem types will be described: home/work and more-structured/less-structured. Finally, levels of wisdom-related knowledge found in the protocols of male and female public school leaders will be compared.

To investigate if wisdom-related-knowledge, "an expert knowledge involving good judgment and advice in the domain, fundamental pragmatics of life" (Baltes & Staudinger, 1993, p. 76), was evident in the problem solving of public school leaders, thirty-one public school superintendents were interviewed and asked to think-aloud (Ericsson & Simon, 1984) about three problems (i.e., X, Y, Z). Their think-aloud responses were transcribed and, subsequently, evaluated by a team of raters on the five wisdom-related criteria (scales).

Statement of the Problem

This study sought to answer the following general research question: In
a group of school leaders, what wisdom-related knowledge is evident in their
discussion of home and work problems? Specific research questions were:

1. In home and work problems is wisdom-related knowledge
evident?
2. Is the level of wisdom-related knowledge different in home v.
work problems?
3. Is the level of wisdom-related knowledge different in more
structured v. less structured problems?
4. Is the level of wisdom-related knowledge different for male v.
female school leaders?

Data Analysis

Data analysis involved the collection of rating scores provided by a
team of five pairs of raters. Each rating pair was trained to recognize a single
criterion in the transcribed protocols of the subjects using The Manual for the
Assessment of Wisdom-Related Knowledge (Staudinger, Smith, & Baltes,
1994). To determine the validity of the ratings, interrater reliability was
calculated for the five pairs of raters using two measures of correlation: the
Cronbach $\alpha$ and Pearson-product moment coefficient. The scores of the
primary raters (i.e., 1, 3, 5, 7, and 9) were used for all remaining data analyses.
Each subject had three sets of scores corresponding to the three problems
of the study. The criteria were kept as independent measures for most of the
analyses for two reasons. First, analyses that viewed the criteria as
independent parts of the construct wisdom were desired. Second, the data
collection from independently trained rating pairs produced a data set that
was conceptually separate (Staudinger, 1989, p. 126). Two methods to
determine the number of wise responses were used: (a) combining the subjects’ five wisdom scores in a mean score for each problem, and (b) counting the number of criteria receiving scores of (≥ 5) for each problem. T-tests for paired samples were used to determine mean differences on the separate scales for each problem type. T-tests for independent samples were used to compare the means of the randomly selected male subjects with the means of the randomly selected female subjects.

Interrater reliability

A trained rating panel was used to evaluate the subject’s transcribed responses. Interrater agreement was examined because the accuracy of their ratings determined the certainty of conclusions that could be drawn from them. Paired raters were trained in one of the five criteria and were asked to assess the level of that criterion in each transcribed protocol and assign a score on a seven-point scale. A primary rater (e.g., raters 1, 3, 5, 7, and 9) scored all ninety-three protocols. A secondary rater (e.g., raters 2, 4, 6, 8, and 10) rated a randomly selected 29 protocols (across problem type) or 32% of the full data set. During training, an acceptable level of interrater reliability was obtained when three problems of each type (i.e., X, Y, or Z) were rated identically by the pair. Two subsequent measures of interrater reliability were computed during the balance of the study by calculating correlation coefficients for the five pairs of raters. The first measure was calculated four weeks from the training dates (Table 2). Four of the five rating pairs demonstrated moderate (p < .01) to high (p < .001) interrater reliability scores except raters 5/6. This pair of raters met with the researcher to discuss their “disagreement” or “dissensus” (Tsui & Ohlott, 1988, p. 780) and to recalibrate (i.e., realign) their rating practices.
A second measure of interrater reliability was taken when all of the randomly selected protocols were scored (Table 3). The Pearson-product-moment correlations ranged from $r = .32$ to $r = .90$, overall. The range of coefficients for the Cronbach alpha was $.47$ to $.94$. The correlation between rater 1/rater 2 (factual knowledge), rater 3/rater 4 (procedural knowledge), and rater 7/8 (value relativism) were $r = .90$, $r = .73$, and $r = .63$, respectively, which indicated the presence of a statistically significant positive correlation between these rater pairs ($p < .001$, two-tailed significance). Scores for raters 5/6 (contextualism) and raters 9/10 (uncertainty) were $r = .32$ and $r = .42$, respectively.
Correlation coefficients from the present study were compared to three studies conducted by the Berlin Group. Paired raters were used to rate life review problems in Staudinger's dissertation study (1989). She reported that the correlation coefficients ranged from Cronbach α .70 to .82 and Pearson r = .70 to r = .82. A second study on life review (Staudinger, Smith, & Baltes, 1992) reported correlation coefficients ranging from Cronbach α .67 to .77, except on the criterion scale "recognition and management of uncertainty," which they reported was .49 (Staudinger, Smith, & Baltes, 1992, p. 277). In planning problems rated in a similar fashion, Smith and Baltes (1990) described the Pearson correlations as "moderately high, ranging from r = .70 to r = .80 when averaged across problems (overall)" (p. 498). Although these studies are not strictly comparable, it is possible to say that interrater reliability

TABLE 3
SUMMARY OF INTERRATER RELIABILITY (OVERALL)
(n = 29 protocols)

<table>
<thead>
<tr>
<th>Rater pairs</th>
<th>Wisdom criteria</th>
<th>Cronbach α</th>
<th>Pearson r</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2</td>
<td>Rich factual knowledge</td>
<td>0.94</td>
<td>0.90**</td>
</tr>
<tr>
<td>3/4</td>
<td>Rich procedural knowledge</td>
<td>0.85</td>
<td>0.73**</td>
</tr>
<tr>
<td>5/6</td>
<td>Life-span contextualism</td>
<td>0.47</td>
<td>0.32</td>
</tr>
<tr>
<td>7/8</td>
<td>Value-relativism</td>
<td>0.77</td>
<td>0.63**</td>
</tr>
<tr>
<td>9/10</td>
<td>Uncertainty</td>
<td>0.49</td>
<td>0.42</td>
</tr>
</tbody>
</table>

Note: Except for .32 and .42, the coefficients are statistically significant. ** p < .001 level, two-tailed.
correlations were similar, and indicate that the training for the present study
did allow raters to rate the protocols. Further, some parallels between the
lower scores for the meta-criterion (i.e., life-span contextualism, value
relativism, and uncertainty) indicate that raters were faced with more
complex analysis for these criterion than the global scores for factual and
procedural knowledge.

As an added analysis of interrater reliability, separate correlations were
computed for the three problems (i.e., X, Y, Z). Table 4 presents interrater
reliabilities by problem type. The Pearson-product moment correlations
ranged from \( r = .58 \) to \( r = .94 \) for all rating pairs except raters 5/6 (life-span
contextualism) which ranged from \( r = -.15 \) to \( r = .61 \). (This pair of raters had
difficulty in achieving interrater reliability within four weeks of initial
training; their earliest interrater reliability was Pearson \( r = .22 \) to \( r = -.34 \).) Raters 5/6 had significant difficulty reaching consensus on problem Z. This
coefficient (\( r = -.15 \)) lowered their overall reliability measure. However, even
their Pearson coefficients for Problem X (\( r = .47 \)) and Y (\( r = .27 \)) were low.
Observable differences were also found for raters 9/10 for Problem Z (\( r = .35 \))
as compared to X (\( r = .72 \)) and Y (\( r = .62 \)). Low correlation scores suggest that
no linear relationship exists.
### TABLE 4
SUMMARY OF INTRERRATER RELIABILITIES BY PROBLEM TYPE (X, Y, Z)
(n = 9 protocols/problem)

| Pair of raters | Problem X |  | Problem Y |  | Problem Z |  |
|----------------|------------|-------------------------------|------------|-------------------------------|-----------------|
|                | Cronbach r | Pearson r                     | Cronbach r | Pearson r                     | Cronbach r | Pearson r |
| 1/2            | 0.92       | 0.85*                         | 0.94       | 0.90**                         | 0.96       | 0.94**    |
| 3/4            | 0.76       | 0.64                          | 0.87       | 0.78                          | 0.87       | 0.86*     |
| 5/6            | 0.61       | 0.47                          | 0.42       | 0.27                          | -0.34      | -0.15     |
| 7/8            | 0.8        | 0.67                          | 0.74       | 0.58                          | 0.79       | 0.68      |
| 9/10           | 0.84       | 0.72                          | 0.76       | 0.62                          | 0.52       | 0.35      |

Note: * - .01 ** - .001, two-tailed.

Interrater reliability measures indicate that trained raters were able to identify wisdom criteria in the think-aloud protocols of the subject population. The varying levels of agreement suggest that other factors interfered with achieving interrater reliability across all five criteria. Hence, caution should be exercised when conclusions are drawn, particularly when the five criteria ratings are combined in a mean score. However, the raters scoring factual knowledge, procedural knowledge, and value-relativism did achieve a moderate to high level of interrater reliability. These results appear to support the contention that wisdom-related knowledge was evident in the public school leaders’ think-aloud responses to the problems of the study.
Question 1

Evidence of Wisdom-Related Knowledge

To determine if wisdom-related knowledge was evident in the problem solving of school leaders, the mean scores and standard deviations for the five wisdom-related scales across problems X, Y, and Z were calculated. These scores are presented in Figure 1 and are offered as further evidence that wisdom-related knowledge was evident at varying levels in the transcribed responses of the subjects' problem solving. Levels of wisdom-related knowledge for school leaders were highest for two criterion scales: factual knowledge (M = 4.73, SD = 1.56) and life-span contextualism (M = 4.91, SD = 1.65). Scores on the remaining three criterion scales were as follows: procedural knowledge (M = 3.61, SD = 1.77), value relativism (M = 3.63, SD 1.64), and management of uncertainty (3.41, SD 2.15).

Figure 1: Mean levels of wisdom criteria found evident across three problems of the study.
These scores were compared to mean scores for a study of life-planning in an exploratory fashion. According to Smith and Baltes (1990), "higher ratings were assigned overall for rich knowledge, life-span contextualism, and relativism (in all cases, \( M = 3.7 \)) than for exceptional insight and uncertainty (\( M = 3.3 \) and 3.1 respectively)" (p. 500).

Once it was determined, that wisdom-related knowledge was evident in the protocols, the mean scores for each subject, for each problem were examined for "wise" (Staudinger, 1989) responses. Following from previous studies (Staudinger, Smith, & Baltes, 1994, p. 5), a wise response was one which received high scores on the five wisdom criteria. In the present study, a wise response was operationally defined as one which received a mean score of \( \geq 5.5 \) across all five criteria, for a particular problem. In previous research, the "theoretical conception of wisdom as expertise" (Staudinger, 1989, p. 125) predicted top level performance as "rare"(p. 125). A surprising 16\% (\( n = 15 \)) of the 93 protocols received a mean score of \( \geq 5.5 \) across all five criteria: three of problem X, seven of problem Y, and five of problem Z. Only one subject of the sample population (3.2\%) received a mean score of \( \geq 5.5 \) on all three problems. Four subjects (12.9\%) received a score of \( \geq 5.5 \) on two problems. Four subjects (12.9\%) received a mean score of \( \geq 5.5 \) on one problem.

Given the expectation that wise responses would be uncommon, and because the individual criterion scores were initially combined to calculate the means, a second method was used to determine the number of wise protocols. Staudinger (1989) had retained the independence of the criterion scores and counted the number of criteria which received a score of \( \geq 5.5 \). Using this method, a second calculation was done for each protocol, for each subject. In this calculation, protocols which received a mean scores of \( \geq 5 \) on
all five of the wisdom criteria were determined. This reduced the number of wise responses to nine protocols belonging to four subjects (12.9%): two of problem X, three of problem Y, and four of problem Z. Biographical information for the subjects who produced at least least one wise protocol were aggregated. Table 5 presents a composite of these subjects.

