Recreating Identity: A Grounded Theory Study of Changing Mental Models and Response to Intervention

Theresa L. Pulos
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Dianne Cooney-Miner

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Diane Reed

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Recreating Identity:
A Grounded Theory Study of Changing Mental Models and Response to Intervention

By
Theresa L. Pulos

Submitted in partial fulfillment of the requirements for the degree Ed.D. in Executive Leadership

Supervised by

Dr. Dianne Cooney-Miner
Committee Member
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Ralph C. Wilson, Jr. School of Education
St. John Fisher College

November 2008
We recommend that the dissertation by

Theresa L. Pulos

Entitled: Recreating Identity: A Grounded Theory Study of Changing Mental Models and Response to Intervention

Be accepted in partial fulfillment of the requirements for the Education Doctorate degree.

Dianne Cooney Miner, Ph.D., R.N., C.N.S., Chair

Diane Reed, Ed.D., Committee Member

July 30, 2008

Date
Dedication

This journey of learning was made possible and enlivened by the support, guidance, and friendship of so many special people. I wish first to thank my teachers. My chair, Dr. Dianne Cooney-Miner, shaped my thinking through her wisdom, scholarship, and insights. I will appreciate dwelling in complexity evermore because of her. Dr. Diane Reed, my committee member, brought endless positive energy and practical connections to my real life work as an educational leader. Dr. Walton and Dr. Million created a truly cutting edge program and I am so grateful that my path crossed with theirs at the genesis of this bold new idea. To my executive mentor, Shelly Cahoon, I send my thanks for being such a valued friend and resource.

The members of Cohort 1 will be forever friends. We bonded in the fire of an intense and worthy endeavor and I am the better for knowing and struggling with all of you. My deepest affection and appreciation goes to my fellow Centurions. May I say one last time, I love my group!

To my posse who kept me sane with much laughter and listened, without complaint, to my endless references to mental models, I offer gratitude and the promise of first round of the first vintage.

Finally, and most importantly, I am forever indebted to my family. I could never ask for a better cheering section. For Steve, Emily, and Mom, you are all simply the best. I am very blessed to have you on my side.
Biographical Sketch

Theresa L. Pulos is currently principal of Schlegel Road Elementary School in Webster, NY. Mrs. Pulos attended the State University College at Brockport, graduating summa cum laude in 1978 with a Bachelor of Science degree. She completed her Master of Arts degree in Speech Pathology from the State University College at Geneseo graduating summa cum laude in 1980. In 2000, Mrs. Pulos received a Certificate of Advanced Study in Educational Administration from the State University College at Brockport. She began doctoral studies in the summer of 2006 at St. John Fisher College in the Ed.D. Program in Executive Leadership. Mrs. Pulos pursued her research in mental models and Response to Intervention under the direction of Dr. Dianne Cooney Miner and received the Ed.D. degree in 2008.
Abstract

The Individuals with Disabilities Education Improvement Act of 2004 permits school districts to use an alternative process to establish eligibility for special education services. Response to Intervention (RTI) procedures represent a significant change in thinking and practice. The purpose of this study was to understand the cognitive changes that accompany the implementation of RTI. Specifically, the relationship between school psychologists’ mental models regarding the assessment of learning disabilities and their roles as experts in traditional psychoeducational assessment was studied.

The study employed a qualitative methodology. Participants included experienced school psychologists. Interview data was transcribed, coded, and analyzed in accordance with the constant comparative method of a grounded theory inquiry. The phenomenon of interest in this study was the process of changing one’s mental model regarding an essential element of professional functioning. The emergent theory, Recreating Identity, is presented as a way to understand the internal and external processes of adaptation associated with the paradigm shift.

This shift required internal and external changes that included recognition of flaws in both the discrepancy model and the eclectic attempts to work around those flaws. The dissonance created by this recognition led to a variety of defense mechanisms and dissonance reduction strategies. The introduction of the RTI paradigm created challenges to participants’ established patterns of power, status, and influence. In turn, this generated the need for retooling of collaborative relationships, skills sets, and attitudes. Recreating Identity is best considered an emergent theory that reflects the selective accommodation of participants’ mental models to the new paradigm.
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Chapter 1: Introduction

Education is facing serious challenges that require widespread and sustainable changes in attitudes, beliefs, and actions (Daggett, 2005; Fullan, 2005). Since the advent of the standards movement schools nationwide have been engaged in rapid-fire change efforts designed to close achievement gaps, implement the research-based practices required by No Child Left Behind legislation (2001), and prepare students to compete in a vastly different world. Daggett observes:

The world of today requires a different core of knowledge that all students need for success. The push of global competition, elimination of unskilled jobs, advancements in technology, and the demand for maintaining a middle class has led the public, media, and government to push for higher standards for all students. This is why change must happen in schools . . . and soon (p. 1).

The need for reform specific to the field of special education is evident as well. The 2004 Reauthorization of the Individuals with Disabilities Education Act (IDEA, 2004) contains a provision for the identification of students with learning disabilities that represents a significant departure from the model that had been in place since 1977. The previous paradigm for identification required the documentation of a statistically significant discrepancy between a student’s measured aptitude and achievement. Research and practice have indicated longstanding flaws in this discrepancy criterion (National Joint Council on Learning Disabilities [NJCLD], 2005). The revisions of IDEA are intended to address these flaws and provide more effective early intervention and
identification to ensure that all children will succeed in school.

These initiatives are likely to have an impact on both regular and special education teaching and support staff. The most immediate impact of these legislative changes is on the professional roles and daily practice of school psychologists, whose jobs heretofore have emphasized the comprehensive assessment of students for the purpose of determining eligibility for learning disabilities services. This group of professionals is experiencing a dramatic change that requires the adaptation to an entirely new way of conceptualizing learning disabilities and diagnosing children with learning disorders (Fuchs & Young, 2006). Adapting to this change will involve modifications in the attitudes and beliefs, known as mental models, which underlie individual and collective actions. This study explored the changes that occurred in the mental models of psychologists as they began to assimilate new thinking into their diagnostic practice. Understanding this change process provides insights that can be applied as educational communities move toward consistent and sustainable implementation of evidence-based practices that require shifts in longstanding paradigms.

Background of the Study

Systems Thinking and Sustainability

Daggett (2005) asserts that one of the central actions schools must take in order to prepare students for this changing world is to create a culture that supports change. Approaches to this reculturing (Fullan, 2005) are varied but all share the common perspective of a systems thinking approach (Mid Continent Regional Education Laboratory [McREL], 2000). Systems thinking principles are derived from the interdependencies observed in the natural world (McREL) and are often described in
contrast to the linear-sequential relationships that prevailed in the Industrial Age (Senge, 2000). Two central tenets of systems thinking are: (a) the interconnectedness of all actors and actions within a system in a way that creates dynamic, rather than linear cause-and-effect results; and (b) understanding change as a process, not an event (Senge, 1990).

System-wide approaches to educational change are the only mechanisms capable of addressing the complex issues in contemporary education (Fullan, 2001). Little progress has been made in applying systems thinking to school reform in the past decade because there is a lack of specific and concrete strategies that can be applied. Systems thinking has squandered its potential because it has stayed at the concept level. The reality test will be to put it into practice (Fullan, 2005).

Fullan (2005) comments further on the relationship between cultural change and sustainability, noting that the adoption of systemic change requires strategies that enable people to question values and beliefs as they create new structures for learning within and between levels of the system. Kegan and Lahey (2001) observe that sustaining significant changes in behavior without corresponding alterations in the underlying meanings that give rise to the behaviors is impossible. The discipline of working with mental models presents one concrete strategy that school leaders can use to examine the implicit and emotionally laden belief structures that support our actions and inhibit learning (Senge, Kleiner, Roberts, Ross, & Smith, 1994).

*Mental Models*

Educational leaders who attempt to create a culture for school reform must attend to the deep-seated assumptions and beliefs, known as mental models, that exist within themselves and the system (Kim, 1993). The rigorous examination and readjustment of
these mental models is needed before sustainable changes can be realized because new
information is filtered through the lens of pre-existing cognitive models (Senge, 1990).
Information that is novel or inconsistent with prior beliefs is rejected (Shelton & Darling,
2003), making change becomes exceedingly difficult.

Cognitive scientists consider mental models to be to semi-permanent tacit maps of
the world that people hold in long–term memory (Johnson-Laird, 1983). These maps or
internal representations of external events include explicit and implicit understandings
(Kim, 1993). Mental models are considered to be active memory structures because they
play a role in our daily interactions (Kim) by filtering information and helping us to make
sense of the world based on our past experiences (Senge, 2000). Mental models evolve
over time (Preskill & Torres, 1999) until they come to be thought of as deeply held truths
manifested by behaviors and opinions taken for granted with their origins long forgotten.

Fauske and Raybould (2005) describe two facets of mental models. First, mental
models include conceptual frameworks that reflect one’s beliefs, values, assumptions,
and norms. The second aspect of mental models relates to the routines (behaviors and
actions) associated with these frameworks. Because these dual aspects of mental models
can change independently, it is possible to change observable behaviors without altering
the fundamental cognitive underpinnings of these routines. Cognitive theory suggests that
changes in short-term mental models will be gradually reflected in changes in long-term
deep-seated beliefs (Johnson-Laird, 1983).

The concept of mental models extends beyond individuals to include the shared
understanding of teams and organizations (Klimoski & Mohammed, 1994). Jeffery,
Maes, and Bratton-Jeffery (2005) describe shared mental models as knowledge structures
that facilitate communication related to task demands and goals. They suggest that the effectiveness of collaborative problem solving is impacted by the degree to which information regarding the task and completion criteria is held in common by team members. Effective team performance requires that team members hold common or overlapping cognitive representations of task requirements, procedures, and role responsibilities (Ashmos & Nathan, 2002). Kuhn (1970) uses the term paradigm to describe the universally recognized models used within a scientific community to solve problems. These paradigms include the beliefs, values, and techniques shared by members of the scientific community.