In the Berlin Group's "age-by-experience paradigm" (Baltes & Staudinger, 1993, p. 77), an attempt is made to link wisdom acquisition with age and several other facilitative conditions. By restricting the age range of the subjects of this study, and by selecting a sample of public school superintendents, the present study attempted to control for age and work-related practice. However, information about the number of contexts in which a subject had experience (i.e., total districts worked and years as a classroom teacher) and mentored-practice (i.e., had a mentor for the superintendency) was collected. All but one of the subjects had served in multiple district contexts: three in 2-3 districts, four in 4-5 districts, and one in six or more districts. All but one superintendent had a mentor for the superintendency. Interestingly, all of the subjects who had at least one wise response had been trained in a subject area which would include extensive training in life matters about the human condition: Counseling/Special Education (1); Science (1); Elementary (1); English (1); English/Social Studies (1); Special Education (2); Social Studies (1); and Math/Social Studies (1). This substantiates a connection with previous wisdom research. Staudinger, Smith, and Baltes (1992) found that there was a "definite superiority of participants who, as a function of their professional training and practice, might have been expected to have had more opportunity to acquire wisdom-related knowledge" (p. 279).
<table>
<thead>
<tr>
<th>Gender</th>
<th>Subject Area</th>
<th>Wise Responses</th>
<th>Current Age</th>
<th>Education</th>
<th>Age Entered Admin</th>
<th># Years as Classroom Teacher</th>
<th># Years in Current Super</th>
<th># Total Years As A Super</th>
<th># Total District Worked</th>
<th># Super. Held</th>
<th>Mentor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>Counsel/ Special Education</td>
<td>3 X Y* Z*</td>
<td>46-50</td>
<td>Doctorate</td>
<td>36-40</td>
<td>0-4</td>
<td>0-4</td>
<td>0-4</td>
<td>4-5</td>
<td>2</td>
<td>Yes</td>
</tr>
<tr>
<td>Male</td>
<td>Science</td>
<td>2 X* Z*</td>
<td>40-45</td>
<td>Doctorate</td>
<td>25-30</td>
<td>5-9</td>
<td>0-4</td>
<td>0-4</td>
<td>4-5</td>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td>Male</td>
<td>Elementary</td>
<td>2 Y* Z*</td>
<td>51-55</td>
<td>Masters</td>
<td>25-30</td>
<td>5-9</td>
<td>0-4</td>
<td>0-4</td>
<td>1</td>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td>Male</td>
<td>Math/Soc Studies</td>
<td>2 Y Z*</td>
<td>46-50</td>
<td>Doctorate</td>
<td>25-30</td>
<td>0-4</td>
<td>5+</td>
<td>15+</td>
<td>6+</td>
<td>3</td>
<td>Yes</td>
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<tr>
<td>Female</td>
<td>English/ Soc Studies</td>
<td>1 Y* Y</td>
<td>46-50</td>
<td>Doctorate</td>
<td>25-30</td>
<td>5-9</td>
<td>0-4</td>
<td>5-9</td>
<td>4-5</td>
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</tr>
<tr>
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<td>Special Education</td>
<td>1 Y</td>
<td>40-45</td>
<td>Masters</td>
<td>25-30</td>
<td>5-9</td>
<td>0-4</td>
<td>0-4</td>
<td>2-3</td>
<td>1</td>
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<tr>
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<td>Social Studies</td>
<td>1 Y</td>
<td>46-50</td>
<td>Doctorate</td>
<td>25-30</td>
<td>0-4</td>
<td>0-4</td>
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<td>4-5</td>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
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<td>Special Education</td>
<td>1 Y*</td>
<td>46-50</td>
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<td>31-35</td>
<td>5-9</td>
<td>5+</td>
<td>5-9</td>
<td>2-3</td>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td>Male</td>
<td>English</td>
<td>1 Z</td>
<td>51-55</td>
<td>Doctorate</td>
<td>36-40</td>
<td>5-9</td>
<td>5+</td>
<td>10-14</td>
<td>2-3</td>
<td>1</td>
<td>No</td>
</tr>
</tbody>
</table>

Note: * indicates a response which has $\geq 5$ on each of the criterion.
Specifically, their study indicated clinical psychologists scored higher than the control group. However, as a group they received average scores.

Questions 2 and 3
Wisdom-Related Knowledge Levels
Home/Work and Well-structured/Ill-structured Problems

To determine differences on levels of wisdom-related knowledge for home v. work problems and well-structured v. ill-structured problems the criteria were kept as independent measures and the mean scores and standard deviations for each criterion, for each problem (i.e, X, Y, and Z) were calculated. T-tests for paired samples were used to compare the mean scores and standard deviations for each of the criteria (Table 6). Problem X and Z were problems that school leaders would encounter at work. Problem Y was a problem frequently encountered at home by working professionals and was similar to the life-planning problem developed by Baltes and Smith (1990).

Problem X - Work Problem/Well-Structured
A school guidance counselor at a unit district's high school has reported to the principal, that a police report alleging sexual abuse has been filed by the parents of a 14-year-old girl enrolled at the high school. The alleged perpetrator of the abuse is John, one of the 45-year-old male science teachers. An investigation is being conducted by the Department of Children and Family Services. The girl has not fully confided in the guidance counselor, but evidence from several counseling sessions and from conversations with the girl's mother indicates to the counselor that the girl may have been meeting off campus with the teacher.

Problem Z - Work Problem/Ill-Structured
A superintendent from a nearby school district, has become aware that there is some concern from district administrators regarding the confidentiality and/or behavior of some of the school district board members. Hearsay suggests that information discussed in executive session has been leaked to the press and to staff members within the organization. Furthermore, individual board members have approached him/her to discuss the behavior of their colleagues on the board. The rancor has surfaced at monthly board meetings in the form of many split votes on routine issues, and frequent hostile personal criticism.
Problem Y-Home Problem/Most Ill-Structured
A 40-year-old successful professional accountant who works over sixty hours per week, was recently offered a major promotion in a company that has experienced dramatic growth in the recent past. His/her new responsibilities would require a substantial increase in time on the job and an increase in traveling on behalf of the company. He/she and his wife/her husband have recently had one child. They have two children under the age of five. He/she has been experiencing marital problems in the form of his wife's/her husband's increased dissatisfaction with the demands of his/her work. He/she needs to give an answer to his/her job within the next few days.

Guidelines developed by Leithwood and Steinbach (1995) were used to classify the three problems as "well-structured" and "ill-structured" (Fredricksen, 1984). Pilot study participants and subjects of the main study were asked to rank-order the problems in terms of: "frequency and familiarity," "superintendent role responsibility," "procedures guiding future action," and "facts available" (Leithwood & Steinbach, 1995, p. 74). Superintendents perceived problem X as the most well-structured problem; then problem Z; and problem Y as the most ill-structured problem of the three (by all but two participants). Therefore, the t-scores were examined for possible differences between the criteria across the problems.

No significant differences were found between mean scores for the criteria for the three problems except on the criterion procedural knowledge. The mean scores on procedural knowledge for problem X, the well-structured, work problem were significantly lower (M = 3.19, SD = 1.87) than the mean scores on procedural knowledge for Y, the ill-structured, home problem (M = 4.10, SD = 1.94), t = -2.99 (p < .005). Yet the three problems had similar levels of factual knowledge about the pragmatics of life. The mean scores on factual knowledge were X (M = 4.68), Y (M = 4.58) and Z (4.94).

The data is too crude to interpret without further study, but several ideas may apply in this situation. Since any expertise is a combination of the
factual knowledge of the domain and the procedures to access it, it appears that when facing a problem at home, the school leaders demonstrated higher levels of understanding about the "processes of knowledge acquisition, manipulation, retrieval and application" or procedural knowledge about the pragmatics of life (Staudinger, 1989, p. 46). Two types of knowledge are available as procedural knowledge: general rules and/or methods for acquiring needed information, and specific skills or strategies for accessing knowledge of the domain. Through practice and increased exposure, information processing theory suggests that a domain's knowledge is subjected to greater refinement. Possibly, the home problem, by its subject matter, provided the opportunity for the subjects to demonstrate their knowledge about human relationships. To some extent, the Berlin Group has suggested that at least two avenues for accessing wisdom have been identified: life-planning and life review. Home and family are stimuli for tapping this knowledge. However, there are other potential explanations as well. Two methods for how subjects work a problem have been discussed in the literature. In thinking-aloud protocols, evidence is provided about how information is used in problem resolution:

One can find evidence regarding a subject's strategies, such as working forward through the problem (from fact to hypothesis) or working backward (from hypothesis to fact), by tracing the order in which the subject worked through this associative structure" (Olson & Biolsi, 1991, p. 268).

This is important because, at times, the method by which the problem is addressed can indicate the level of expertise that the subject has in a particular domain. With some exceptions, research suggests that experts work forward;
novices work backward. A possible explanation for the level of procedural knowledge might be that the work problem did not provide the stimuli necessary to tap the wisdom domain, or was sufficiently well-structured, that it did not allow the subjects to use their wisdom-related knowledge. Problems such as sexual abuse and employee ethics are highly constrained by the laws that apply to them in the schools. Most of the subjects, but not all, began to work the problem by describing the specific legal parameters, or suggesting they needed to call their school attorney. However, there were also subjects who began by addressing the developmental and psychological impacts of the events on key characters and relevant community groups discussed in the story. The subjects had relatively high levels of wisdom-related knowledge for the criterion life-span contextualism: problem X, (M = 5.03, SD 1.89); problem Y (M = 4.81, SD 1.68); and problem Z (M = 4.9, SD = 1.42). Briefly, life-span contextualism includes integrating three life-span contexts into the discussion of the problems: age, culture, and individual biography (Staudinger, Smith, & Baltes, 1994, p. 51). This would be an expected strength of public school superintendents. Their critical position in the public school hierarchy requires a vast knowledge of a number of competing contexts and how to manage them, for the good of children. Other factors may contribute to the development of school superintendents' knowledge about contextualism: (1) they often have experience in more than one school district; (2) a school superintendent's career usually includes serving in a number of positions within the schools (e.g., department chair, principal, coach, teacher, etc.); and (3) they live in the communities in which they work and participate as neighbors, churchgoers, and consumers of the many activities within the community, as well as, community leaders.
Table 6: T-Test Scores for Criteria on Problems X, Y, Z
(n = 31)

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Mean</th>
<th>SD</th>
<th>Criterion</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factual X</td>
<td>4.68</td>
<td>1.64</td>
<td>Factual Y</td>
<td>4.58</td>
<td>1.5</td>
<td>0.34</td>
<td>0.735</td>
</tr>
<tr>
<td>Factual X</td>
<td>4.68</td>
<td>1.64</td>
<td>Factual Z</td>
<td>4.94</td>
<td>1.57</td>
<td>-0.72</td>
<td>0.474</td>
</tr>
<tr>
<td>Factual Y</td>
<td>4.58</td>
<td>1.5</td>
<td>Factual Z</td>
<td>4.94</td>
<td>1.57</td>
<td>-1.1</td>
<td>0.281</td>
</tr>
<tr>
<td>Procedural X</td>
<td>3.19</td>
<td>1.87</td>
<td>Procedural Y</td>
<td>4.1</td>
<td>1.94</td>
<td>-2.99*</td>
<td>0.005</td>
</tr>
<tr>
<td>Procedural X</td>
<td>3.19</td>
<td>1.87</td>
<td>Procedural Z</td>
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<td>1.4</td>
<td>-1.46</td>
<td>0.154</td>
</tr>
<tr>
<td>Procedural Y</td>
<td>4.1</td>
<td>1.94</td>
<td>Procedural Z</td>
<td>3.68</td>
<td>1.4</td>
<td>1.01</td>
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</tr>
<tr>
<td>Context X</td>
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<td>1.89</td>
<td>Context X</td>
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<td>0.609</td>
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<tr>
<td>Context X</td>
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<td>1.89</td>
<td>Context Z</td>
<td>4.9</td>
<td>1.42</td>
<td>0.35</td>
<td>0.73</td>
</tr>
<tr>
<td>Context Y</td>
<td>4.81</td>
<td>1.68</td>
<td>Context Z</td>
<td>4.9</td>
<td>1.42</td>
<td>-0.37</td>
<td>0.716</td>
</tr>
<tr>
<td>Values X</td>
<td>3.35</td>
<td>1.6</td>
<td>Values Y</td>
<td>3.68</td>
<td>1.62</td>
<td>-0.81</td>
<td>0.426</td>
</tr>
<tr>
<td>Values X</td>
<td>3.35</td>
<td>1.6</td>
<td>Values Z</td>
<td>3.97</td>
<td>1.76</td>
<td>-1.74</td>
<td>0.092</td>
</tr>
<tr>
<td>Values Y</td>
<td>3.68</td>
<td>1.62</td>
<td>Values Z</td>
<td>3.97</td>
<td>1.76</td>
<td>-0.93</td>
<td>0.359</td>
</tr>
<tr>
<td>Uncertainty X</td>
<td>3.42</td>
<td>2.06</td>
<td>Uncertainty Y</td>
<td>3.65</td>
<td>2.38</td>
<td>-0.44</td>
<td>0.661</td>
</tr>
<tr>
<td>Uncertainty X</td>
<td>3.42</td>
<td>2.06</td>
<td>Uncertainty Z</td>
<td>3.1</td>
<td>2.15</td>
<td>0.69</td>
<td>0.495</td>
</tr>
<tr>
<td>Uncertainty Y</td>
<td>3.65</td>
<td>2.37</td>
<td>Uncertainty Z</td>
<td>3.1</td>
<td>2.15</td>
<td>1.08</td>
<td>0.287</td>
</tr>
</tbody>
</table>

Note: A t-statistic of +/- .275 is necessary for two-tailed statistical significance.

* p < .005.
Figure 2: Levels of wisdom-related criteria for the problems of the study.
Question 4
Differences in Level of Wisdom-Related Knowledge for Male/Female Public School Leaders

To determine if the levels of wisdom-related knowledge were different for male v. female school leaders, the five wisdom criteria for three problems (i.e., X, Y, Z) were kept as independent scales and two independent samples were taken from the study population. The mean scores and standard deviations of male and female school leaders were calculated for each of the criteria for each problem. T-tests for independent samples were used to compare the means of the randomly selected male subjects (N = 22) and the randomly selected female subjects (N = 9). An analysis of the data (Table 7) revealed there were no significant differences between males and females on any of the five wisdom-related criteria at the $p < .05$ level. Graphically depicted (Figure 3), some differences on levels of wisdom-related knowledge for male and female leaders are discernible. For the criterion life-span contextualism in problem Y, females received higher mean scores ($M = 5.44$, $SD = 1.24$) than males ($M = 4.55$, $SD = 1.79$). This suggests that females may have a more elaborate understanding or acute awareness of the embedded contexts of home problems. This is highly speculative given the type and amount of information available. On the criterion uncertainty, females received lower scores on problems X ($M = 2.67$, $SD = 2.18$) and Z ($M = 2.22$, $SD = 2.04$), than on problem Y ($M = 4.33$, $SD = 2.35$). Males received consistent scores for uncertainty for problem X ($M = 3.73$, $SD = 1.98$), problem Y ($M = 3.36$, $SD = 2.38$) and Z ($M = 3.45$, $SD = 2.13$), respectively. Probably one of the finest descriptions of uncertainty was discussed by Meacham (1991):
The essence of wisdom, as argued in the preceding and elsewhere (see, e.g., Meacham, 1983b, p. 127), lies not in what is known but rather in the manner in which that knowledge is held and in how that knowledge is put to use. To be wise is not to know particular facts but to know without excessive confidence or excessive cautiousness. Wisdom is thus not a belief, a value, a set of facts, a corpus of knowledge or information in some specialized area, or a set of special abilities or skills. Wisdom is an attitude taken by persons toward the beliefs, values, knowledge, information, abilities, and skills that are held, a tendency to doubt that these are necessarily true or valid and to doubt that they are an exhaustive set of those things that could be known (Meacham, 1990, p. 187).

To understand the ratings of the female subjects, the rater’s comments on rating sheets were reviewed (Appendix O). The rater was unable to assign a high score (i.e., 7) to any problem X or problem Z for a female subject. The comments suggest that high scores were assigned on the basis of the number of scenarios and subjects’ explicit statements made about the complexity of the problem and the potential for the unexpected. Low scores were given for a lack of recognition that the unexpected might occur. Problem Y received a number of high scores (i.e., 6 and 7). They were assigned to subjects who discussed the potential trajectories problems could take, and implied or stated that they embraced a personal philosophy about life’s inevitable uncertainties and their management. Given the interrater reliability on Problem Z, the wide standard deviations, and a lack of reportable statistical significance on t-tests for uncertainty, no conclusions will be drawn. However, future studies may want to examine this aspect of the study more closely.
TABLE 7  
T-SCORES FOR WISDOM CRITERIA FOR PROBLEMS X, Y, Z BY GENDER

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Males (n = 22)</th>
<th>Females (n = 9)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Problem X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factual</td>
<td>4.64</td>
<td>1.68</td>
<td>4.78</td>
<td>1.64</td>
</tr>
<tr>
<td>Procedural</td>
<td>3.18</td>
<td>1.87</td>
<td>3.22</td>
<td>1.99</td>
</tr>
<tr>
<td>Context</td>
<td>5.14</td>
<td>1.91</td>
<td>4.78</td>
<td>1.92</td>
</tr>
<tr>
<td>Values</td>
<td>3.36</td>
<td>1.62</td>
<td>3.33</td>
<td>1.66</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>3.73</td>
<td>1.98</td>
<td>2.67</td>
<td>2.18</td>
</tr>
<tr>
<td>Problem Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factual</td>
<td>4.68</td>
<td>1.62</td>
<td>4.33</td>
<td>1.23</td>
</tr>
<tr>
<td>Procedural</td>
<td>4.14</td>
<td>1.98</td>
<td>4.00</td>
<td>1.94</td>
</tr>
<tr>
<td>Context</td>
<td>4.55</td>
<td>1.79</td>
<td>5.44</td>
<td>1.24</td>
</tr>
<tr>
<td>Values</td>
<td>3.64</td>
<td>1.53</td>
<td>3.78</td>
<td>1.92</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>3.36</td>
<td>2.38</td>
<td>4.33</td>
<td>2.35</td>
</tr>
<tr>
<td>Problem Z</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factual</td>
<td>5.09</td>
<td>1.77</td>
<td>4.56</td>
<td>.88</td>
</tr>
<tr>
<td>Procedural</td>
<td>3.59</td>
<td>1.50</td>
<td>3.89</td>
<td>1.17</td>
</tr>
<tr>
<td>Context</td>
<td>4.86</td>
<td>1.49</td>
<td>5.00</td>
<td>1.32</td>
</tr>
<tr>
<td>Values</td>
<td>3.95</td>
<td>1.86</td>
<td>4.00</td>
<td>1.58</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>3.45</td>
<td>2.13</td>
<td>2.22</td>
<td>2.04</td>
</tr>
</tbody>
</table>

Note: There are no statistical differences between the criteria for any of the problems as a function of gender.
Figure 3: Levels of wisdom-related criteria for the problems of the study by gender. Females score higher in context for home problem (Y) and higher for uncertainty for home problem (Y) than work problems (X and Z).
Summary

An interview format adapted by the author from the Manual for the Assessment of Wisdom-Related Knowledge (Staudinger, Smith, & Baltes, 1994) to its final form as shown in Appendix G was used to interview thirty-one public school superintendents. Three problem scenarios were developed using an intensive review of the literature to represent particular topics, as well as, problem structures. These problems were designed to stimulate the think-aloud responses of the 31 public school leaders who were the subjects of this study. The interviews were audio-recorded and transcribed and were rated on a seven-point scale as to how close they resembled an ideal response by a team of raters. The scores of the two raters for each criterion were assessed for interrater reliability. Then, the primary raters' scores were used for measuring levels of wisdom-related knowledge.

The beginning of this chapter presented the findings on the level of interrater reliability achieved in this study. As reported, interrater reliability was moderate to high for three pairs of raters ($r = .63$ to $r = .90$), while two pairs of raters had difficulty achieving acceptable levels of interrater reliability ($r = -.15$ to $r = .42$). The monitoring of rater agreement over the course of the study indicates that moderate to high levels are achievable given the optimal conditions for rater training and recalibration. The ability to compute these scores and to achieve moderate to high interrater reliability is one indicator that problems can produce protocols that can be scored using the methods of the Berlin Group and The Manual for the Assessment of Wisdom-Related Knowledge (1994).

Despite the varying levels of interrater reliability, the mean scores for the five separate criteria on the three problems were calculated for the thirty-
one subjects of the study. The mean scores indicated that wisdom-related knowledge was evident in the think-aloud protocols contributed by the subjects in response to the three problems. Further evidence was suggested by the ability to calculate wise responses for the subjects using two different methods: calculating a mean score for each problem by combining the criteria scores, and counting the number of protocols receiving a rating > 5 on all five wisdom-related criteria. The subjects that produced these protocols were discussed.

To determine differences between the three problems in eliciting wisdom-related knowledge, t-tests for paired samples were used to compare the mean scores between the criteria. No significant statistical differences were found except between procedural knowledge for problem X and procedural knowledge for problem Y. Several interesting observations invite future examination. For example of the nine persons producing wise protocols, all reported they had a mentor, most has a subject area preparation that may have included training about psychological development and advice-giving (e.g., special education, counseling, social studies), and most had worked for several school districts during their professional lives. T-tests for independent samples were used to compare the mean scores for the randomly selected male and the randomly selected female subjects. No significant statistical differences were found. There were, however, indications that several avenues of research should be pursued.
CHAPTER V
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Chapter V begins with a discussion of the problem and the purpose for the study. The research questions are detailed and the research instrument and rating panel are critiqued. A discussion of the findings is integrated with a review of relevant literature. Finally, the chapter concludes with recommendations for further research and implications for practice.

The Purpose of the Study

Many dissertations have been written and much research has been conducted regarding the public school superintendency and the content of knowledge needed to successfully administer in the public school community. At the same time, researchers assert that "much of the problem-solving engaged in by educational administration occurs in a social context" (Leithwood & Steinbach, 1995, p. 17). For this reason, the ability to understand the variations and the fullness of human existence would seem to be essential for school leaders. This exploratory study offers the concept of wisdom as an essential ingredient in public school leadership. Wisdom has been chosen for several reasons: (1) in an examination of the historical definitions of wisdom, it has been suggested that wisdom is a respected and desirable way of behaving which unifies rational and intuitive thinking and
balances the needs of humanity with the pragmatics of life, and (2) wisdom has frequently been associated with the virtues of exemplary leadership.

Many ways have been used to explore the topic of wisdom. Birren and Fisher (1990) aptly describe these endeavors as follows:

If wisdom exists like a Greek goddess on top of a mountain, there are clearly many methodological avenues to the top, with vague and shifting descriptions at the base---descriptions by villagers, who pass on the folklore of earlier generations that claim to have sighted her (pp. 323-324).

Although implicit and explicit approaches have been used, explicit approaches to the study of wisdom are rare. However, researchers at the Max Planck Institute for Educational Research, Berlin, offered one explicit approach. In the present study, their operational definition of "wisdom-related knowledge" was used to classify the content of knowledge exhibited by public school leaders as they think-aloud about problems to be solved. In their view, knowledge gained from observation and experience with "human nature and human conduct" (Smith & Baltes, 1992, p. 272) is the foundation of wisdom expertise. It is fortified and refined by individuals working towards life goals and conducting the pragmatic activities of life (Smith & Baltes, 1992).

Along these lines, this study explored whether the methodology proposed by the Berlin Group could be used to examine the think-aloud responses of a group of school leaders to three problem-scenarios and to assess if wisdom-related knowledge was evident in their problem solving.
The Research Instrument

The researcher received *The Manual for the Assessment of Wisdom-Related Knowledge* (Staudinger, Smith, & Baltes, 1994) from the Max Planck Institute for Human Development and Education in Berlin. The instrument and procedures were modified for these exploratory purposes to suit the population of public school leaders. Three problems were designed and modified with consultation from one public school superintendent and a review of the relevant literature. The interview format and the design problems were field tested in a pilot study, and the participants' suggestions were incorporated in the revisions. Then, the instrument was used to interview a random sample of thirty-one public school leaders (i.e., 22 male and 9 female) from four counties in Illinois.

The Research Questions

Four questions were used to guide the research:

1. In home and work problems is wisdom-related knowledge evident?
2. Is the level of wisdom-related knowledge different in home v. work problems?
3. Is the level of wisdom-related knowledge different in more structured v. less structured problems?
4. Is the level of wisdom-related knowledge different for male v. female school leaders?

The Wisdom Criteria

The conceptualization of wisdom and the wisdom-related criteria
provided by the Berlin Group were useful for rating the think-aloud responses produced by the subjects in response to the study problems. The levels of wisdom-related knowledge were below average for the subjects for the five wisdom-related criteria except for "factual knowledge" and "life-span contextualism" (Staudinger, Smith, & Baltes, 1994, p. 5). However, subjects did not necessarily discuss the content of wisdom-related knowledge in their problem solving for all problem-types. The subjects' responses supported the Berlin Group's contention that certain problems tap this knowledge more efficiently than others. The limitations of this study do not allow for drawing strong conclusions, but patterns observed in the data suggest there are several problem elements that are at work in the application of the wisdom criteria to problem solving:

1. The procedures that superintendents use to evaluate problems are different for work and home.
2. The content of knowledge which embraces the human element may more likely be activated when problems are ill-structured and the stimuli of family and home are directly tapped.
3. The legal constraints and political context of the public school environment may constrain or prevent the superintendents' application of wisdom-related knowledge to work problems.
4. Wisdom may not be the expert knowledge of choice for all work problems.
5. Certain individuals, as a function of their background knowledge, philosophical orientation, and/or personality disposition, may apply wisdom-related knowledge to any problem presented to them.