Shared mental models not only provide structure but impact the scope and acceptance of new information. In some cases they limit acceptance of new information that is discrepant from existing models, in spite of evidence to the contrary (Davison & Blackman, 2005). Mental models are created and reinforced in implicit ways that go beyond verbal learning. The continuation of existing practices, relationships, and patterns of behavior all implicitly reinforce flawed paradigms in spite of evidence to the contrary (Kuhn, 1970). An illustration of this phenomenon can be seen in the degree to which school psychologists’ roles on child study teams have remained focused on testing and placement decisions (Reschly, 2005). This has occurred at the expense of the development of systemic approaches to preventing academic and behavioral failure, in spite of multiple calls within the field for proactive change (Ehrhardt-Padgett, Hatzichristou, Kitson, & Meyers, 2003; Pianta, 2003).

Facilitating change in organizations, including schools, requires conscious attention to both individual and shared mental models (Argyris & Schon, 1996). Argyris
(1994) describes the master programs that are created internally as a result of past experiences. These master programs, or schema, provide a context that can increase efficiency during problem solving because responses can transfer from one situation to another. However, when faced with potential dissonance, anxiety, or embarrassment, individuals default to protective responses designed to (a) remain in control, (b) maximize winning and minimize losing, (c) suppress negative feelings, and (d) be as rational as possible. Argyris describes these actions as theories-in-use and contrasts them with espoused theories.

Theories-in-use tend to be deeply defensive and designed to avoid vulnerability, risk, embarrassment, or the appearance of incompetence. A focus on maintaining control rather than reflecting on beliefs and actions is counterproductive to learning. While school psychologists are widely regarded as experts in assessment (National Association of School Psychologists [NASP], n.d.), the implementation of RTI approaches will necessitate a broader range of skills. The shift away from established practices may involve personal and professional challenges to psychologists' confidence and feelings of efficacy (Ehrhardt-Padgett et al., 2003). Understanding and anticipating the emotions associated with changing individual and shared mental models can inform educational leaders who seek to facilitate such changes.

Response to Intervention

The process for identifying children as Learning Disabled (LD) is currently the focus of intense discussion and scrutiny (Fuchs & Young, 2006). The discrepancy criterion for identifying students as LD was established in 1977. Since that time there has been ongoing criticism of the aptitude-achievement discrepancy formula that has, until
recently, been at the core of the identification process (Fuchs & Young). Widespread concern exists that students are misidentified using the discrepancy formula (Vaughn, Linan-Thompson, & Hickman, 2003). There has been a 150% increase in the number of students in this category that now represents over 50% of the special education population (Kavale, Holdnack, & Mostert, 2006). Additionally, a significant concern relates to the wait to fail condition that often occurs when the discrepancy criterion is applied. In these cases, students are denied access to special education supports until they have satisfied the discrepancy criteria (NJCLD, 2005).

Following the 1997 reauthorization of IDEA, the topic of alternatives to the discrepancy model surfaced as a timely subject for review. In August 2001, the United States Department of Education Office of Special Education Programs (OSEP) sponsored a summit of researchers, practitioners, and advocacy groups. At that time, Gresham (2001) presented a model that called for children to be identified as LD only after failing to respond to interventions that consisted of empirically validated approaches. Conclusions from the summit affirmed that the IQ/achievement discrepancy is neither necessary nor sufficient for identifying learning disabilities. The panel found that the most promising identification method was the response to evidence-based intervention alternative suggested by Gresham (Bradley, Danielson, & Doolittle, 2005).

In 2004, Congress reauthorized IDEA with the following provision:

local education agencies (LEAs) may use a student’s response to scientifically-based instruction as part of the evaluation process; and (b) when identifying a disability, LEAs shall not be required to take into consideration whether a child has a severe discrepancy between achievement and intellectual ability [P.L. 108-
Response to Intervention (RTI) protocols vary somewhat on specifics but all adhere to essential core elements, including: (a) universal screening; (b) systematic application of scientific, research-based interventions in general education settings; (c) continuous measurement of student response to the interventions; (d) the use of the formative RTI data to inform instruction; and (e) reliable measures to ensure integrity of the interventions (NJCLD, 2005; Bradley et al., 2005). Most RTI protocols include some form of tier system, most effectively three tiers, (Tilly, 2003) that are characterized by increasing intensity of intervention.

School psychologists. Students who fail to respond to research-based instruction through the tier system may be considered eligible for special education services. This represents a significant change in thinking and practice for special educational professionals, especially school psychologists (NASP, n.d.), who have traditionally completed the required comprehensive assessments of intelligence and achievement prior to classification decisions (Gilman & Gabriel, 2004). School psychologists address the needs of children and youth related to issues such as learning and academic achievement, behavior and discipline, problem solving and social skills, mental health, and family stressors. Currently there are approximately 38,000 school psychologists employed in K-12 educational settings. The primary job functions reported by school psychologists have remained relatively stable over time, with the major portion of their responsibilities related to special education eligibility assessments (NASP, n.d.). Regional variations are beginning to surface as the impact of IDEA 2004 and its emphasis on preventive practices and the alignment of assessment and intervention (NASP Blueprint, 2006) are
beginning to be understood more widely. Implications for training arising from this change in emphasis were noted in the latest revision of the National Association of School Psychologist Blueprint for Training and Practice (2006). The authors observe that simply putting information about the revisions and related research into the hands of practitioners will not be sufficient to improve practice. They recommend devoting explicit attention to efforts to create systems to support implementation of the evidence-based practices required to meet the new mandates.

Multiple authors have addressed the impact this shift will have on the professional roles of school psychologists, noting that while precise roles are yet to be defined, they will entail fundamental changes in attitudes, beliefs, and skills (Reschly, 2004, 2005; Mastropieri & Scruggs, 2005; Vaughan et al., 2003; NJCLD, 2005). The need for thoughtful and explicit examination of the beliefs and attitudes about such a change is essential if the initiative is to weather the stress of implementation and become sustained over time.

Statement of the Problem

Creating a culture that supports systemic change is an essential leadership challenge in the 21st century (Fullan, 2005). In order to create sustainable change, attention must be paid not only to learning skills and other external competencies, but also to reshaping the implicit mental models that direct our actions (Senge et al., 1994). Understanding the cognitive shifts that occur when educators undergo a far-reaching change in established practice has the potential to inform educational leaders who seek to facilitate such systemic change.

Recent changes in the criteria for making students eligible to receive special
education have the potential to impact the educational futures of significant numbers of students-at-risk by providing them with evidence-based interventions before a discrepancy can be established (NJCLD, 2005). The use of Response to Intervention data to inform instructional decisions likewise holds promise for increasing the effectiveness of remedial instruction and preventing student failure. School psychologists are the educational professionals most closely associated with the assessment and diagnosis of learning disabilities (Shapiro, 2000). As such, an essential aspect of their role and function within schools will be impacted by a change in diagnostic procedures and philosophy (Mastropieri & Scruggs, 2005; NJCLD, 2005; Reschly, 2004, 2005; Vaughan et al., 2003). At this time the literature does not contain an exploration of the cognitive shifts implicit in these changes.

Statement of Purpose

The purpose of this study was to develop an understanding of the cognitive changes that accompany the implementation of RTI in schools as a means of identifying students who need special education. Specifically, the relationship between school psychologists' mental models regarding the assessment of learning disabilities and their roles as experts in traditional psychoeducational assessment was studied so that the following research question below could be addressed.

Research Question

How do the mental models of school psychologists change as they begin to implement Response to Intervention approaches into their professional practice to support sustainable school reform?
Significance of the Study

This study adds to the literature regarding strategies needed to support school reform. As reported by Fullan (2005), there is a need for research based strategies for applying systems thinking principles such as mental models in the field. Similarly, the field of school psychology is experiencing a major shift in thinking and professional practice (Fuchs & Young, 2006). Shinn (2007) indicates that more research is needed to understand the threats that professionals perceive regarding the changes to roles and belief systems associated with a problem-solving versus identification model. Elliott, Kratochwill, and Roach (2003) identify a need for research into practices that will support the sustainability of evidence-based interventions in the schools. Elias, Zins, Graczyk, and Weissberg (2003) call for a process that makes clear the assumptions that school psychologists hold about learning and behaviors so that the spirit of continuous improvement of services for students-at-risk can prevail. The phenomenon of interest in this study is the process of changing one’s mental model regarding an essential element of professional functioning. The creation of a theory of such change could prove instructive for educational leaders working with school reform efforts that challenge established practice.

Definition of Terms

Mental Models: This study used the Senge et al. (2000) definition of mental models: “The images, assumptions, and stories that we carry in our minds of ourselves, other people, institutions and every aspect of the world” (p. 67). Mental models usually exist below the level of awareness, and often remain untested and unexamined (Senge et al.).
School Psychologists: School psychologists focus on how social-emotional issues, family problems, neurological factors, and mental illness affect learning. School psychologists perform a range of psychological services to students and families in schools, including assessment, consultation for student and systems-level change, prevention, intervention, staff, parent and student education, research and program development, mental health care, and advocacy (NASP, n.d.).

Minimally, most states require completion of a post-master’s degree graduate program (e.g., Educational Specialist). Although individual states may have somewhat different requirements for credentialing, training in a school psychology program at a specialist level (i.e., a three-year graduate degree in school psychology, that includes a full academic year of internship) is required by the National School Psychology Certification System, and by the standards of the National Association of School Psychologists (NASP, n.d.).

Learning Disability: (A) GENERAL - The term means a disorder in one or more of the basic psychological processes involved in understanding or using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations.

(B) DISORDERS INCLUDED - The term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia and developmental aphasia.

(C) DISORDERS NOT INCLUDED - The term does not include learning problems that are primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage (IDEA 20 U.S.C. 34 CFR 300.8(c)(10)).
Response to Intervention: RTI refers to an individual, comprehensive student-centered assessment and intervention concept that has generated several models used in schools. RTI focuses on applying a problem-solving framework to identify and address the student's difficulties using effective, efficient instruction leading to improved achievement. The core characteristics of RTI include: (a) high quality instruction in the general education setting; (b) general education instruction that is research-based; (c) general education instructors and staff who assume an active role in student achievement in that curriculum; (d) universal screening of academics and behavior; (e) continuous monitoring of student performance; (f) continuous progress monitoring to pinpoint student difficulties; (g) implementation of research-based interventions to address student difficulties; (h) systematic assessment of the fidelity or integrity with which the intervention is implemented; and (i) use of progress monitoring data to determine the effectiveness of interventions and to make modifications as needed (NJCLD, 2003).