To explore these issues adequately, the problems of the study must be
examined and construct validity established. Then, the problems should be re-administered to a sample of superintendents, and their levels of wisdom-related knowledge should be compared to levels for a control group.

The Rating Panel

A dynamic aspect of this study was the use of a ten-member rating panel to analyze the transcribed protocols. The rating panel took on a significant and essential life of its own. In many ways, the study became an examination of how the raters (1) reacted to the training, (2) conceptualized and made meaning of their assigned criterion, (3) developed methods to employ the instrument and achieve rater consensus, (4) interacted with each other during training, (5) interacted with the researcher throughout the study, and, finally, (4) analyzed the protocols. As a result, a second review of the literature focused on the use of rating panels in assessment. A number of researchers have studied interrater agreement (Cicchetti, Showalter, & Tyrer, 1985; Tsui & Ohlott, 1988; Cicchetti, Volkmar, Sparrow, Cohen, Fermanian, & Rourke, 1992). In one study Tsui and Ohlott (1988) assert that:

Interrater agreement is only possible under the ideal condition of consensus in criterion type, in criterion weight, in performance information observed and recalled, and with no rating style differences, which may occur due to intrapersonal (e.g., cognition) or interpersonal factors (e.g., affect) (Tsui & Ohlott, 1988, p. 799).

They discuss three sources of "dissensus" (p. 779): "rating errors, selective perceptions, and variations in criteria type or weight" (p. 779). Rating errors were specifically addressed during training and in discussions with raters by phone during the rating process. In the present study, the criteria were
complex and multi-faceted; therefore, rating pairs may have assigned
different weights to the aspects of specific criteria. Further, Tsui and Ohlott
(1988) discuss a study by Foti and Lord, in which they suggest that rating
behavior is also affected by how raters encode information. They state:

raters encode information according to either a script or prototype
schema. The script schema led to higher accuracy in behavioral rating
than the prototype schema, and the script schema was induced when
the rater had knowledge of the ratee’s task goals... (p. 799).

The present study used a script schema. Raters had knowledge of the subjects’
task goals. However, no ideal responses were constructed for the three
problems to offer specific statements for raters to use. Instead responses to life-
planning problems and the Manual for the Assessment of Wisdom-Related
Knowledge (Staudinger, Smith, & Baltes, 1994) were used for examples of
criteria. As a result, rating pairs attempted to achieve rater consensus in a
variety of ways. For example, two pairs of raters developed rubrics to refine
the wisdom criteria and achieve consensus. Raters for the criterion of
procedural knowledge created a rubric (Appendix L) which added precision
and clarity to their rating process. However, the rubric developed by raters for
the criterion of life-span contextualism (Appendix P) seemed to be
problematic. A superficial analysis of the raters’ comments indicates that the
rubric was ill-adapted because the raters used frequency counts of a criterion’s
aspects to assign scores. For greater precision, future research should develop
an ideal protocol for each problem and provide representative idea segments
which illustrate anchor points (i.e., 1, 4, and 7). The use of a rubric for each
criterion could hold promise.

The perceived or real relationships of the participants (i.e., subjects and
raters) in a study can impact the degree of rater agreement. Discussed frequently in the literature is the relationship between rater and ratee. Tsui and Ohlott (1988) suggest that a subordinate-superordinate relationship can bias a rating panel because of prior expectations that the rater holds about the ratee. In their words, "self-interests and other biases, including implicit theories, may lead to idiosyncratic effectiveness criteria. Even when different raters agree on the roles that a manager should perform (i.e., criterion type), they may differ on the degree of emphasis that each role should be given (i.e., criterion weight)" (p. 784). For this reason, the rating panel was blind to the profession of the subjects who produced the protocols. Nevertheless, the raters speculated that the subjects of this study were school administrators.

The measures of interrater reliability indicate that high levels of agreement are possible using the conceptualization and operationalization of wisdom from The Manual for the Assessment of Wisdom-Related Knowledge (Staudinger, Smith, and Baltes, 1994). The essence of dissensus among pairs of raters is a matter to be pursued in future research. Several artifacts from this study might be used to make a more accurate assessment of interrater agreement. A between-methods (qualitative and quantitative) approach is recommended. The protocols with attached rating sheets provide a wealth of information: the number of minutes raters took to rate a particular protocol, their comments while rating, and specific phrases highlighted to represent the criterion. Furthermore, several raters kept a log of their reflections during the rating process. These could be used for qualitative analysis. Finally, raters should be interviewed to collect their perceptions of rater training, rating criteria, protocol evaluation, and the difficulties encountered en route. It is recommended that:
1. A random and objective selection of raters should be considered.

2. Rater training be more systematic and be based on ideal protocols developed for each problem type.

3. Researchers considering the use of the Berlin Group's methods should receive more intensive training on the five wisdom-related criteria and the procedures to train subjects for thinking aloud.

4. The number of problem types should be reduced so that raters are able to rate a larger number of like protocols.

5. The life-planning or life-review problems developed by Baltes and Smith (1990) or Staudinger (1989) might be used to assess levels of wisdom-related knowledge of public school leaders. Use of these problems has the advantage that ideal protocols already exist.

6. A computer program might be developed that could identify the criteria in transcriptions and be used to rate the protocols.

The findings suggest that rating panels are potentially useful in assessing complicated protocols, but that optimal conditions must include adequate time and intensity of training; random selection; the inclusion of multiple raters per criterion; clear and precise descriptions of criteria; and the development of ideal protocols for the study problems. Further, the rating panel provides a provocative story of its own. Researchers should consider studying rating as a method of data analysis. The function, the interactions, and the ways individuals process information and achieve consensus are potentially interesting topics to pursue.

A Brief Summary of The Findings

This study concludes that wisdom-related knowledge was evident in
the problem solving of school leaders. The ability of the trained raters to use the definitions and scale points of the five criteria found in *The Manual for Assessment of Wisdom-Related Knowledge* (Staudinger, Smith, and Baltes, 1994), and to assign scores on a seven-point scale to the protocols supported this approach.

The study investigated if the mean levels of wisdom-related knowledge were different for home/work and/or structured/ill structured problems. The problems of the study were classified as work problems or home problems by their primary problem context. Furthermore, they were hierarchically assigned a label of well-structured to ill-structured by the sample population, participants of a pilot study, and one practicing superintendent. The most structured problem was problem X, the next most structured problem was problem Z, and the least structured problem was problem Y.

No significant statistical differences between mean levels of wisdom-related knowledge for the five criteria were found, with one exception. The results indicated a significant statistical difference between the mean levels of procedural knowledge in the one ill-structured/home problem (Y) as compared to the well-structured/work problem (X). At the same time, a high level of interrater agreement for the criterion procedural knowledge ($r = .98$ to $r = .73$, $p < .001$, two-tailed) was found. Further, in terms of the number of wise responses, the well-structured/work problem produced a smaller number of wise responses (3) than the ill-structured/home problem (7). The home problem (Y) was similar to the life-planning problems of the Berlin Group and would be expected to produce higher scores on the wisdom criteria. Because the classification of the problems confounded primary problem
context (i.e., work, home) with problem structure (i.e., well-structured, ill-structured) the reasons that differences occurred can only be speculated.

The final research question was designed to collect information about the differences and similarities in the mean levels of the male subjects and female subjects of the study. Differences between the mean scores for the male school leaders and the female school leaders were not statistically significant. Women and men were similar in the procedural aspects of working problems and the information that they brought to bear on their resolution. However, there was evidence that some differences might exist in a larger sample. Specifically, the mean levels of wisdom-related knowledge on the criterion uncertainty were higher for females for the home problem than for the two work problems. Conversely, the level of uncertainty for the work problems was higher for males than for females.

Wise Responses

In a meta-analysis of writings about leader effectiveness, Yukl (1991) found several “points of convergence” (p. 275). Effective leaders establish cooperative relationships with all levels in the organizational structure, and understand the importance of trust in those relationships. They have the ability to procure needed resources to make the jobs of others more satisfying. They accomplish this by asserting influence to remove obstacles that impede progress. They have the ability to weigh and control information for the betterment of the organization’s participants and the wider community. Their decision-making is characterized by an openness to creativity, the prediction of potential problems, and the employment of key players for resolution. Commitment and compliance of the participants to shared goals is increased
by leaders' ability to understand what underlies an individual's motivational level. Exemplary leaders use this to influence forward-movement (Yukl, 1991). Wise responses in the present study were produced by individuals who had a background knowledge in sociology, special education, counseling, elementary education, science, and/or English. Future research may want to investigate the contribution of subject area to the expertise and effectiveness of public school leaders. This study suggests that the foundation of effective leadership may be the result of a thorough and deep understanding about people, their motivations, their age-related development, their historical and social impacts, and their normative and nonnormative influences.

**Factual Knowledge**

The level of superintendents' knowledge on the criterion "factual knowledge" (Staudinger, Smith, & Baltes, 1994, p. 5) was consistently above average (i.e., > 4) across the problems. To receive higher scores on factual knowledge, a response must demonstrate "a general knowledge about human nature and life conditions (motives, emotions, vulnerability, mortality, human conduct and its social, normative, and personal conditions), common to all individuals within a cultural community" (Staudinger, Smith, & Baltes, 1994, p. 15). At the same time, specific information about certain life events and how they proceed must be evident (e.g., having and raising children). Superintendents would be expected to score high on factual knowledge because of the nature of their interpersonal relationships at work. They oversee school districts comprised of children with a range of age-associated needs, wants, and interests. Simultaneously, they foster the development of professionals from young adulthood to retirement age. Directly or indirectly,
they are made aware of the environmental, financial, developmental and educational needs of these diverse groups. Public school superintendents have many opportunities in their daily discourse to refine factual knowledge about the human condition. Rich factual knowledge about the developmental stages of adulthood is illustrated in the following example:

His children are, of course, at a very young age and this is one that I can tell you that I would personalize in my answer. The way I would answer it now versus what I would have answered it twenty-five years ago is different...I think that people in the very early stages of making decisions on career versus family choose career. The thought is: Well, I can make up for lost time with my family... and I can always keep job first and things working out. It doesn’t work that way. There will be things that he will miss out with his five-year old and his newborn child that he will never see again. To some people, it doesn’t bother them, to others it does.

A second subject applied wisdom-related knowledge to understand the motives and inclinations of participants in the work place:

I think board members need to develop and learn how to disagree with one another and still feel there is a we, and I think that would be an important piece of the puzzle. If it’s a board member that is leaking and going behind the back or to the press, and so on, then I think you’ve got someone who, for some reason, feels as though they can’t express their opinion to the board openly. I would tend not to take sides, but would bring it to the board by asking: If this is happening, why is it happening? Is it because people feel as though they don’t have a say in the right form? Is it someone who just doesn’t feel part of us and maybe we have to work harder on including him or her? Or maybe he or she is the honest dissenter, but at least it is played out there - who is playing all of the different roles. It’s not this behind the scene, what I would call - a corruption of relationships, from an unknown.
In most protocols which evidenced higher levels of factual knowledge about the human condition, subjects used the key players to stimulate discussion about the developmental aspects of aging and the normative and non-normative thoughts and behaviors of humans in interaction with others.

**Life-span Contextualism**

The level of superintendents' knowledge on the criterion “life-span contextualism” (Staudinger, Smith, & Baltes, 1994, p. 5) was consistently high across the problems. A high level of this criterion (Appendix M) is characterized by integrating: (1) past, present, and future considerations; (2) personal and public contexts and themes (i.e., “family, friends, work, leisure time [sic] etc.” (p. 17); and (3) age-associated, culturally-embedded, and idiosyncratic events and circumstances. In the following excerpt, the subject demonstrates the ability to identify and integrate significant personal and private contexts with the climate of the school community.