Summary

Creating an environment that supports systemic change is one of the defining leadership challenges of the 21st century. This chapter provides a framework for exploring the cognitive shifts required for sustainable change in education and establishes the purpose for the study. The concept of mental models and their relationship to learning and adapting to change are summarized. Changes in special education classification procedures and their impact on school psychologists are introduced. Terms relevant to the study are defined and the research design is briefly summarized.

The remainder of the document is organized into four chapters. Chapter Two summarizes the relevant literature regarding the phenomenon of interest, and related
topics, including the sustainability of change, cognitive and emotional dynamics associated with dissonance and power relationships, and the role of school psychologists. The research design methodology, participants, and data collection and analysis procedures are detailed in Chapter Three. Chapter Four includes an in-depth presentation and discussion of the study findings. The final chapter summarizes the research process and integrates the findings into an emergent model of change. Limitations of the study and implications for practice, education, leadership, and research are also presented in Chapter Five.
Chapter 2: Review of the Literature

Introduction and Purpose

The review of the literature begins with a summary of theoretical and empirical findings related to systemic and sustainable changes in education. The research regarding mental models as a means of enhancing systemic change is discussed in detail, followed by recommendations for surfacing and reshaping mental models. Background information related to cognitive dissonance and dissonance reduction strategies is presented. The construct of social power is introduced. Changes arising from mandates included in the reauthorization of the Individuals with Disabilities Education Act of 2004 (IDEA 2004) were a focus of this study. An overview of these mandated changes as they relate to the classification of students with learning disabilities within a Response to Intervention paradigm is reported. The implication for school psychologists and the mental models of learning disabilities they hold and their roles in the eligibility process are discussed. The chapter concludes with a brief overview of the principles of the grounded theory research methodology used for the study and a summary of the research question and relevance of the study.

Sustainability of Educational Reform

Fullan (2005) defines sustainability as the “capacity of a system to engage in the complexity of continuous improvement consistent with deep values of human purpose” (p. ix). Hargreaves and Fink (2000) expand this definition to include a concern for the impact of initiatives on the welfare of others, now and in the future. Two sets of strategies
are needed for sustainable school reform: networking and reculturing (Fullan). This study focused on reculturing which is dependent upon developing new values, beliefs, and norms. To change a culture one needs to change the conversations that a group has about the things that are implicitly agreed upon and accepted. These conversations need to include frank discussions of attitudes and beliefs, not simply behaviors (Martin, 2005). Changes in attitudes and beliefs must precede changes in behavior otherwise change will be superficial and impermanent (Kegan & Lahey, 2001; Senge, 1994). Further, educational institutions must develop the internal capacity to promote these change-inducing strategies and avoid relying on outside experts (Toole, 2001).

**Sustainability at the school level.** There is a general consensus about the importance of sustainable change (Fullan, 2005) and increasingly, the sustainability of educational innovations has been a focus of research (Vaughan, Klingner, & Hughes, 2000). Investigators are particularly interested in explaining why research-based practices are not sustained over time (Coburn, 2003). Sindelar, Shearer, Yendol-Hoppey, and Liebert (2006) reported the results of a longitudinal qualitative study of the sustainability of innovative special education practices in a large middle school (1,765 students) in Florida. Their findings, based on an ethnographic case study design, supported the observations made by Vaughn et al. (2000) that a prime determinant of sustainability is the extent to which the innovation is consistent with educators’ beliefs. Sindelar et al. (2006) found that unless the attitudes and beliefs of those most closely involved with the new practices were consistent with intended outcomes, the change was likely to be subject to attrition and diminish over time.

Klingner, Arguelles, Hughes, and Vaughn (2001) sought to understand the factors
that enhanced or inhibited the spread of research-based instructional practices four years after a professional development program. Of the 98 teachers surveyed, 93% indicated that they continued to implement at least one of the research-based strategies. A subgroup of 18 teachers deemed to be high-level users of the strategies were further investigated through videotaped observations and interviews. Findings supported the importance of alignment of teacher beliefs with the purposes of the strategies. Further, the researchers observed that the educators who reported a sense of belonging to a professional community with shared values were more motivated to sustain their efforts at using the research-based practices and served as models to encourage other staff to do the same.

*Sustainability at scale.* Expanding change efforts beyond individual settings to include entire systems is known as scaling. Coburn (2003) synthesized the empirical and theoretical literature (19 empirical studies, 18 position papers, and 10 descriptive accounts) regarding the challenges of scaling and sustainability and observed that to be at scale, reforms must effect deep and consequential change in educational practice. This deep change extended beyond surface structures and procedures and altered educators’ foundational beliefs and underlying assumptions of how students learn, their expectations for students, and conceptions of what constitutes effective practice. The more challenging the reform was to school personnel’s existing beliefs and practice, the more extensive professional development was needed to establish the initiative and sustain it over time.

Measuring deep and consequential changes in educational practice requires explicit attention to the beliefs, norms, and professional principles in evidence. Coburn (2003) noted, however, that it is more difficult to measure changes in concepts and beliefs than in the activities used or materials selected. Additional methodologies are
needed to measure shifts in thinking and ownership of reform at different levels.

Implications for further research identified in the meta-analysis included investigation of
the ways that educators assimilate new ideas so that researchers can answer the question
of whether educators learn to rethink and reconstruct their beliefs when they encounter
innovations or if they alter the reforms in ways that reinforce pre-existing assumptions.
The current study adds to the body of knowledge related to sustainable changes by
explicating the process of changing one’s mental model of an essential aspect of
professional practice.

The relationship between changes in individual beliefs and principles and system-
wide change has been established (Coburn, 2003; Klingner et al., 2001; Sindelar et al.,
2006). Given that reform initiatives are more likely to be maintained over time when the
reforms are aligned with practitioners’ beliefs about students, finding ways to match
educator beliefs with proposed innovations must be regarded as an essential leadership
task. The challenge is to find effective ways to help school personnel such as school
psychologists reshape their existing beliefs and internalize new mental models in order to
create this alignment. Strategies that help leaders understand and use disciplines of
systems thinking, including mental models, hold potential for sustaining reform efforts.

Mental Models

Mental models can be understood as the internal symbolic representations of the
world (Johnson-Laird, 1983). They include images, assumptions, beliefs, and norms
about ourselves, other people, and our interactions with the world (Senge, Cambron-
McCabe, Lucas, Smith, Dutton, & Kleiner, 2000). These deeply ingrained beliefs
influence our perceptions and actions, often in ways that we do not clearly comprehend.
Central to understanding why two people perceive the same event differently is the notion that we process all of our experiences through the lens of our unique mental models. Once a mental model is formed, information is perceived through the perceptual filter of that model (Hill & Levenhagen, 1995). Unless we explicitly surface our assumptions and frames of reference, we cannot hope to reach a common understanding with those around us. Mental models usually exist below the level of awareness and often remain untested and unexamined (Senge et al., 2000).

Kim (1993) described the dual nature of mental models which include both routines and frameworks. Routines refer to the procedural or operational elements, also understood as the doing components. The framework aspect of mental models represents a person's view of the world, including explicit and implicit understandings that can be understood as the thinking components.

**Mental models and learning in schools.** Raybould (2000) explored changes in individual and shared mental models of school staff regarding a mandated change to increase the use of instructional technology. Using a grounded theory approach, the researcher collected interview, observation, and self-report data from six teachers, a principal, and a technology specialist over eight months in an urban elementary school in the western United States. Content analysis of the data resulted in the identification of two types of mental models that are analogous to those reported by Kim (1993). Raybould (2000) used the terms system-structural (i.e., routines) and interpretative (i.e., frameworks) to describe these models. The researcher observed that changes regarding procedural or system-structural elements were easier to establish and sustain than changes in the conceptual or interpretive frameworks on both individual and
organizational levels. It was found to be easier to add to an existing framework than to create a new one. Individual learning was identified as a precursor to group and organizational learning. Finally, mental models that were not commonly held among team members did not lead to organizational learning. This finding is consistent with Schein (1992). Implications of the research suggest the need for further study of mental models and their impact on organizational learning in schools.

In 2001, Toole explored the relationship between teachers’ instructional mental models and their decision to use new classroom pedagogy. When reporting the findings of a mixed methods analysis of seven schools that included survey and interview data, Toole noted that the importance of educators’ beliefs (mental models) overshadowed any demographic variable including years of experience, commitment to teaching, organizational structure, gender, and age. Implications for research and staff development activities indicate that a focus on mental models is needed if the goal is deep and lasting change. Innovations cannot be presented simply as a set of behaviors or techniques to learn without addressing pre-existing mind-sets.

Strauss, Ravid, Magen, and Berlinger (1998) studied the relationship between teachers’ mental models and their beliefs about children’s minds and learning. A group of 32 junior high school teachers were assessed on their subject matter knowledge and grouped accordingly. Semi-structured clinical interviews were conducted to discern the nature of the teachers’ mental models of children and learning. The investigators found that these models were independent of teachers’ subject matter knowledge and both constrained and overrode subject matter knowledge. Educators’ decisions were driven by the framework of their mental models about learning, not by the content of their
academic subject. The researchers noted that teachers have a rich, systematic, structured, and remarkably complex representation of children’s minds and the causal relationship between instruction and learning and it was belief system that implicitly guided decisions.

The researchers recommended helping educators to surface tacit mental models so that they become more aware of the underlying belief system guiding their decisions in order to make them more open to genuine alternatives. Consistent with Klingner et al. (2001) and Vaughan et al. (2000) the researchers suggest that reform efforts that do not directly address educators’ mental models will fail. Extending this line of thinking to the current study suggests implications for examining the mental models of school psychologists dealing with new models for assessment and identification. It further questions whether providing revised information about the content of their professional specialty will be sufficient to change the underlying beliefs and motivate action.