Based on the description that goes here there seems to be a climate of hearsay and discussion about one another. Administrators seem to be talking about board members, unidentified people are engaging in hearsay, and then, board members are talking about board members. Based on all of this, they all seem to be willing to talk to Burt. So Burt, the superintendent, at least based on the evidence we have before us, appears to be something of a trusted confidant of all these warring factions. So that in and of itself has some potential. I think the issue is an important one, but one that I’ll offer some dichotomies on. From the perspective I operate from the board of education is the property of and is the product of the community. It is not the product of the superintendent nor the administration, and the community must hold some sort of expectations for behavior on the part of their representatives. In saying that, then, the superintendent role, from this perspective, is to find out what the community culture is,
in terms of their expectations for behavior. If, in fact, the community culture is one that encourages this kind of behavior and, in fact, rewards it, either through giving a pleasurable response when people give a juicy tidbit or by engaging in it more, then it really becomes problematic as to whether the superintendent is going to turn around the culture. I would submit, you are going to ride the horse in the direction it’s going, and so, if that culture is one that’s like that, then it becomes a question of how strong an intervener one person is going to be.

While some subjects were able to discuss local concerns in depth, the following response embeds the local school culture in a larger socio-historical context:

The whole context within which superintendents have to work now versus even ten or even fifteen years ago has radically changed because of the whole cultural change to: (a) having parents more involved in the schools, (b) having teachers work in far more collegial manners, and (c) having board members setting policy within that larger context. We are not in the “old school” where the superintendent is the authority figure who simply calls the shots and everybody follows.

The protocols of this study indicated that superintendents have internalized decision-trees as part of an evaluative framework for making a decision. These decision-trees are used to assign positive and negative valences to the elements of a problem. As information is collected about the persons, groups, and contexts relevant to a particular decision, insignificant details are eliminated from consideration. A critical examination of the essential contexts is achieved by asking questions about the current circumstances, the socio-historical background, and any future considerations. The following
How does he know this is happening? Where's the hearsay coming from? How is he aware of the press involvement here? Has there been anything in the press? Does his district generate press? Is there a lot in the newspaper regarding his district and its actions? And is the tone of that press different now? How is he aware that there might be some information out there? And also, regarding staff members within the organization, what staff members? Why does he think and what background does he have that indicates things are being leaked? How is it affecting his performance? What board members does he think are involved? What does he consider the makeup of the board? Does he have a united board? Does he have a split board? Have they just taken a turn in the recent past? Are some of the things that are happening personally affecting him or just board members? In other words, could it become a personal attack on him?... In other words, is he solving this problem as an outsider, or is he solving it as someone who has a very personal stake in this thing? While the superintendent really is responsible for the role and functioning of the school district, he isn't responsible for the operation of board members amongst themselves.

Superintendents in this study demonstrated an ability to understand a number of contexts relevant to public education and to family life and weighed the importance of these contexts when problem solving.

**Gender and the Findings**

There is no doubt that a recognition and management about the uncertainty of work decisions has become well-accepted in managerial practice. In *The Reflective Practitioner* (1983), for example, Schon states:

Managers have become increasingly sensitive to the phenomena of uncertainty, change, and uniqueness. In the last twenty years,
"decision under uncertainty" has become a term of art. It has become commonplace for managers to speak of the "turbulent" environments in which problems do not lend themselves to the techniques of benefit-cost analysis or to probabilistic reasoning. At least at the level of espoused theory, managers have become used to the instability of patterns of competition, economic context, consumer interests, sources of raw materials, attitudes of the labor force, and regulatory climate. And managers have become acutely aware that they are often confronted with unique situations to which they must respond under conditions of stress and limited time which leave no room for extended calculation or analysis. Here they tend to speak not of technique but of "intuition" (Schon, 1983, p. 239).

Then how does one explain the differences in the criterion "recognition and management of uncertainty" (Staudinger, Smith, & Baltes, 1994, p. 5) for the females in this study? It is proposed here that two reasons may apply: (1) the compensatory measures women might use to be accepted into the profession of school administration, and (2) the importance for fostering an atmosphere of confidence in their employees.

Women need to be perceived as tough (Lips, 1991). At the secondary level, for example, many women strategically select the school dean's position as a "rite of passage" to the principalship and the superintendency. Citing a study by Andrews in 1984, Shakeshaft suggests a "woman's self-confidence 'has a substantial impact on an individual's chances of being perceived as a group's emergent leader' (1984, p. 9)" (Shakeshaft, 1989, p. 85). According to Lips (1991),

For many people, the image of a powerful person is inescapably male...

In other words, female public school leaders may intentionally minimize the perception of uncertainty in their discussion of work problems. Female subjects' low levels of uncertainty may also be related to their role as "disturbance handler." In summarizing this concept, which was coined by Mintzberg, Yukl states:

In the disturbance handler role, a manager deals with sudden crises that cannot be ignored, as distinguished from problems that are voluntarily solved by the manager to exploit opportunities (entrepreneur role). The crises are caused by unforeseen events, such as conflict among subordinates, the loss of a key subordinate, a fire or accident, a strike, and so on. A manager typically gives this role priority over all of the others (Yukl, 1991, p. 65).

The female subjects of this study emphasized the importance of helping subordinates feel a sense of trust that a problem was being managed. The female participants appeared to move quickly to a temporary solution that would buy time. In other words, they selected a potential "problem space" to narrow the problem, and then worked towards a solution according to that scenario. By doing so, they prevented or minimized potential disturbances to other problem participants; however, they restricted their discussions to one or two scenarios. The following example clarifies this approach:

So the question is hard for me to answer for this particular person. One of the things is that I don't know her and because there are so many "ifs". I'm going to make some assumptions, because I'm going to narrow down the problem. The reason I'm going to narrow down the problem is because it can go on ad infinitum if I don't. And one of the
things in my thinking style is that I like to get to a solution, and that doesn’t mean that changes can’t be made along the way, but I find that particularly as a leader, that if I’m not able to get something down as a starting point and then work from that, that people feel, and I feel, that we’re going in circles. And that’s really hard for people who are looking to leaders to lead.

Since the number of suggested scenarios and the discussion of potential problem trajectories dictates the level of uncertainty in a response, this amounted to a “rush to judgment” and lowered the scores of female participants on the criterion of uncertainty.

Female subjects’ higher levels of recognition and management of uncertainty on the home problem may be easier to explain. Women do tread on familiar territory in the management of the home. Reportedly, even professional women who work many hours per week continue to coordinate and manage the details of their family and home. For this reason, they may be more comfortable with the uncertainties that occur in this context. According to Lips (1991),

The division of labor, even in families in which the wives are doctors, professors, lawyers, or other professionals, with the professed ideology of the couple as egalitarian, is strangely traditional. Although research shows that employed women spend less time doing housework than do non-employed wives, women still do most of the housework (79%, according to Berardo, Shehan, & Leslie, 1987)” (p. 143).

One final possibility for the scores in the criterion uncertainty may lie in the essence of the criterion itself. In previous research, Staudinger (1989) found scores in this criterion to be low and interrater reliability measures less stable. For this reason she suggested that “the uncertainty scale seems to represent an
aspect of the knowledge system, fundamental pragmatics of life, that primarily calls for direct experience in order to show expertise in that aspect of the knowledge system” (p. 154). Perhaps the focus on a subject age range of 40-55 is the source of lower scores on uncertainty. Older persons seem to score higher on this criterion. Staudinger further asserts that “this does not imply that awareness of uncertainty could not be taught if someone would be able to develop an adequate curriculum” (p. 154). Anyone who has attempted to share one’s experiences with younger persons understands how difficult uncertainty may be to teach. The learner’s receptivity to this knowledge is essential. Our wisdom comes with an understanding of the relativity of certain circumstances in our lives; the significance of life events and situations changes with more life experience, and, thus, we become more receptive with age.

Whatever the reasons for the perceived differences in uncertainty for females and the lower scores for the subjects overall, this criterion offers many opportunities for future investigation. Further, wisdom studies may be a way to explore the similarities and differences between men and women in leadership roles in work and family settings.

Recommendations for Future Research

The present study indicates that school personnel are an interesting and potentially rich population with which to explore the topic of wisdom. Used previously in several wisdom studies, the profession of school administration continues to be a population that may evince higher levels of wisdom-related knowledge. Recommendations for further study include the following questions:
1. If this study were replicated with a randomly-selected control group of human service professionals solicited through the newspaper, how would the superintendents compare?

2. Since previous research has suggested that older persons who were nominated as wise scored higher on the wisdom criteria, if this study were replicated using superintendent wise nominees of several age groups, how would the results compare?

3. If life-planning problems were used in interviewing superintendents, would levels of wisdom-related knowledge be different?

4. If teachers in these sampled districts were asked to rate their respective superintendent’s effectiveness or level of wisdom how would these superintendents fare?

5. If the superintendents in this study were exposed to a curriculum which systematically addressed the five wisdom-related criteria in a problem-based format, would their levels of wisdom-related knowledge increase?

6. If the protocols from this study were analyzed using a qualitative approach, what would the nature of the themes discussed reveal?

7. If this study were replicated using equal numbers of male and female public school leaders, would the results be similar to those of the present study?

8. How do public school leaders define wisdom, which individuals do they think possess wisdom and/or what actions or decisions would they classify as wise?

Implications for Practice
Wisdom-related knowledge seems to be an expert knowledge that
certain public school leaders use when defining and solving problems at work and at home. In fact, some public school leaders appear to use this expert knowledge exclusively. This is important because previous research by Norris (1986) suggested that:

Educators are calling for leaders with the ability to sense organizational needs from a holistic approach and with the insight or intuitive feel for what the organization can become. Such activity depends upon the complementary incorporation of left-brain processes of analysis and judgment with right-brain visionary, or conceptual skills. Recent research does not present a positive picture of the superintendent as an agent for change, in that, most superintendents have been found to be analytical and technical in the [sic] problem-solving approach, rather than intuitive and conceptual (Norris, 1986, p. 1).

However, it is likely that this knowledge system may be perceived by some as irrelevant to problems in the public school arena. Perhaps even those who possess this knowledge do not use it to resolve school problems because it does not facilitate their work. Further, public school leaders may be constrained from using wisdom-related knowledge by the bureaucratic, political, and legal implications of decisions in the public schools. The school environment may work against wise decision-making. In short, who is to say that this type of knowledge is suitable for a school environment? Leaders who possess wisdom and apply it to problem solving in the schools may be considered unwise or irresponsible.

However, nine subjects produced wise responses in this study. They seemed to possess some unique combination of traits and skills which make them more likely to sort through problems using wisdom-related knowledge.
Subjects who have a sociological, psychological and/or human development background seem more likely to discuss problems humanistically. Biographical interviews of these subjects might reveal something about the development of wisdom.

On the other hand, Meacham (1990) suggests that it is not the persons, but special circumstances that allow for the application of wisdom knowledge. In his view, the development of wisdom can only take place in a particular environment:

The maintenance of wisdom throughout the life course and its restoration if it has been lost depend upon the continued immersion of the individual within a “wisdom atmosphere” that assists the individual in avoiding the extremes of too confident knowing and of paralyzing doubt. In a wisdom atmosphere, there is a supportive network of interpersonal relations in which doubts, uncertainties, and questions can be openly expressed, in which ambiguities and contradictions can be tolerated, so that individuals are not forced to adopt the defensive position of too confident knowing (Meacham, 1990, p. 208).

Wise people are cultivated in such an environment, and they, in turn, cultivate wisdom in others. For one subject this mentoring relationship was discussed as follows:

I want Mark to give me some indication, early on, as to what his priorities are. I would start walking him through a series of questions, in each category. With regard to the job: Where does he get his satisfaction? As he reflects on his past years, what has he been pleased with, or dissatisfied with? As he looks to the future, what would he hope? If he were to look back five years hence, what would the benchmarks or
indicators of a successful career be? I would use all of that to get to what his fundamental value system is. As he thinks about his family, what is he most proud of? I would ask similar kinds of questions: What are the indicators that you have a successful family? When you think of your family, what is an irritant? What bothers you? He's got to live with this decision, and my goal is to help him think through these in an unbiased manner and to do this by separating from my own value system. I really believe in the peer coaching concept and the whole focus on peer coaching. If I've got it right, it is to help teachers and professionals improve themselves by encouraging them to meta-cognate on their own. I'm strongly convinced that that is more powerful than a supervisor or even an outside person saying, you know you should do this or that. Give somebody a chance to think it through, get in tune with himself/herself, and come to his/her own conclusions. It is better for the individual and for the organization.

This is, perhaps, why mentorship has been associated with wisdom. In the definition of wisdom-related knowledge set forth here, wisdom entails an ability to distance oneself from the persons and details of a problem so that relevant factual and procedural knowledge, values, contexts, and the likelihood of uncertainties about the human condition can be elicited and applied in an unbiased and humble fashion.