Datnow and Castellano (2000) studied implementation of a mandated reform initiative (Success for All) in two schools using an in-depth, qualitative case study design. Interview and observational data were used to create a typology of responses ranging from strongly supporting the reform to opposing the reform. The researchers found that even a school-wide vote to implement a program was not sufficient to ensure that it was sustained with fidelity over time. The teachers who were most faithful to the program were those whose beliefs were congruent with the stated aims of the initiative, however, even this group made significant adjustments to the prescribed program. The researchers suggest that before embarking on an externally mandated reform, schools should engage in a critical inquiry process. They propose that this inquiry process might
result in a greater alignment of educator beliefs and sustainability of the initiative. They further noted that the strong support of building leadership and external trainers was insufficient to maintain the fidelity of the initiative in the absence of teacher belief in its effectiveness. These results reinforced observations made by Toole (2001) and Raybould (2000) and suggest that attention to the beliefs and attitudes of professionals required to implement a change in practice is a necessary step if the change is to be maintained over time.

Haterius (2004) explored the process of cognitive changes that teachers experienced while implementing a mandated curriculum. The researcher employed an inductive, grounded theory design to collect data through interviews, focus groups, and archival documents from two schools engaged in a systemic state-mandated reform initiative. Findings indicated that educators experienced a three-step cognitive change process. First, they acquired new knowledge, then experienced success using the knowledge, and finally, acknowledged a paradigm shift. Educators engaged in a cycle that went from learning new knowledge, to experiencing success, and back to learning more new knowledge. The majority of educators in the study did not experience a paradigm shift until the second year of the implementation. Five factors accelerated the cognitive shifts (a) knowledge, (b) self-efficacy, (c) accountability, (d) leadership, and (e) collegiality. Three impeding factors were also identified (a) lack of time, (b) lack of resources, and (c) reluctance to change.

A consensus exists in the literature (Datnow & Castellano, 2000; Haterius, 2004; Raybould, 2000; & Toole, 2001) that there is a relationship between mental models and educational practice, particularly with respect to sustaining change over time. Exploring
the alignment between existing mind sets and proposed change is recommended as a necessary component if change is to be sustained. It is also important to recognize that mental models may be incomplete, inaccurate, or outdated. Complications of flawed models are addressed in the following section.

Belief persistence and flawed mental models. Individuals acquire beliefs from multiple sources and experiences and then develop sets of attributions based on these beliefs. Once established, these belief sets are highly resistant to change even in the face of feedback. Friedman (2004) refers to this behavior as belief persistence and notes that it occurs when there is resistance to changing one's beliefs to reflect how things actually work in practice. This explains how knowledgeable professionals can persist in behaviors that are ineffective in spite of information to the contrary.

Fullan (2001) observes that people unwittingly reinforce poor practice when they operate as cohesive teams with inaccurate or incomplete mental models. The stronger a personal or team mental model is, the more likely it is to become self-referential and prevent the team from considering novel input from external sources (Davison & Blackman, 2005). Using case study methodology that included observations and interviews, Davison and Blackman (2005) analyzed the mental models of two organizations (a) one that had successfully implemented innovation, and (b) one that had failed to do so. Findings indicated that when mental models are shared and create a framework that supports team processes without closing out new information, teams can succeed. In contrast, however, mental models that limit or pre-select input prevent teams and individuals from constructing an accurate picture of the current reality. In order for change to occur, a perception of difference between the model and reality must occur.
When this perception is denied or ignored, teams stagnate. Similarly, knowledge of a system can blind us to errors, a condition Argyris (1994) labeled *skilled incompetence*. Reduced levels of flexibility and openness, in turn, shape collective learning and impact the organization’s capacity to accept innovation.

In discussing the impact of mental models on staff development, Duffy (2003) notes that mind-sets may not be functional or correct. Individual and team models may be incomplete, inaccurate, or not functional for the current conditions. In spite of these flaws, however, these models can be extremely resistant to change even when they result in the failure of individual or collective efforts.

Additionally, the understandings that people have of how complex systems work can be incomplete or flawed. Chapman and Ferfolja (2001) deconstructed accounts of several industrial disasters and identified seven factors that resulted in the development of flawed mental models. These include: (a) information that is based on site-specific, historical understandings that is transferred to other contexts and assumed to be correct; (b) input from unreliable sources that is accepted as valid; (c) idiosyncratic models created in an attempt to make sense of complexity; (d) assumptions that everyone perceives the same situation in the same way; (e) structural barriers that inhibit information sharing; (f) communication gaps and; (g) selectively disregarding correct sources based on perceptions of the credibility of the messenger or the strength of pre-existing mental models.

Complex organizations such as school systems need to be alert for the presence of such flawed models that may be at the core of established practice. Explicit examination of beliefs and assumptions is needed so that required changes can be implemented and
sustained. In the case of special education, the assumptions that guide placement
decisions are currently being debated in the literature (Hale, Kaufman, Naglieri, &
Kavale, 2006; Kavale, Holdnack, & Mostert, 2006; NJCLD, 2005; Vaughn & Fuchs,
2003), with strongly held opinions being contested. The debate has created a sense of
dissonance within the field and for individual practitioners. The nature of cognitive
dissonance and the strategies used to reduce this dissonance are explored in the next
section.

Dissonance. Cognitive dissonance theory refers to the state of psychological
discomfort that occurs when there is a conflict between one’s beliefs and one’s actions.
The existence of dissonance creates a pressure to reduce the tension that is proportional to
the importance of the dissonant elements (Festinger, 1957). Argyris (1994) suggests that
the pressure of dissonance will create the need for a protective response that avoids
vulnerability, risk, embarrassment, or the perception of incompetence. A number of
strategies are employed to reduce dissonance and provide this defensive protection. These
include (a) attitude change (Festinger, 1957), (b) reducing the importance of the dissonant
elements through trivialization (Simon, Greenberg, & Brehm, 1995), (c) denial of
responsibility (Gosling, Deniseau, & Oberle, 2006), and (d) self-affirmation (Steele,
1988). Trivialization reduces dissonance by minimizing the importance of the dissonant
elements (Simon, et al., 1995) and may be a first response that is likely to be employed
when the dissonant elements are not highly important to the individual. Denial of
responsibility serves to reduce dissonance by separating one from one’s own behavior
(Gosling et al., 2006) and is an efficient mode of reducing negative emotions. Dissonance
can also be resolved by group mechanisms (Matz & Wood, 2005). These mechanisms
include the opportunity to self-affirm and strategies to achieve group consensus such as persuasion and changing one's position on points of conflict.

While distinct and opposing points of view are being forwarded, consensus is beginning to emerge on the need to address long-standing flaws in the identification model (Fuchs, Mock, Morgan, & Young, 2003). The literature references several approaches to reshaping mind sets, a number of which are germane to the current study and are described in the following section.

Strategies for reshaping mental models. Reform implies a reinvention through which a new stability replaces the old (Reid, 1986). Research indicates that institutional practices are based on a theory that includes an understanding of their purpose and how the practices are embedded in a wider pattern of obligations and beliefs. Institutional practices are maintained because there is the equilibrium that exists between three elements (a) common sense theory, (b) practical efficiencies, and (c) comfortable relationships. Change is not sustained because it does not promote a new equilibrium. Educators act in a way that reflects what they accept as common-sense theories and the sorts of relationships within schools with which they are comfortable (Reid, 1986). Longstanding practices in assessment and eligibility for special education are under scrutiny (Willis & DuMont, 2006) with an accompanying disequilibrium for the educational professionals impacted.

Working with educators, therefore, requires careful attention to the impact of mental models (Duffy, 2003), particularly in the design of staff development programs to support the implementation of new initiatives. Educators who hold incomplete or inaccurate models need help to unlearn what they think they know so that they can accept
new information and develop new skills and establish a new equilibrium. Duffy proposes several approaches to assist educators to examine and evaluate personal and organizational mental models. These strategies include fostering meta-cognitive analysis of unstated assumptions through a dialogue process and using inquiry to help educators to deeply question their professional choices and actions.

Friedman (2004) contends that in order to change a fundamental belief system one needs a non-threatening situation. He proposes a process to surface mental models that is based on consideration of thoughts and feelings in the current situation that are separate from any pre-existing mind-set. The use of reflective questions and critical thinking skills is recommended. A new belief set must be self-generated. Similarly, Martin (2005) describes a framework called appreciative inquiry that can influence organizational culture through simultaneous inquiry and change. Senge et al. (2000) also recommend a reflective approach that balances advocacy with inquiry. Reflection involves slowing down one's thinking so that one can become aware of the leaps of abstraction and the inferences being made. Using reciprocal inquiry to ask questions in order to better understand opposing points of view rather than continuing to press an argument allows everyone to make his or her thinking explicit.

Smith has developed a three stage continuum for developing the capacity to learn using mental models (Senge, 2006). The first step includes experimenting with the new language and cognitive constructs that underlie the discipline of mental models. At this stage, individuals and organizations may use some of the terms related to surfacing and reshaping mental models, but their actions remain fundamentally unchanged. The next level of change is reflected in attempts to apply newly learned behaviors under conditions
that are stable and secure. Finally, changes in language and actions are integrated into performance repertoires in complex and novel ways. Individuals and teams skilled at addressing mental models through an active process of inquiry and testing assumptions have the capacity to distinguish objective data from assumptions.

Gardner (2004) applied case study methodology to explore the phenomena of changing minds, noting that changing one’s own mind or influencing others to change their mind sets is both a difficult and poorly understood process. He proposes seven factors that come into play when individuals alter their thinking about deeply held beliefs. These factors are (a) reason, (b) research, (c) resonance, (d) resources, (e) rewards, (f) real-world events, and (g) resistances. The impact of these factors varies in effectiveness based on intrapersonal dimensions.

The literature regarding changing mental mind-sets lacks a specific exploration of the change process as experienced by school psychologists engaged in a fundamental shift in their professional roles. The context for this shift is detailed in the next section.

IDEA 2004 and the Changing Role of School Psychologists

Since the 1975 passage of Public Law 94-142, school psychologists have played a pivotal role in the identification of students with learning disabilities (Shapiro, 2000). Consistent with the definition of LD in PL 94-142 and successive reauthorizations of the bill, school psychologists were tasked with completing comprehensive evaluations that assessed students’ intellectual abilities, academic achievement levels, and the possible existence of processing deficits. Congruent with language that required a severe discrepancy between ability and achievement, most psychologists came to construe the discrepancy itself as the learning disability (Ysseldyke, 2005). Despite objections
presented in the literature (Francis, Fletcher, Stuebing, Lyon, Shaywitz, & Shaywitz, 2005; Fuchs & Young, 2006; Lyon, 1987; Siegel, 1989; Velluntino, Scanlon, Small, & Fanuele, 2006; Ysseldyke, 2005), school psychologists adopted a mental model that included beliefs that: (a) IQ was an important indicator of academic achievement; (b) children with severe discrepancies responded to special education techniques differently than children without discrepancies; (c) patterns of processing deficits were persistent over time; and (d) considerable evidence existed that supported an aptitude-treatment interaction that would explain a child's response (or lack thereof) to a specific instructional intervention (Fuchs & Young, 2006).

Following prolonged and sometimes acrimonious debate in the field (Holdnack & Weiss, 2006; Willis & DuMont, 2006), Congress reauthorized the Individuals with Disabilities Education Improvement Act (IDEA, 2004) with the following provision:

(c) local education agencies (LEAs) may use a student's response to scientifically-based instruction as part of the evaluation process; and (b) when identifying a disability, LEAs shall not be required to take into consideration whether a child has a severe discrepancy between achievement and intellectual ability (PL 108-446, 20 U.S.C. § 1400).

Multiple authors have addressed the impact this shift will have on the professional roles of school psychologists, noting that while precise roles are yet to be defined, the changes will entail fundamental adjustments in attitudes, beliefs, and skills (Mastropieri & Scruggs, 2005; NJCLD, 2005; Reschly, 2004, 2005; Vaughan et al., 2003).

Response to Intervention as an alternative to the discrepancy model of LD. In response to the recognized weaknesses in the discrepancy model of learning disabilities
identification, educators proposed and implemented alternatives (Ysseldyke, 2005) that incorporate elements of formative, curriculum-based assessments, problem-solving protocols and intervention support teams (Marston, Muyskens, Lau, & Canter, 2003). Generally referred to as Response to Intervention (Fuchs & Young, 2006), these alternatives include a sequential but non-linear process that begins with high-quality instruction in general education followed by progress monitoring using curriculum-based methods. Students who fail to achieve satisfactory levels are targeted for evidence-based, small-group intervention.

The process of monitoring and revising instructional supports continues until students achieve success or demonstrate the need for highly individualized, that is, special education, because they have failed to respond to evidence-based instruction (Bradley et al., 2005). Comprehensive cognitive assessment may or may not be a part of the process of determining eligibility for special education. Varied interpretations of many elements of the RTI process are currently the topic of intense debate within the literature and the subject of ongoing research (Reschly, 2005).

Vaughn et al. (2003) studied students' responses to treatment to determine if such a process could meaningfully identify reading or learning disabilities. A group of 45 second-grade students at risk for reading failure based on class performance were assessed using a battery of standardized reading instruments. After the baseline measurements were obtained, the students were given up to 30 weeks of supplemental instruction by trained tutors. Ongoing progress monitoring occurred weekly. Modifications were made in the treatment plan according to student progress and students who reached the pre-established benchmark were removed from tutoring but continued to
be monitored. Findings include: (a) almost equal numbers of students met exit criteria at each benchmark (10 weeks, 20 weeks, 30 weeks); (b) an almost equal number of students never met criteria (n=11); (c) more girls than boys failed to make exit criteria; (d) weak fluency predicted poorer progress; and (e) all students made the greatest progress during the first 10 weeks of intervention.

The researchers concluded that it was possible to identify students who could be considered eligible for special education as a consequence of their failure to respond to a targeted and intense supplemental reading program. In addition, all of the poor readers were given supplemental instruction prior to significantly discrepant performance in reading. For most of the students, this supplemental instruction was sufficient to help them meet the exit criteria. Follow-up studies were recommended, particularly to determine whether the achievement gains were maintained over time. Finally, the researchers noted that the expectation that more boys would fail to thrive was not supported in this instance, in spite of the high rates of referrals to special education for boys typically reported. Vaughn et al. (2000) commented that an advantage of using RTI processes might include a reduction in the biases implicit in existing referral processes.

Al Otaiba and Fuchs (2006) reported the results of a longitudinal experimental study of 104 children that provided evidence to support the long-term impact of early intervention. Student response to supplemental instruction was measured in both Kindergarten and first grade and then again in third grade. The majority of students (91.8%) who were non-responsive to intervention in Kindergarten continued to be non-responsive by Grade 1. By Grade 3 all but one of the non-responsive cohort were receiving special education support for reading difficulties. Al Otaiba and Fuchs
concluded that failure to respond to early intervention is a generally valid predictor of a long-term reading disability. These findings support and extend the conclusions of Vaughn et al. (2003) that well-planned and implemented early interventions can prevent reading failure and that achievement gains are maintained over time. Taken together, the results present a strong argument for including RTI processes in early education settings.

**RTI at scale.** Since 1993 the Minneapolis Public School System has been engaged in a wide-scale Problem Solving Model (Marston et al., 2003). The model emphasizes classroom intervention and problem-solving team processes such as targeted interventions, ongoing cycles of progress monitoring, and program adjustments. Professional roles of teachers, administrators, and specialists were observed to change significantly after adoption of the model. Specifically, the time school psychologists spent in traditional assessment duties fell by 35% in the first two years of the model. The role of psychologists expanded to include alternatives to traditional eligibility measures, that is, intelligence tests, such as functional evaluations, curriculum-based assessments, and instructional consultation based on data. These changes were considered to represent a significant shift in assessment philosophy and required comprehensive, ongoing training.

Similarly, large-scale RTI models, also known as problem-solving models (PSM), exist in Iowa’s Heartland Area Educational Agency 11 (Bolt, 2005), Ohio’s Intervention-Based Assessment Model (Telzrow, McNamara, & Hollinger, 2000), and Pennsylvania’s Instructional Support Teams (Kovaleski, Tucker, & Stevens, 1996). The impact of these efforts on student outcomes is reported to be positive, if preliminary, in comparison to traditional special education models (Burns & Ysseldyke, 2005). Additional research on
the large-scale RTI models is recommended, including studies of the best way to equip school psychologists for the altered and expanded role implicit in the problem-solving model (Knotek, 2005; Marston et al., 2003).

**Implication of the legislative changes on school psychology.** For most school psychologists, RTI represents a new paradigm (Reschly & Ysseldyke, 2002). A range of issues will need to be addressed if the protocols are to be implemented and sustained at scale (Coburn, 2003). School psychologists are in are often in positions of influence and may use their personal and positional power to accomplish their objectives. The relationship between persuasion and influence are explored in the following section.

French and Raven (1958) describe five bases for creating social power in groups. Three aspects of this conception of power are relevant to this inquiry. First, legitimate or formal power is derived from a prescribed, hierarchical relationship. School psychologists may access legitimate power as a by-product of their role as decision-makers. The second category of social power, expert power, is derived from specialized knowledge, expertise, and training. Finally, referent power is established as a mechanism of social influence based on a sense of identification and affiliation with another. Yukl, Kim, and Falbe (1996), explored the relationship between influence and social bases of power. Their results suggest that effectiveness of influence factors is highly dependent upon the referent power of the agent. Challenges to skill set, decision-making processes, and status of psychologists engaged in the changing paradigm may have an impact upon their referent power and, consequently, their ability to influence others.

Another pressing issue relates to the professional development needs for acting psychologists. Past job expectations may not have emphasized the skills that will be
necessary for school psychologists involved in implementing RTI models (Christo, 2005). For example, psychologists must develop proficiencies in curriculum-based measurement (CBM), problem-solving models (PSM), evidence-based interventions (EBI), consultation (Shapiro, 2000), and ecological approaches to identifying learning difficulties (Hagans-Murillo, 2005). While professional organizations have responded and are providing awareness-level training, sustainable changes need to be made at the local level (Bolt, 2005). One way to support professional development efforts is to identify strategies that foster changes in professionals' mental models before and during training and implementation phases. The purpose of this study was to develop a theory of change related to mental models and thus has the potential to inform and support professional development activities.

**Qualitative Inquiry**

Qualitative inquiry seeks to understand the meaning of a phenomenon as experienced by participants themselves (Creswell, 2003). Creswell notes that processes that are evolving and emergent are best explored through a qualitative lens (2007). The phenomena of interest in this study relate to the process by which one changes his or her mind about a personally and professionally relevant subject. The inductive and emergent approach associated with grounded theory was applied in the current study.

*Grounded theory.* Originally described by Glaser and Strauss (1967), grounded theory seeks to generate theory, rather than to verify existing theory, through a systematic and concurrent process of data collection, coding, comparison, and analysis. The resulting theory is derived inductively from the specific context of the inquiry and may be robust enough to extend to related contexts.
Conrad (1978) used grounded theory design to understand the major sources and processes of academic change in higher education. The researcher studied four institutions consistent with the principles of theoretical sampling in that they were (a) relevant to focus of inquiry (had experienced a change) and (b) allowed for comparison of similarities and differences in the way they had managed the change process. Data collection occurred through interviews and through analysis which commenced immediately after the data collection at the first site and continued throughout the inquiry process. Categories and concepts emerged from the preliminary analysis and guided subsequent data collection. Concepts were modified, added, or abandoned as new data emerged until they coalesced into a coherent theory of academic change.

The experience of Conrad (1978) is instructive to the current study in several respects. First, the phenomenon of interest in both studies relates to change, specifically in academic settings. The complexities of change are well suited to in-depth and recursive inquiry. Conrad observed that the theory that emerged from his inquiry was more nuanced and responsive to the specifics of higher education than existing change theories. This observation suggests that grounded theory is an appropriate methodology for the study of cognitive shifts in school psychologists, a phenomenon that has not been studied in this population.

Summary

Change is an inevitable and omnipresent reality in all aspects of contemporary life, particularly education. Diverse student needs, the demands of an increasingly technological and global economy, and the legal and moral mandate that all schools ensure the success of all children necessitate the development of new skills and beliefs.
Creating the capacity to support change that is systemic and enduring is an essential leadership challenge. Researchers have identified a number of conditions that must be present to ensure sustainable change. Fullan (2005) has established that sustainable change depends upon the creation of a new, shared understanding of attitudes and beliefs. These beliefs must be aligned with the purpose of the innovation and extend beyond changes in surface behaviors (Vaughn et al., 2000; Coburn, 2003). Sustainable change is more likely to be experienced by professionals who belong to a community with shared values (Klingner et al., 2001) and requires extensive professional development that addresses challenges to beliefs, expectations, and practice. However, the field does not yet have adequate mechanisms to understand and measure how practitioners reconstruct these beliefs and mental models (Coburn, 2003).