Since research has demonstrated the need for leaders of a different mettle, attention should be paid to cultivating leaders who possess an encyclopedic knowledge of the human condition and the behaviors and attitudes necessary to develop a culture in which others may achieve wisdom. Educational institutions spend expend energy and resources in the development of persons who can problem solve in subject domains, but often neglect the pragmatic aspects of living and cooperating with other human beings. Recent findings that schools are emphasizing student's engagement of real-world problems suggest that wisdom studies may be an avenue of
investigation. Concurrently, preparation programs which prepare school administrators might consider ways to foster the development of this relevant content area and incorporate it into superintendent problem solving.
APPENDICES
APPENDIX A
REQUEST FOR INFORMATION FROM THE
MAX PLANCK INSTITUTE
To Researchers:

My name is Susan M. Stoecker-Terronez. I am a graduate student in Educational Administration at Loyola University, Chicago, Illinois, U.S.A. I have my Masters degree in Social Work from Loyola University, and have been employed for nearly twenty years in post-masters Psychiatric and School Social Work practice. I am nearing completion of my program of study and have been in pursuit of a doctoral dissertation topic. As part of an Advanced Qualitative Research class I have been exploring potential topics for the dissertation.

During an earlier course, I became interested in Deanna Kuhn’s *Thinking as argument* and found several books with her qualitative research included. I came across the concept of “wisdom-related knowledge” in one of these sources. This concept seemed to parallel some research I had been doing about the educational training of school administrators.

Since that time, I have read articles that you have published, purchased the book *Wisdom: Its Nature, Origins, and Development*, and have become more familiar with the work of the life-span psychologists. I would be interested in any information that you can provide: materials, training, bibliographies, and/or phone consultation as I consider this topic more fully.

From my fledgling point of view, I have thought of several ideas and would appreciate your input. If they appear rather poorly formulated, I hope you will be patient with my naive and elementary exposure to your work.

1. Has anyone used the methodology you have been refining to study school administrators?
2. Have the classification categories or scales been applied to problems other than life-planning and life-review?
3. Have the scales been applied to the problem-solving episodes of groups rather than individuals?
4. After transcripts have been rated, have the segments been analyzed using a qualitative approach?

Besides any written information you may provide, I am also traveling to Europe in the summer and would be interested in any conferences or workshops that might be offered about your work. Although I am going to Rome in early July, I might be able to attend a training institute in the weeks
before or after my trip. I have many questions and I am anxious to communicate with you at this time. My comprehensive exams are in October and once passed, I can begin the dissertation. I am hoping to refine a proposal, however, in the next four months.

In closing, please know that I am honored to have this opportunity to communicate with you and I am grateful if you have any time to devote to this request. It is apparent by your work that the development of your concepts and theory have required a great deal of time, thought, and expertise. I am excited about your work and have a deep respect for all of you. Thank you.

Respectfully,

Susan M. Stoecker-Terronez
APPENDIX B

RESPONSE FROM THE MAX PLANCK INSTITUTE
Dear Ms Stoecker-Terronez,

Thank you for your letter and your interest in our work on Wisdom. I am happy to tell you that we have just completed our Manual for the Assessment of Wisdom-Related Knowledge, you will find it enclosed with this letter. I am also sending you reprints of our latest publications.

Now to answering some of your questions:

**Question 1:** I can tell you that so far we had one study using a content analytic technique which is currently under review (see enclosure).

**Question 2:** Our most recent study indeed used, what we call a social-interactive paradigm. We very much believe that wisdom is the prototype of a collective construct (see enclosure).

Concerning your presence in Europe, I am not completely sure yet about my schedule before July 1 and after July 18. If you can arrange to come to Berlin, I would be happy to meet with you and discuss "Wisdom research". I would suggest that you contact me sometime in June. Then I will be able to tell you whether I will be in Berlin before or after your class in Rome.

Sincerely,

Ursula M. Staudinger

Enc.
APPENDIX C

REQUEST FOR INTERVIEW
Dear Dr. Staudinger:

Thank you for sending the reprints of the Institute's latest publications. They have been very helpful in adding to my understanding about the Institute's most recent research on Wisdom.

I sincerely appreciate your willingness to meet with me in July, per our phone conversation while you were in the United States. I have made arrangements to spend July 17 to July 23, 1994 in Berlin. As per our conversation, I would like to meet with you at the end of that week - possibly Thursday, July 21, 1994 or Friday, July 22, 1994.

I will arrive in Berlin by air on July 17, 1994. To assure that the time is convenient for you I will call the Institute on the morning of Monday, July 18, 1994.

I am looking forward to visiting with you. I am also eager to see Berlin as my paternal grandparents are from Germany.

Thank you again for your willingness to spend time with me as I prepare to begin my research year.

Sincerely,

Susan M. Stoecker-Terronez
APPENDIX D

SUPERINTENDENT LETTER
Dear Superintendent (Name):

I am presently a doctoral candidate in Educational Leadership and Policy Studies at Loyola University of Chicago. My dissertation research will examine the content of superintendent problem solving.

The sample will be drawn from a population of suburban school superintendents with specific demographic characteristics. The attached questionnaire is designed to collect the data needed to select these participants. I would greatly appreciate your completing the questionnaire and returning it by July 15, 1995. A self-addressed stamped envelope has been provided for your convenience.

If you are selected for this study and you agree to participate you will receive a follow-up phone call in early July to arrange for a forty-five minute interview. Interviews, arranged at your convenience, will be tape-recorded, transcribed, and analyzed. Your anonymity will be strictly respected.

Members of my dissertation committee are Dr. Carol Harding, Dr. Steven Miller, Dr. Janis Fine, and Dr. Henry Bangser. As a fellow superintendent, Dr. Bangser has been involved in the construction of this study.

In gratitude for your prompt response a copy of my results will be forwarded at the completion of the study. If you have any questions about the nature of my research, please feel free to contact me at 708 377-4768. Thank you in advance for your cooperation.

Sincerely,

Susan M. Terronez
APPENDIX E

SUPERINTENDENT BIOGRAPHICAL INFORMATION
SUPERINTENDENT NAME: ____________________________

SCHOOL DISTRICT NAME: ____________________________

PLEASE CHECK ITEMS THAT APPLY.

GENDER: MALE _______ FEMALE _______

EDUCATION:

B.S. _______ MASTERS DEGREE _______ DOCTORATE _______

OTHER _______

AGE:

Under 40 _______ 40 - 45 _______ 46 - 50 _______ 51 - 55 _______ 56 - 60 _______
61 + _______

AGE AT ENTERING FIRST FULL-TIME ADMINISTRATIVE POSITION OTHER THAN SUPERINTENDENT:

25 - 30 _______ 31 - 35 _______ 36 - 40 _______ 41 - 45 _______ 46 + _______

TYPE OF SCHOOL DISTRICT WHERE YOU HELD FIRST FULL TIME POSITION IN EDUCATION:

Elementary _______

Junior High/Middle School _______

High School _______

College/University _______

Vocational/Technical _______

Parochial _______

District Office _______

Other _______

SUBJECT(S) TAUGHT IN FIRST FULL-TIME POSITION IN EDUCATION:

Art _______ Computer Education _______ Counseling _______ Driver _______

Education _______ Elementary _______ English _______ Foreign _______

Language _______ Industrial Arts/Technology _______ Math _______

Music _______ PE/Health _______ Science _______ Social Studies _______

Special Education _______ Vocational Education _______ Other _______

No Teaching Experience _______
NUMBER OF YEARS YOU SPENT (Part-time or Full-time) AS A CLASSROOM TEACHER:

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<tr>
<td>10-14</td>
<td>15-19</td>
</tr>
<tr>
<td>20+</td>
<td></td>
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</tbody>
</table>

NATURE OF YOUR FIRST ADMINISTRATIVE/SUPERVISORY POSITION:

- Assistant Principal
- Dean of Students
- Principal
- Director/Coordinator
- Assistant Superintendent
- State Agency
- Business Office
- Other

NUMBER OF PUBLIC SCHOOL SUPERINTENDENCIES YOU HELD INCLUDING CURRENT:

<p>| | |</p>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
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<tr>
<td>3</td>
<td>4</td>
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<tr>
<td>5</td>
<td>6+</td>
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NUMBER OF YEARS YOU HAVE BEEN IN YOUR CURRENT SUPERINTENDENCY:

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<tr>
<td>0-4</td>
<td>5+</td>
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</table>

NUMBER OF YEARS TOTAL YOU HAVE SERVED AS A SUPERINTENDENT:

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<tr>
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<tbody>
<tr>
<td>0-4</td>
<td>5-9</td>
</tr>
<tr>
<td>10-14</td>
<td>15+</td>
</tr>
</tbody>
</table>

NUMBER OF TOTAL DISTRICTS IN WHICH YOU HAVE WORKED:

<p>| | |</p>
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<tr>
<td>1</td>
<td>2-3</td>
</tr>
<tr>
<td>4-5</td>
<td>6+</td>
</tr>
</tbody>
</table>

DID YOU HAVE A MENTOR FOR THE SUPERINTENDENCY:

- YES
- NO
- DON'T KNOW

WOULD YOU BE WILLING TO BE PARTICIPATE IN THIS STUDY?

- YES
- NO
PLEASE INDICATE THE TIME OF YOUR GREATEST AVAILABILITY:

JULY 15 - 31________AUGUST 1 - 14________AUGUST 15 - 31________
SEPTEMBER 1 - 15________

Thank you so much for your time. Return questionnaires to:

Susan M. Terronez
115 N. Oakwood Avenue
West Chicago, IL  60185
Phone: 231-5285
APPENDIX F

STUDY PROBLEMS (X, Y, Z)
Study Problems

Problem X
Mary/Paul, a school guidance counselor at a unit district's high school, has reported to Gordon/Sandy, the principal, that a police report alleging sexual abuse has been filed by the parents of a 14-year-old girl enrolled at the high school. The alleged perpetrator of the abuse is John, one of the 45-year-old male science teachers. An investigation is being conducted by the Department of Children and Family Services. The girl has not fully confided in the guidance counselor, but evidence from several counseling sessions and from conversations with the girl's mother indicates to the counselor that the girl may have been meeting off campus with the teacher.

What should Gordon/Sandy do and consider in making his/her plans?
What additional information is needed?

Problem Y
Mark/Karen, a 40-year-old successful professional accountant who works over sixty hours per week, was recently offered a major promotion in a company that has experienced dramatic growth in the recent past. His/her new responsibilities would require a substantial increase in time on the job and an increase in traveling on behalf of the company. He/she and his wife/her husband have recently had one child. They have two children under the age of five. He/she has been experiencing marital problems in the form of his wife's/her husband's increased dissatisfaction with the demands of his/her work. He/she needs to give an answer to his/her job within the next few days.

What should Mark/Karen do and consider in making his/her plans?
What additional information is needed?
Problem Z

Burt/Jan, a superintendent from a nearby school district, has become aware that there is some concern from district administrators regarding the confidentiality and/or behavior of some of the school district board members. Hearsay suggests that information discussed in executive session has been leaked to the press and to staff members within the organization. Furthermore, individual board members have approached him/her to discuss the behavior of their colleagues on the board. The rancor has surfaced at monthly board meetings in the form of many split votes on routine issues, and frequent hostile personal criticism.

What should Burt/Jan do and consider in making his plans? What additional information is needed?
APPENDIX G

DIALOGUE FOR SUBJECT INTERVIEWS
Hello. My name is Susan M. Terronez. The purpose of this study is to determine the content of knowledge you use when you think about a certain problem to be solved. Because the study will involve your spontaneous reflections, I would like you to read and sign consent for use of your transcribed responses (Appendix). I will be audio-taping your responses to the main questions of the study, but your name and district will be deleted from the typed protocols, and will be kept strictly confidential.

"In this study, [I] am interested in what you spontaneously think about when you are presented with a certain problem to be solved. In order to find out what goes on in your mind while you are solving the problem, [I] ask you to think aloud. [I] want you to say everything that goes through your head, from the moment when you first read the problem, until you are finished. Please speak continuously while you are working on the problem. Also, please do not try to plan or explain what you say, simply imagine that you are sitting alone in a room, talking to yourself. It is very important for [me] that you speak continuously. For this reason, if you should stop talking for an extended period of time, I will prompt you to continue speaking. Is it clear what [I] mean by thinking aloud? (p. 6).