Mental models consist of routines and interpretive frameworks (Kim, 1993; Raybould, 2000) that include assumptions, beliefs, and norms about ourselves and the world (Senge, 2000). These mental models serve as perceptual filters and because they often remain untested and unexamined can influence our decisions independently of other knowledge or information (Hill & Levenhagen, 1995; Strauss et al., 1998; Datnow & Castellano, 2000; Toole, 2001). Constellations of beliefs, values, and techniques shared by members of a community are known as paradigms (Kuhn, 1970) and like mental models may be incomplete, inaccurate, or flawed (Chapman & Ferfolja, 2001; Davison & Blackman, 2005). The literature reports a lack of strategies that can be used to foster the changes in mental models needed for systemic reform (Fullan, 2005).

School psychology is entering into a new era that will require changes in skills and mental models regarding learning disabilities assessment and eligibility. IDEA 2004
allows districts to use a student’s response to scientifically-based instruction as a part of the evaluation process. Known as *Response to Intervention*, this process includes a problem-solving, student and curriculum-centered assessment and intervention framework. RTI has been shown to be a valid and reliable alternative to the discrepancy model for identification of learning disabilities (Al Otaiba & Fuchs, 2006; Marston et al., 2003; Vaughn et al., 2000). Under the discrepancy model school psychologists played a pivotal role in the identification of learning disabilities (Shapiro, 2000). RTI represents a new paradigm that involves a significant shift in assessment philosophy and traditional relationships and responsibilities for school psychologists (Reschly & Ysseldyke, 2002).

The literature identifies changing mental models as a fundamental prerequisite for sustainable change; however, there is no exploration of the change process as experienced by school psychologists engaged in this fundamental shift in their professional roles reported in the literature.

The phenomenon of interest in this grounded theory study was the process of changing one’s mental model. The qualitative inquiry sought to address gaps in knowledge related to understanding how professionals reconstruct mental models under conditions of shifting roles and responsibilities. The creation of theory regarding this change process will inform educational leaders working with school reform efforts that challenge established practice.
Chapter 3: Research Design and Methodology

This chapter summarizes the research design and methodology for this grounded theory study of changing mental models. The alignment between the research problem statement, question, and design is described. An overview of the research context, participants, instrumentation, and data analysis strategies is also provided.

Statement of the Problem

Creating a culture that supports systemic change is an essential leadership challenge in the 21st century (Fullan, 2005). In order to create sustainable change, attention must be paid not only to learning skills and other external competencies, but to understanding and reshaping the implicit mental models that direct our actions (Senge, 2006). In the field of special education, current reform efforts are likely to have an impact on the mental models and daily practice of school professionals responsible for the diagnosis of learning disabilities.

School psychologists are the educational professionals most closely associated with the assessment and diagnosis of learning disabilities (Shapiro, 2000). As such, an essential aspect of their role and function within schools will be impacted by a change in diagnostic procedures and philosophy (Mastropieri & Scruggs, 2005; NJCLD, 2005; Reschly, 2004, 2005; Vaughan, Linan-Thompson, & Hickman, 2003). At this time the literature does not contain an exploration of the cognitive shifts implicit in these changes. Understanding the cognitive shifts that occur when educators undergo a far-reaching change in established practice has the potential to inform educational leaders who seek to
facilitate systemic change in order to improve outcomes for students-at-risk.

The purpose of this grounded theory study was to develop an understanding of the cognitive changes that accompanied the implementation of RTI in schools as a means of identifying students who need special education. Specifically, the relationship between school psychologists' mental models regarding the assessment of learning disabilities and their roles as experts in traditional psychoeducational assessment was studied so that the following research question could be addressed.

Research Question

How do the mental models of school psychologists change as they begin to implement Response to Intervention approaches into their professional practice to support sustainable school reform?

The General Perspective: Qualitative Inquiry

Creswell (2007) observes that the topics that are typically addressed in qualitative inquiry are "emotion laden, close to people, and practical" (p. 43). These characteristics aptly describe the phenomena of interest in this study, namely, the process by which one changes his or her mind about a personally and professionally relevant subject. It seems reasonable to speculate that highly trained professionals, when confronted with a challenge to their accepted notions and established competencies, will experience dissonance and associated emotions. This is especially true when those same professionals believe that their decision-making process is correct and helpful. It is also likely that altering the existing beliefs, norms, and assumptions known as mental models will not be a linear or seamless process, but one that is iterative and intertwined with elements of both the mundane and profound. As such, this topic was well suited for a
qualitative methodology such as grounded theory that seeks to understand an elusive process in order to generate an explanation or theory (Creswell, 2007).

Grounded Theory

Grounded theory is a qualitative research strategy that attempts to propose a newly emergent theory to explain a process or phenomenon. The procedures associated with grounded theory are both flexible and rigorous (Corbin & Strauss, 1990). While differences of opinion can be found in the literature regarding the extent to which grounded theory procedures must be prescribed (Charmaz, 2006), the following elements remain essential. Data collection and analysis are interrelated processes that occur concurrently. Concepts that emerge from data analysis inform the ongoing inquiry and influence the selection of the sample in order to expand the theoretical representation of concepts. Concepts and categories are modified, added, or abandoned as new data emerge until they coalesce into a coherent theory of the phenomenon of interest (Corbin & Strauss, 1990). Memo writing is a technique employed throughout the research process to help the researcher analyze data and to move from focused coding to theoretical concepts (Charmaz, 2006).

Grounded theory procedures are well suited to explore phenomena that involve the complexities of change (Conrad, 1978). The process of in-depth and recursive inquiry implicit in grounded theory can result in a nuanced and emergent understanding of how a group of participants experience a unique phenomenon (Creswell, 2007), such as the cognitive shifts involved in this study.

Research Context

Determining the context for this grounded theory study was based on the dual
processes of purposeful and theoretical sampling. Typically, a grounded theory study will begin with a homogeneous sample of individuals with a shared experience who can purposefully inform the inquiry (Creswell, 2007). During the process of data collection, the sample is expanded intentionally through the use of theoretical sampling (Fassinger, 2005). Theoretical sampling entails the active and purposeful collection of data from sources that are both similar and different with respect to the phenomenon of interest. This variety serves to deepen confidence in the categories that emerge (Glaser & Strauss, 1967) and to eliminate gaps among categories (Charmaz, 2006).

The initial contexts for this study were public school systems in western New York. The region includes rural, urban, and suburban communities in Monroe, Ontario, and Orleans counties. Schools within this region represent a range of economic and demographic conditions but demonstrate many commonalities in their approaches to providing intervention services because of the unifying influences of the Board of Cooperative Educational Services (BOCES) support system. The area has just begun to explore the adoption of RTI procedures, as evidenced by the number of conferences and professional development sessions addressing the topic that have occurred within the 2006-2007 school year. Most of these presentations have been organized by regional educational agencies (BOCES) or local professional associations, and have relied on the expertise of presenters from outside of the immediate vicinity.

Research Participants

Qualitative research employs the concept of purposeful sampling (Creswell, 2007) in the selection of participants as well as research contexts. Participants are selected intentionally for their potential to inform the research topic. Corbin and Strauss (1990)
recommend beginning a grounded theory inquiry with individuals who represent a shared set of experiences. After initial data collection, the sample of participants is expanded to include as much depth as possible regarding the concepts pertinent to the topic of interest.

The experience of school psychologists faced with a significant change in professional practice was the focus of this study. Therefore the sample of participants was school psychologists with a minimum of 10 years of experience, currently practicing within public school settings in upstate New York. These individuals were also members of local, state or national professional associations or those who had participated in at least one RTI learning experience within the past year. These criteria were established to ensure that participants had sufficient background knowledge and expertise to meaningfully contribute to the inquiry.

Application of principles of theoretical sampling (Charmaz, 2006) expanded the sample during the course of inquiry through the use of snowballing. Participants were asked to identify other practitioners who could add additional insights to focused areas of the inquiry (Creswell, 2007).

*Instruments Used in Data Collection*

A wide range of data collection methods is appropriate for use in ground theory studies, with interviews, observation, and document analysis occurring most frequently (Creswell, 2007). Charmaz (2006) affirms that interviews are particularly well suited to grounded theory inquiry in that they allow for in-depth exploration of a person’s lived experience with the topic under study. Grounded theory interviews are described as simultaneously open-ended and emergent, meaning the researcher begins with open-ended questions that establish a framework for the conversation. As themes and topics
emerge, the researcher shapes the interviews to gather more focused data to develop the emerging theoretical framework.

The focus of inquiry in this study related to the deep-seated and implicit assumptions, beliefs, and values known as mental models, and the experience of changing these models in response to external pressures. The evolution of these mental models was uncovered through a semi-structured interview process that engaged participants in introspection and reflection. This study included individual interviews of approximately one hour each. Participants who agreed to be interviewed at their convenience were assured confidentiality. During the interview process a digital audio recording was obtained for later transcription, coding, and analysis. Field notes completed by the researcher immediately after the interview complemented the verbatim transcripts. Extensive analytic and theoretical memos expanded and refined the emerging categories and conceptual model.

The interview process in grounded theory is intentionally open-ended, however, some degree of structure and organization is typical (Fassinger, 2005). Charmaz (2006) recommends that novice researchers use some form of interview guide to maintain focus and reduce the likelihood of becoming overly directive in the questioning process.

Consistent with the recommendations of Creswell (2007) and Fassinger (2005), these questions were developed through a pilot interview process with volunteer participants who fit the sample demographic. The opening questions were selected for their potential to tap into participants’ understanding and experience with the phenomenon of changing roles and mental models. Questions that spoke to the connections between participants’ beliefs and their roles within their professional settings
were selected for their potential to inform systemic organizational change. Additional questions and prompts emerged throughout the research process and were incorporated into subsequent interviews, consistent with grounded theory interview processes (Corbin & Strauss, 1990).

Data Collection and Analysis

Data analysis in grounded theory is considered to be nonlinear, emergent, and occurring concurrently with data collection (LaRossa, 2005; Charmaz, 2006). Analysis begins with the coding of data and proceeds through various levels, alternatively described in two, three, or four stages (Charmaz, 2006; Glaser & Strauss, 1967; LaRossa, 2005; Corbin & Strauss, 1990). Creswell (2007) recommends the systematic, three levels of coding proposed by Corbin and Strauss (1990) for novice researchers. This model begins with open coding, followed by axial, and finally selective coding, although it is important to restate that the analysis process is never presumed to be linear but is expected to be recursive. Another data analysis technique employed in grounded theory is memo writing. Memo writing and the three levels of coding that were used in the current study and are described below.

Memo writing. This technique began early in the research process and continued throughout the data collection, analysis, and writing. Memos supported the analytic process by making the researcher’s thinking explicit. They further provided a record of provisional codes, relationships, and assumptions and helped the researcher to identify gaps in the emerging theory (Charmaz, 2006). Memo writing also served to make the research process and results dependable by providing a clear audit trail for readers and subsequent researchers (Bruce, 2007; Brown, Steven, Troiano, & Schneider, 2002).
Open coding. The process of data analysis begins with the deconstruction of the interview transcript into discrete concepts based on indicators that include the participants’ words, phrases, and sentences (LaRossa, 2005). These indicators are given labels that define what is happening and are coded with words that reflect action (Charmaz, 2006). Corbin and Strauss (1990) note that by giving raw data conceptual labels, it becomes possible to compare different incidents or activities. As relationships between concepts emerge, ideas are grouped into categories that become increasingly abstract. This abstraction is developed by identifying and comparing the properties and dimensions of the category. In this process, concepts that are similar but not identical may be grouped under an abstract heading that encompasses them all (for example, birds, kites, planes = flying objects). Categories may also represent dissimilar activities that have some commonality, for example, fasting, running, and gastric bypass surgery might be categorized as controlling weight strategies. Returning to the data collection process to assemble additional indicators for each concept continues until no substantially different indicators emerge. The category is then said to be theoretically saturated and to represent a well-grounded concept (LaRossa). Well-grounded categories are further explored through the process of axial coding.

Axial coding. Corbin and Strauss (1990) describe axial coding as the process of developing a category through its relationship with subcategories. Categories are analyzed in terms of the conditions, action and interaction strategies, and consequences that are related to the phenomenon of interest (Creswell, 2007). Essentially, the core category can be thought of as the hub of a wheel with answers to questions such as when, where, why, and how, forming the spokes of an axis, hence, axial coding. As these
relationships are verified through ongoing data collection and analysis, the researcher systematically seeks to explore all possible variations and connections. In this way, the emerging theory is continually refined as the linkages become more specific and elaborated (Corbin & Strauss). When it can be said that the axial coding process has revealed a set of well-developed and conceptually dense categories that are coalescing into emerging theory, selective coding is employed.

**Selective coding.** The goal of selective coding is to unify all categories around a central, core category by creating a theoretical account or hypotheses (Creswell, 2007; LaRossa, 2005). Selective coding occurs in the later phases of data analysis (Corbin & Strauss, 1990), but still does not preclude the researcher from returning to the field in search of additional data to verify or amplify the core category. The theoretical core story seeks to illuminate the study phenomenon by explicating the relationships of all other categories to the core category (Fassinger, 2005). This theoretical story is often accompanied by a visual representation or model (Creswell, 2007). Corbin and Strauss consider a theory to have explanatory power if each of the categories has adequate conceptual density as a result of the constant comparative analysis and theoretical sampling.

**Credibility, Transferability, and Dependability of Qualitative Research**

Unlike quantitative research, qualitative designs do not seek to produce results that are statistically reliable, valid, and generalizable (Creswell, 2003). Rather, the results of a qualitative inquiry seek to be credible and transferable based in part on the richness of the description used to relate the findings, and to the triangulation of data from multiple perspectives and participants (Lincoln & Guba, 1985). In-depth interviews and
member checks further enhance the authenticity of the emergent theory (Brown et al., 2002).

This study adhered to the principles of dependability by documenting an audit trail that includes a thorough description of the research methods and procedures. Memo writing and field notes add to the transparency of the process and increase dependability (Bruce, 2007). Ample excerpts of participants' comments are included (Charmaz, 2006). The use of a constant comparative method of data collection and analysis support the credibility and transferability of the results. Multiple points of view were gathered from varied subjects. These were confirmed through member checks. Usefulness is related to transferability and speaks to the everyday value of the work (Charmaz, 2006). This study seeks to inform educational leaders who desire to facilitate sustainable change; therefore, the attribute of usefulness informed the interview and analysis process.

Protection of Human Subjects

Participants in the study were adult professionals who gave informed consent for their participation. Interviews were conducted at neutral locations with the permission of participants. Audio transcripts were transcribed by a professional transcription service and all written and audio recordings were secured under lock and key for the duration of the study. All identifying information including names, details of work settings, professional affiliations, and university connections were removed in order to protect confidentiality.

Summary

This chapter describes the qualitative method of inquiry that was used to study the phenomenon of interest, namely, process of changing one's mental model. An overview
of grounded theory design is presented along with the research context, participants, instrumentation, and data analysis process.
Chapter 4: Findings and Discussion

Introduction

The purpose of this study was to understand the process of cognitive change that school psychologists experienced as they began to implement Response to Intervention in their professional practices. Understanding the process of changing an established paradigm of professional practice has the potential to inform educational leaders who seek to implement sustainable change in education. Qualitative data were collected through semi-structured interviews and analyzed using a constant comparative process. An emerging theory of changing mental models is described through the delineation of a core category and its associated categories and themes. Each theme is illustrated by excerpts from the participants' interviews. Properties and dimensions of the categories and themes are embedded in each section.

The Core Category

Corbin and Strauss (2008) described a core category as the main theme or phenomenon of the inquiry. They also defined process as the ongoing action/interaction/emotional response to a situation or problem, with the purpose of reaching a goal. “Process demonstrates an individual’s... ability to give meaning to and to respond to problems and/or shape situations that they find themselves to be in” (p. 98).

The psychologists who participated in this study spoke at length about the changes currently at play in their field, and the resulting positive and negative impacts experienced or anticipated. Recreating personal and professional identities in response to
these changes was explained through a model of internal and external processes of adaptation as summarized in Table 4.1. These processes included elements of dissonance and personal sense making, changes in power and status, loss and gain, challenges to competence and skill set, and ultimately, recreation of identity. External elements that provided the context for internal changes include role-related factors such as status, collaboration, and leadership. The process was described as a spiraling process that evolves over time. Recursive interrelationships between actions, interactions, and consequences were revealed throughout the process.

Because the phenomenon of interest was in the early stages of implementation for most of the participants, this framework is best considered an emerging theory, and representative of the initiation phase of the change process. Throughout the discussion of findings, the core category is in bold letters, categories are in title case, and themes are italicized. Quotations are identified by each participant’s number (#) and the page where the comments appear in the transcript.
### Table 4.1

*Summary of Categories and Themes of Recreating Identity*

<table>
<thead>
<tr>
<th>Category</th>
<th>Themes</th>
<th>Dimensions and Properties</th>
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<tbody>
<tr>
<td>Recognizing a Flawed Mental Model</td>
<td>Responding to the Flaws</td>
<td>Dawning awareness</td>
</tr>
<tr>
<td></td>
<td>Denial and belief</td>
<td>persistence</td>
</tr>
<tr>
<td></td>
<td>Recognizing and Reducing</td>
<td>Dissonance reduction</td>
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<td></td>
<td>Dissonance</td>
<td>strategies</td>
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<td></td>
<td>Reshaping and</td>
<td>Sense making in complexity</td>
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<tr>
<td></td>
<td>Accommodating</td>
<td></td>
</tr>
<tr>
<td>Recreating Roles and Relationships</td>
<td>Reconsidering Status, Power, and Influence</td>
<td>Challenges to expert power</td>
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<td></td>
<td></td>
<td>Challenges to referent power</td>
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<tr>
<td></td>
<td></td>
<td>Collaboration, consultation and leadership</td>
</tr>
</tbody>
</table>

**Category 1: Recognizing a Flawed Mental Model**

The paradigm shift at the center of this inquiry was the reconceptualization of the process for identifying students with learning disabilities. Federal law now permits RTI protocols as alternatives to the traditional, discrepancy-based procedures that have dominated the field of school psychology. Understanding the discrepancy model as an example of a flawed mental model established the context for the cognitive changes.
experienced by the participants.

Mental models are simplified conceptualizations of the reality that they represent. They are by their very nature incomplete (Johnson-Laird, 1983). They do, however, serve as important and effective tools for understanding complexity. The model for identifying students as eligible for special education services that has come to be known as the discrepancy model shares many of the same characteristics. Psychologists developed and used procedures including mathematical calculations, graphs, and formulas to explain the relationship between complex learning variables to non-expert audiences. One participant described how she was trained to plot test scores on a norm chart, “If you’re in the box you’re okay, if you’re not you have a discrepancy” (#2, p. 3). This calculation-based approach to diagnosis was reinforced by systems of checklists and formulas that were employed in most schools. Psychologists were required by the State of New York to complete a Learning Disability Checklist that specifically asked about the presence of a severe discrepancy. One psychologist observed, “I went to a lot of Committee on Special Education (CSE) meetings in other districts where they got out their calculators to prove that the kid was going to qualify for services” (#13, p.7). Another participant noted, “They were even more determined to prove their calculations when the kid wasn’t going to qualify” (#15, p. 2).