Subjects are told that they will be given two warm up tasks and three study problems. Only the responses to the three study problems will be audio-
recorded. Then, the subject is given a card with the first practice problem typed on it:

"Name 20 animals" (p. 7)

Subjects are not expected to count the animals as they are listing them, the interviewer does that. The subject is then instructed to read the problem aloud and begin speaking. Most subjects pause while conducting a silent search for other animal names. When pauses occur, the interviewer instructs them to put those thoughts into words and keep speaking. Once the subject has indicated that the response is finished, the interviewer asks for the subject to recall all of the thoughts that went through his/her head while working the problem. Feedback to the subject is designed to encourage more verbalization of thoughts.

"Now I will give you [a second warm-up task] before we begin with the main tasks. I want you to do the same thing for each of the tasks: Think aloud (as before) while you work on the task.... The last [practice problem is] somewhat different since there isn’t necessarily a right or wrong answer, nor is there a specific end to the solution (such as in the previous task,... about naming 20 animals). In this respect, it resembles the kind of tasks that we are concerned with in our study. Please proceed exactly as you did before by telling me everything that comes to mind while your are working on the problem (p. 8). Pay attention to all the information in the text" (p. 8), using the details to stimulate your response. Consider several possibilities, answer in detail, and evaluate your own suggestions.

The subject is given a second card with the following question typed on it:

"Imagine that you have to organize a move to another city. What
The feedback that follows this problem continues to be instructive to the subject in the "think-aloud" methodology. Subjects are asked to give the sequence of their thoughts as they worked the problem.

Main Study Problems

"There are many different occasions which can prompt you to think about and make plans for the future. One may plan for a day, a week, or a month, but there are also times when one reflects on the direction one should take [for even longer periods of time]. In this study, I am interested in both short-term planning and long-term planning. Planning in these circumstances implies considering and evaluating various options, as well as considering the possible consequences of these options and weighing one against another. In the [stories] I am about to give you, a person is precisely in such a situation where [short and long-term planning] is called for... Please read the story aloud, and then formulate a realistic plan for this person" (p. 8).

"Once again, please think aloud while you are formulating the plan" (p. 9). This type of thinking aloud while working on a problem related to your family or your job is quite different than what you are used to doing. Superintendents often are very careful about what they say to others about their thinking processes. Yet this is the type of thinking this study is attempting to extract. As mentioned earlier, your responses will be kept in strictest confidence.
You will receive three problems which you will select randomly. You will be given 12 minutes to respond to each problem. "Talk about all aspects of the problem, as you see it. Which decisions should be made? Which opportunities are available? What plans must be made? As you are thinking through the plan, you might find that you need answers to certain questions or that you need additional information. If this is the case, then simply ask me what you would like to know, for example, 'I need to know about X' or 'I would like to know why this or that happened' or something like that" (p. 9). I can't give you the answers to these questions, but I am, nevertheless, interested in finding out what extra information you feel you need in order to work on the problem.

Subjects are encouraged to ask as many or few questions as they would like.

Subjects are offered three cards from which they select their first study problem at random. Each card has the problem and two prompt questions typed on it: "what should [protagonist of the problem] do and consider in making his/her plans, and what additional information is needed? (p. 9).

Once the subject completes the first study problem, they select a second, and, finally, a final card. Their responses are audio-recorded.

APPENDIX H

CONSENT FORM
Consent Form

Project Title: The Content of School Superintendent Problem Solving

Purpose and explanation of procedure: The purpose of this study is to determine what type of knowledge informs superintendent problem-solving. 

Risks and discomforts: Participation in an in-person interview that will assess knowledge that informs problem-solving. No use of individual or districts name which could identify participants will be used.

Benefits: Information gathered will be used to help those who are charged with the selection and training of school superintendents. Participants will be provided with a summary of the information they utilize in problem-solving and a publishable manuscript at dissertation completion.

I, ________________________________, state that I am over 18 years of age and that I wish to participate in a research project conducted by Susan M. Terronez, chief investigator.

I acknowledge that Susan M. Terronez has fully explained to me the risks involved and the need for the research; has informed me that I may withdraw from participation at any time without prejudice; has offered to answer any inquiries which I may make concerning the procedures to be followed; and has informed me that I will be given a copy of this consent form.

I understand that behavioral research such as that in which I have agreed to participate, by its nature, involves some risk of injury, however minimal. In the event of any such injury resulting from these research procedures, I understand I may contact the Chairperson of the Institutional
Review Board for the Protection of Human Subjects for the Lake Shore, Water Tower and Mallinckrodt Campuses of Loyola University (telephone: (312)-508-2471).

I freely and voluntarily consent to my participation in this research project.

__________________________________________  ____________
(Signature of Investigator)  (Date)

__________________________________________
(Signature of Subject)  (Date)
APPENDIX I

LETTER TO RATERS
Dear Rater:

Thank you for agreeing to be a participant in my dissertation research. I am grateful for the time that you have agreed to commit. This letter is designed to define that commitment, and to identify several dates that would be convenient for the bulk of your training.

**Purpose of the Research**

The purpose of this research endeavor is to identify whether and at what level a sample of professionals use a particular type of knowledge when thinking about problem situations. You will be assigned to only one criterion of a particular knowledge system. Although you will be trained on one criterion of this knowledge system, there are actually five criteria which make up this construct. For methodological reasons, you will not be informed of the overall construct until the completion of the study.

**Rater Training**

The training of raters takes place in two parts. The first part includes general training in the assessment of texts using a 7-point rating scale. In this initial training you will receive practice in assessing a text according to some type of complicated criterion. All raters will take part in this session. At the completion of the session the panel of ten raters will be divided into five pairs.

The second part of your training will be presented to you and the other person in your pairing. Each pair will be assigned to one specific criterion. A definition of your assigned criterion will be explained in detail and discussed. You and your partner will come to a joint agreement about the meaning of your criterion. Practice in assessing several protocols from a pilot study will improve your understanding of your specific criterion and help develop interrater agreement.

Finally, over a period of the next three months (September - December), you will receive packets of transcribed responses from the study’s approximately thirty-one participants. You will read and rate transcribed responses on your assigned criterion according to the 7-point scale. A rating sheet will be attached to each protocol.
Dates and Locations of Training

The initial training session will take place at St. Charles High School. Potential dates and times for initial rater training are listed on the next page. Please circle and rank order your preferences and return to me as soon as possible. You can contact me by phone at (researcher home phone number). You will be informed of the date and time of your initial session before the end of June.

The date of the second training session will be chosen at our first training session when pairs are assigned to criteria. The location, time, and date will be at the convenience of the members of each pair.

Please feel free to contact me with any questions or concerns.

Please circle and rank order your preferred dates of training.

- _____ Wednesday, July 5 10:00 A. M.-1:00 P.M.
- _____ Tuesday, July 11 10:00 A. M.-1:00 P.M.
- _____ Thursday, July 13 10:00 A. M.-1:00 P.M.
- _____ Monday, July 17 10:00 A. M.-1:00 P.M.
- _____ Tuesday, July 18 10:00 A. M.-1:00 P.M.
- _____ Friday, July 21 10:00 A. M.-1:00 P.M.
- _____ Monday, July 24 10:00 A. M.-1:00 P.M.
- _____ Tuesday, July 25 10:00 A. M.-1:00 P.M.
- _____ Wednesday, July 26 10:00 A. M.-1:00 P.M.
- _____ Friday, July 28 10:00 A. M.-1:00 P.M.

Return to: Researcher’s name and address
Or call: Researcher’s phone
APPENDIX J

RATER BIOGRAPHICAL QUESTIONNAIRE
RATER NAME: ____________________________________________

SCHOOL DISTRICT NAME (IF APPLICABLE): __________________________

CURRENT JOB TITLE: ____________________________________________

PLEASE CHECK OR CIRCLE ITEMS THAT APPLY.

GENDER: MALE _______ FEMALE _______

EDUCATION:

B.S. _______ MASTERS DEGREE _______ DOCTORATE _______

OTHER _______

SPECIFY THE SUBJECT MATTER OF YOUR HIGHEST DEGREE: __________________________

AGE AT MOST RECENT BIRTHDAY: _____________

AGE AT ENTERING FIRST POSITION IN THE SCHOOLS: ______________

TYPE OF SCHOOL DISTRICT WHERE YOU HELD FIRST FULL-TIME POSITION IN EDUCATION:

Elementary _______

Junior High/Middle School _______

High School _______

College/University _______

Vocational/Technical _______

Parochial _______

District Office _______

Other _______

SUBJECT(S) TAUGHT IN FIRST FULL-TIME POSITION IN EDUCATION (IF APPLICABLE):

Art _______ Computer Education _______ Counseling _______ Driver Education _______ Elementary _______ English _______ Foreign Language _______ Industrial Arts/Technology _______ Math _______ Music _______ PE/Health _______ Science _______ Social Studies _______ Special Education _______ Vocational Education _______

Other _______ No Teaching Experience _______
NUMBER OF YEARS YOU SPENT (Part-time or Full-time) AS A CLASSROOM TEACHER (IF APPLICABLE):

NATURE OF YOUR FIRST ADMINISTRATIVE/SUPERVISORY POSITION (IF APPLICABLE):

Assistant Principal________Dean of Students________Principal________
Director/Coordinator_______Assistant Superintendent________State
Agency________Business Office________Other __________________________

NUMBER OF YEARS YOU HAVE BEEN IN YOUR CURRENT POSITION:

____________________

NUMBER OF YEARS TOTAL YOU HAVE SERVED AS A TEACHER/PSYCHOLOGIST/SOCIAL WORKER/ THERAPIST:

____________________

NUMBER OF TOTAL DISTRICTS IN WHICH YOU HAVE WORKED:

____________________

DID YOU HAVE A MENTOR FOR YOUR CAREER-ASPIRATIONS:

YES________ NO________ DON'T KNOW________

Thank you so much for your time. Return questionnaires to:

Susan M. Terronez
115 N. Oakwood Avenue
West Chicago, IL 60185
Phone: 231-5285
APPENDIX K

RATER TRAINING
Training Overview

I. Overview of Research
   A. Rater role.
      1. Raters are a key part of this study.
      2. Rater panels have been used to assess items in both qualitative and quantitative research and much research supports this type of assessment when rating complex protocols.
      3. Raters are required to attend two training sessions (today and one additional day), and to begin assessing the protocols of the study as soon as they become available. Additionally, you will be given a certain time period for rating. Please let me know if you have any
      4. Subjects in this study have responded to three problem situations (labeled X, Y, Z). You will receive packets with all three types of problems represented. Each protocol will be labeled with a respondent ID (subjects are assigned numbers to protect subjects' confidentiality). Each packet will stipulate the sequence you should use to rate the protocol. A rating sheet will be attached to each protocol with a place for your name, the score, reasons for your score, and any comments you may have about the experience. Finally, you will be asked to record the time it took you to rate each
protocol.

B. Biographical Information

II. Overview of Sessions I and III

A. Session One: General training

1. Introduction to working on texts in complex assessments.

2. Rating errors

3. Use of a 7-Point scale
   a. Vehicles
   b. Fairy tales

4. Random assignment to 5-Criterion

B. Session Two: Pair-training on five-criterion

1. Definition of criterion
   a. Joint agreement on meaning of criterion
   b. Discussion of ideal protocols on three problems

2. Practice rating pilot protocols

III. Study Overview

A. Summary of Research

Protocols of this study have been collected from a range of professionals of various ages. These subjects were asked to respond to three dilemmas and told to develop a detailed plan for the three main characters. They were trained to use a “thinking aloud” procedure. Therefore, while you are rating please keep in mind that the protocols will document the characteristics of spontaneous thought; such as, jumps from one thought to another, disorderliness, dismissing and reinstating thoughts, etc. When you begin to evaluate the texts, do not be influenced by how much or how little the
protocols contain such characteristics, but rather by how well the protocol reflects the criterion which you will be assigned.

B. Other things to keep in mind while waiting:

1. It is not how much, but the quality of the protocol in evincing your particular criterion.

2. Sometimes protocols are best understood by reading them aloud.

3. Please highlight those segments which you feel particularly illustrate your criterion.

4. At some point within the first four weeks, I will examine your rating for interrater reliability. If you are very far apart, it would be helpful for you to talk again about the ways you are rating protocols. Do not change your scores. Do not contact your partner after rating these protocols. If scores drift apart, I will contact you and set up another meeting with you and your partner.

5. When you receive a packet, please rate the protocols in the order in which you have received them.

(Rater training has been adapted from the Manual for the Assessment of Wisdom-Related Knowledge developed by Staudinger, Smith, & Baltes in 1994 for the purpose of assessing protocols.)
APPENDIX L

RUBRIC FOR PROCEDURAL KNOWLEDGE
<table>
<thead>
<tr>
<th>I.D. Number</th>
<th>Admits Complexity/Difficult Flexible</th>
<th>Identifying Theme of Problem</th>
<th>Systematize &amp; Analyze Past Experiences &amp; Apply</th>
<th># of Scenarios (Alternatives)</th>
<th>Adjusts Own Perspective</th>
<th>Weighing Alternatives Cost/Benefit</th>
<th>Advice Taking (Listening)</th>
<th>Goals/Means To...</th>
<th>Considers Players</th>
<th>Giving Advice</th>
</tr>
</thead>
</table>

S. Martin
8/95
APPENDIX M

APPLICATION RULES
APPLICATION RULES

CRITERION

"Rich factual knowledge" (p. 40)

An encyclopedic knowledge about the "fundamental pragmatics of life" (p. 40).

Example from present Study:

"What is it that is providing him with the comfort and contentment and satisfaction that humans look for? Part of that is a career, but clearly he needs to look at his family... He goes off to work to fulfill those kinds of things that make us feel that we're fulfilling, satisfying, doing something that is rewarding, all that kind of stuff. But if he doesn't couple that with his family, he's going to have problems."

IDEAL

This criterion has the following two aspects:

1. Many themes are known about the human condition: "mortality, the capacity for self-perception, rules and dynamics of social relationships, and the influence of normative rules on life goals" (p. 40).

2. This human understanding is both broad and deep. Themes are discussed in detail, and the deeper emotional aspects of situations and people are considered. Also, a wide range of themes are discussed.

ANCHOR POINTS

Two themes related to the human condition are discussed in depth, and other themes not mentioned in the problem are considered. A broad range of knowledge is demonstrated by a discussion of a number of aspects of life.

The themes discussed include the ones that are mentioned in the problem, and the generation of more themes. However, the themes are not discussed with "depth" (p. 40).

Only themes mentioned in the problem are discussed, if these, and these are discussed superficially.

(Staudinger, Smith, & Baltes, 1994, pp. 40-44).
APPLICATION RULES

CRITERION

"Rich procedural knowledge" (p. 45)

The "strategies" (p. 45) involved in accessing information about the human condition and factoring that information into decisions.

Example from the present study:

"You almost have to be able to play out what are the potentials and how might each one of them play out. The majority of decisions we make are like that. I mean its good to say that we'll gather as much information as possible, but you gather as much as you can, but a great deal of it is speculative... and I think that's true in the superintendent too. I almost picture myself as I look up each of these paths as I go along, raking the information."

IDEOAL

Four aspects need to be considered:

1. An ability to make use of various strategies" (p. 45) for making decisions: choosing information and sources and weighing the value of collected information to solve problems.

2. The ability to "develop blueprints of life" (p. 45) which use previous experiences to inform them, and, subsequently, to apply these to situations as they occur.

3. An ability to set "goals" and develop a plan for meeting those goals (p. 45).

4. The ability to identify the key players in a scenario and assess how a solution may impact them.

5. The ability to identify how to give advice in certain situations: who to consult, when to address a problem, and, what kind of advice is needed (p. 46).

ANCHOR POINTS

7

Many statements about the strategies one uses to make sense of and solve problems are discussed. Two options are discussed at length. The "five aspects" (p. 51) are covered, and the details that are needed for better decision-making are suggested.

4

Some mention of "strategies" (p. 49) is done, and two options are played out. Some of the people in the problem are mentioned.

1

Choices available to the target person are not compared and contrasted with each other. Strategies for processing information available are not mentioned. One option is discussed.

(Staudinger, Smith, & Baltes, 1994, pp. 45 - 50).
APPLICATION RULES

CRITERION

"Life-span contextualism" (p. 51)

Historical time and its impact on problems (p.51) are considered. There is recognition that certain reactions and decisions are "idiosyncratic" (p. 53) in nature because of "non-normative" (p. 51) events that may take place.

Example from present Study:

"The whole context within which superintendents have to work now versus even ten or fifteen years ago, has radically changed, because of the whole cultural change to: (a) having parents more involved in the schools, (b) having teachers work in far more colleagueal manners, and (c) having board members setting policy within that larger context. We are not in the "old school" where the superintendent is the authority figure who simply calls the shots and everybody follows.

IDEAL

This criterion has the following four aspects:

1. Knowing that there are three contexts which are interrelated in the themes and time periods of life: "age," "culture" and "biography" (p. 51).

2. Knowing that the significance of problems that come to us in life is related to the period of life in which they occur.

3. Knowing that the various contexts in which we live are, at times, "compatible" (p. 52) and, at other times, incompatible.

4. Knowing that the importance and priority of certain events can change as a function of time and age.

ANCHOR POINTS

7 The subject discusses the relationships between the competing contexts and the time factor: "past, present, and future" (p. 57). The main character's situation, and the tensions and conflicts of the various contexts are discussed.

4 "Age, culture, and biography may be mentioned, but the connections of the contexts, but the depth of the discussion is limited to superficial aspects.

1 The themes and time aspects may be discussed, but the connections to the problem are not really explained. Age is not discussed in depth.

(Staudinger, Smith, & Baltes, pp. 51 - 57).
**APPLICATION RULES**

<table>
<thead>
<tr>
<th>CRITERION</th>
<th>IDEAL</th>
<th>ANCHOR POINTS</th>
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<tbody>
<tr>
<td>&quot;Value-relativism&quot; (p. 58)</td>
<td>Value-relativism includes the following four aspects:</td>
<td>7</td>
</tr>
<tr>
<td>Value-relativism includes an understanding of the differences of values and goals that people have.&quot; (p. 58)</td>
<td>1. An ability to separate one’s own values from the values of others, and to realize that these alternative value options are based on differences in “social and cultural backgrounds” (p. 58).</td>
<td>The subject discusses all four aspects thoroughly. If aspect four (enduring or core values) is not discussed, then the remaining three must be discussed in depth</td>
</tr>
<tr>
<td>Example from present study:</td>
<td>2. A recognition that advice that is “unbiased, flexible, and non-dogmatic” (p. 58) places value on the perspective of the person in the problem.</td>
<td>4</td>
</tr>
<tr>
<td>“This is my own bias, it may not be all superintendents, I really feel number one priority is kids. Number two priority is keeping the board together as a whole, and focused on what’s best for kids. So you kind of have to put a whole bunch of temptations aside... I have to be the one to take the “high ground.”</td>
<td>3. A recognition that there are a wide range of potential solutions for problems based on the particular perspective one takes when defining and discussing a life problem (p. 58).</td>
<td>The subject discusses the first three aspects (“distance, differentiation, or relativistic thinking”). If only two aspects are discussed, one is discussed in depth. The subject points out at least one other person’s “values or goals” (p. 62) are mentioned.</td>
</tr>
<tr>
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<td>4. An ability to understand that, even in the light of a multitude of potential solutions based on value-relativism, there are some “basic human principles” or “universal values” which endure and may influence the direction that problem resolution may take (p. 58).</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The subject makes no mention of the three aspects: “distance, differentiation, or relativistic thinking” (p. 59). A certain bias or inflexibility is implied or stated by the way the subject addresses the problem.</td>
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(Staudinger, Smith, & Baltes, p. 61-62).
CRITERION

"Uncertainty" (p. 63)

An understanding that life is unpredictable and many things can occur normative or nonnormative which will change plans. People need to be aware of these things and plan accordingly.

Example from the present study:

"You’ll never have enough information to make the perfect decision, so all we can ever do is to accumulate enough information in the time frame in which we’re operating in order to make a better decision."

APPLICATION RULES

IDEA L

A response which demonstrates high levels of this criterion includes the following four aspects:

1. An ability to identify and predict the potential occurrences of specific life stages.

2. A willingness to make decisions despite life’s many uncertainties or to delay them while awaiting the collection of more information.

3. A “recognition that unexpected individual social events and developments” (p. 63) occur.

4. An ability to advise another on how to prepare and deal with the unexpected.

ANCHOR POINTS

7

The subject discusses all four aspects thoroughly or the first three are discussed in depth.

4

The subject includes in the discussion the nature of life’s uncertainty and offers good suggestions on how this aspect of life may be handled. The subject does not include aspect 3 or 4.

1

The subject implies or states that the future is predictable and/or minimizes the complexity of the decision in the text. The subject relies primarily on what is explicitly said in the problem statement to make assertions.

(Staudinger, Smith, & Baltes, 1994, pp. 62-67)
APPENDIX N
RATING SHEET
To which degree is this protocol similar to an ideal response with regard to rich factual knowledge about the fundamental pragmatics of life.

1 2 3 4 5 6 7
very little moderately a great deal

REASON FOR RATING:

COMMENTS:
APPENDIX O

COMMENTS ON UNCERTAINTY
Comments from Rating Forms

Uncertainty

Female Subjects

Problem X - Work, well-structured

Score of 1

• No evidence of recognition that things can take unexpected turns. Gets information, but gives no sense of understanding you must expect the unexpected.

Score of 4

• Person says “this can turn into a nightmare” - a recognition of the power of uncertainty, and addresses the need to act fast, but doesn’t play it out with what if’s.

• Good recognizing the concept of - a decision can go in different directions. But weak in believing there is a perfect solution for every problem on those tracks. Not enough “what ifs” and those she has only address -“What if the story breaks?”

Score of 7

• No protocols received a 7 on problem X

Problem Y - Home, Ill-structured

Score of 1

• There is a specified outcome for each question raised - no indication of uncertainty. If this... then this...

Score of 4

• Definite recognition of uncertainty - the need to talk it through (implied to play all the possibilities). Admits there’s not 1 perfect direction.

• No linear thinking, but it stops there.
• Can’t make decisions and give advice. Seems paralyzed in “what a dilemma.”

Score of 6

• Rich in uncertainty - many issues raised, then goes on to raise things that could happen (these are given in question form and reader must infer the conclusion she’s leading to - because it is not stated, she lost a point.

• (S) has a strong recognition of transitions and what they bring. Also, good at perceiving subtle what ifs - “Is this a missed opportunity that she can’t make up for?” But (s) lost points for saying “If she chooses family, she’s definitely losing career advancement. And if she chooses career, she better have back-ups.” Too cut and dry, and not enough what if scenarios.

Score of 7

• In problem-solving, numerous references to the idea of different paths, but says you can’t speculate what will happen. It’s conscious for her and part of her personality.

• Because the speaker had an internalized sense of how uncertainty plays out in life, its part of her personal philosophy. She pauses to reflect - “wait a minute - you can’t always predict.” Things aren’t cut and dry.

Problem Z - Work, Less Structured

Score of 1

• No grasp or room for uncertainty. Choices are presented in a 1, 2, 3, format. There does not seem to be an awareness of the many unexpected variables that could effect things.

• Very definitive language (i.e., implied this will happen for sure). No recognition of uncertainty or decision-making based on uncertainty. Very linear.

• Although numerous questions are presented to think about, they don’t reflect uncertainty. Definitely linear thinking. No room for the unexpected.
Score of 4

• Because does recognize the uncertainty of people on the board ("So you never really know what will trigger a board to..."), and elaborates well. Other than that, few examples of issues of uncertainty. His mind didn’t run with numerous what ifs.

Score of 5

• Little more than average, because not only give some examples illustrating uncertainty, but looks at complex variables such as "how does the member’s personal life enter in? or what motivation is there to leak?"

Score of 7

• No protocols received a 7 on problem Z
APPENDIX P

RUBRIC FOR CONTEXTUALISM
<table>
<thead>
<tr>
<th>Number of differentiated relationships and scenarios</th>
<th>Personal history of character (past, present/future)</th>
<th>Admits difficulty of situation/tensions/conflicts</th>
<th>Priorities set</th>
<th>Gives cost and benefits Weighs options</th>
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S. Spiegel 8/95
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Development and Education.


VITA

Susan M. Stoecker-Terronez was born and raised in Parma, Ohio, and is the daughter of Fred and Eileen Stoecker. She is the step-daughter of Clemie Stoecker. She is married to Michael J. Terronez.

The author received her secondary education at New Trier East High School in Winnetka, Illinois. She received her Bachelor of Science degree from the University of Illinois, Champaign in June, 1971. She received a Masters in Social Work from the graduate School of Social Work at Loyola University, Chicago in June, 1973.

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The final copies have been examined by the directors of the dissertation and the signatures which appear below verify the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Ed.D.

March 26, 1996  
Date  
Director’s Signature

March 26, 1996  
Date  
Director’s Signature