The process of determining a disability based on the discrepancy model had evolved, in part, because of the complexity of the decision. A participant described how using the discrepancy model helped him to clarify and explain his decisions:

People don’t like a whole lot of complexity in decision-making and these are complex decisions…it is never easy making a decision that a youngster has a
learning disability. In the face of complexity people would often look at us for something that they can hang their ...hat on... it's simple like a number, like a discrepancy...and we were able to...look at a procedure like the discrepancy analysis procedure that was relatively straight forward and, I thought, defensible. (#3, p. 10)

However, the use of a simple model to explain a complex phenomenon ultimately results in an oversimplification that creates distortions. Most explanations are inherently limited in their capacity to fully explain complex phenomena (Keil, 2006). In the case of this inquiry, the explanatory power of the discrepancy model was found to be insufficient to adequately address the multiple issues involved when students are struggling in school. This realization was expressed by one participant this way:

We do not have an algorithm that will help us know who will fail. We’ve tried. There is so much information. About family stress, drugs, chance events, diseases...all can affect learning. It is so complicated. But we wanted to come up with a formula, wanted to make it so that the kid here or the kid there would all be seen in the same way, get the same service. It can’t happen. The reality is that there are multiple realities that are totally different from place to place. (#13, p.7)

As a result of years of using this approach, many psychologists came to misconstrue the presence of the mathematical discrepancy as the actual learning disability itself, rather than a single indicator of an underlying difference in one of the psychological processes essential for effective learning. When individuals attempt to make sense of complex and ambiguous situations, they may develop idiosyncratic interpretations that distort or overlook important information. As one participant said, “I
realize now how complicated it really is. The need to make it simple wasn’t only to help the kids; it was to help me, to justify what I was doing” (#13, p.5).

These models may also morph subtly over time and from place to place. One participant described the impact that leading authorities in the field had on establishing the importance of the discrepancy analysis. Jerome Sattler authored the seminal text, *Assessment of Children’s Intelligence and Special Abilities* (1982), which was widely used as a standard reference text on assessment. David Wechsler created the Wechsler Intelligence Scale for Children – Revised (1974), a foundational tool for school psychologists.

When I was first trained, Jerome Sattler said that a difference between the verbal and performance IQ was unusual. Even David Wechsler said that if you have a big difference in the way people express their intelligence, it is a sign of uneven learning growth and might be a learning disability. People forgot the “might” part. (#15, p.1)

*Responding to the flaws.* The process of responding to the flaws in the discrepancy model emerged as the first theme in the category Recognizing a Flawed Mental Model. Participants described a process that progresses along a continuum from a wary phase of dawning awareness to a more complete understanding of the need to move beyond the flawed discrepancy model. The continuum of change includes increments of denial and belief persistence, dissonance and the strategies associated with dissonance reduction, and the cautious accommodation of new strategies into existing mind-sets.

The process of recognizing flaws took several different paths for participants. Even for psychologists within the same organization, there were differences in the change
trajectory. The dimensions of this theme reflect the deeply personal nature of change and the reality that change processes are rarely one-dimensional or straightforward (Fullan, 1991). One group began to experience discomfort with the discrepancy calculations early in their careers. Participants said, “Well I grew up with a discrepancy model and I realized way back that it doesn’t work….it didn’t make sense to me… it always made me cringe to report it and eventually...I stopped reporting it” (#4, p.2). “I never liked the discrepancy; I always ... talked against it” (#11, p.7). “I was not using the discrepancy model long before they said we couldn’t just because I knew it was the right thing to do” (#2, p. 13). While these participants reported they experienced less cognitive dissonance when the discrepancy model was rejected by the field; they nonetheless had to work within the existing discrepancy based frameworks in their schools. This caused them to create idiosyncratic processes and they shared the resulting challenges to their competency, which will be described in subsequent themes.

A second group of participants experienced a more subtle awareness of problems with the model that emerged gradually over the course of their careers. “I can’t even really remember a specific time, but there were pieces of information all along the way” (#6, p. 2). The dawning awareness of this disconnect mirrors Freyd’s (1987) observation that individuals are sensitive to dynamic information, even when they are not able to observe real-time changes (p. 427). One psychologist described the evolution of his thinking in this way:

I began thinking about it years ago when I first began to get information related to whether the discrepancy formula was an appropriate method to use in identifying kids and so in the back of my mind, I was always thinking about it from almost
from the moment I got my first building. Is this really an appropriate way to identify kids as LD? We had information of what LD really is. Is this discrepancy formula a good way to do that? Is one kid just reading disordered and one kid LD? We didn’t really have a good process with which to understand that, we sort of got stuck in the idea that there was something magical when a kid got classified. (#6, p. 2)

The last group reported they found it difficult to simply reject the discrepancy model and move on. Consistent with Friedman’s (2004) observations, these individuals experienced an anxiety-induced perseverance of belief that included a return to using the familiar model in the face of stress. As one says, “Maybe it’s because I just can’t let go of my beliefs. It just makes sense. It is logical. I can’t really even define why” (#13, p. 4). This belief persistence served to reduce the anxiety created by challenges to their thinking and the related changes in social relationships, roles, and expectations associated with these changes. In an anxiety-avoidance situation belief persistence and maintenance of the status quo are highly reinforced because they reduce the anxiety associated with the unknown (Schein, 1984). Under such conditions, an external event is needed as the catalyst for internal adaptation. This participant described IDEA 2004 as such a catalyst, “It was foisted on us. If 2004 hadn’t come along, we would have continued with a quite discrepant system, all under the trappings of a discrepancy model” (#13, p. 9). Schein’s characterization of an external adaptation problem as one that is beyond the control of the group but that determines the fate of the group aptly describes the impact of IDEA 2004 on this population.

Recognizing and reducing dissonance. A response to these changes was a
growing dissonance regarding previous practices. Participants became conscious that the discrepancy model was being challenged. Some became aware through their reading of professional literature. Others when they read the explanations that accompanied the change in the legal language. By 2004 all were faced with the realization that the discrepancy model lacked empirical grounding. “Much of what I did in the past didn’t have a scientific foundation. I didn’t know that when I was doing it. I thought that it had an empirical basis” (#1, p. 12). This realization created a strong sense of disequilibrium as participants recognized that in spite of their efforts to be “scientific” in their thinking, they had failed:

I tried to check myself. Whenever I found myself getting farther away from the ideal model, I used best practice. I used good tests. They were aligned with curriculum, and they were good measures of psychological processes. I did my research and then, G** d*** it- all of it was for s***. There was no evidence! (#13, p. 3)

It was important to participants that they be able to make sense of their past actions in light of the new information. This participant reflected on his attempt to put his actions into perspective:

It (the discrepancy model) is an attempt by human beings to do the right thing but in a way that doesn’t overwhelm them. They want a code to live by. After a while, it gets too complex; you wind up wanting to flip a coin; but I just can’t do that. In the end it is often a personal opinion. But you surround that opinion with the trappings of science; you can’t just say it is my opinion. (#3, p. 8)

The magnitude of the change for participants was summarized by this
psychologist:

All of these kinds of things are pretty big changes in here. I think we need to talk about the way that we have done business over the last 30 years. I think that's quite a bit of change...I'm feeling that's a pretty big thing, trying to make that shift. (#1, p.1)

Chapman and Ferfolja (2001) note that one reason flawed mental models perpetuate is because inaccurate information is accepted at face value based on its source. This participant discussed how his opinion was influenced by experts in the field:

Everything that we were told said that it had an empirical basis, if we read all the important text books it talked about doing discrepancy analysis...looking to see if there was a severe discrepancy and the procedures we were taught all were consistent with that kind of discrepancy approach. It causes me some dissonance now to look back and think that, you know, I really did buy into that...it caused me more dissonance and quite frankly when I started to come across the literature that suggested that it wasn’t a good thing to do and at first I didn’t believe it. I just thought all these people are just mavericks; they don’t know what the hell they’re talking about. (#3, p. 10)

Reducing the dissonance created by this emerging understanding represents another point on the continuum of Recognizing a Flawed Mental Model. Elliot and Devine (1994) described cognitive dissonance as an uncomfortable psychological state from which individuals seek to escape. Argyris (1994) noted that defensive routines become employed unconsciously when individuals are faced with the negative feelings associated with dissonance. Attempts to suppress these feelings can take several forms.
One of the ways to escape is to trivialize the element that causes the dissonance (Simon et al., 1995). By dismissing critics of the discrepancy model as “mavericks” this participant was employing such a strategy for reducing dissonance. Questioning the credibility of the messenger made it possible to selectively disregard the correct information (Chapman & Ferfolja, 2001).

Gosling et al. (2006) described another dissonance reduction strategy, which they call denial of responsibility. They suggested that this defense mechanism allows one to become disengaged from one’s own behavior, thereby reducing the negative feelings associated with prior actions. A participant suggested that his colleagues were employing this strategy when they claimed not to have ever used the discrepancy model:

I know a lot of people now are saying that they never used the discrepancy model. Well, I went to a lot of CSE meetings in other districts when they got out their calculators to prove that the kid didn’t qualify for services. I’m skeptical. They are not lying. They are reconstructing reality in order to accommodate a complex reality. First, do no harm. None of us wants to believe that we were ever part of process that kept a kid from getting help because they didn’t fit the formula. That causes me some dissonance. (#13, p. 7)

Denial of responsibility was echoed by the next participant who identified external agents as the source of the failed model:

Okay, you know school psychologists, they have done what they’ve been told for the last 20 years and they’ve done a good job. It’s kind of like medicine. If you turned the medicine clock back, you know 20 or 30 years, you know, the practices were probably different than they are now. I mean they did the best job that they
could at the time... everything that they did was inappropriate. Looking back on things, it's kind of like the Middle Ages when people drilled heads for schizophrenia. (#6, p.4)

Several participants employed a third strategy for dissonance reduction. After acknowledging that much of their work was without empirical foundation, these psychologists looked for ways to rationalize their actions by putting them in a context that made sense. As one said, “Everybody lives in a context. Nobody is completely objective.” This strategy is also consistent with Argyris’ framework of defensive routines which drive individuals to seem as rational as possible under the duress of dissonance. This participant continued by making a parallel with the field of medicine:

It's like a physician who for a long time said to women that they should take estrogen after they have gone through menopause. That was the best evidence they had at that point in time. The best evidence I had was that the discrepancy model was the model to use. Then suddenly I was faced with information that said this is not the best practice and then you have to, if you are a good professional, if you are an ethical professional, you’ve got to change your practice and that’s what I did. (#3, p. 19)

A final strategy for reducing dissonance is to assert a valued aspect of one’s self (Steele, 1988) as this participant did, noting, “I believe in what I do, or I wouldn’t do it” (#5, p.13) when asked to describe her contribution to the assessment and identification process.

*Throwing the baby out with the bath water.* Most of the participants echoed this self-affirmation. Many of them used the metaphor, “Throwing the baby out with the bath
water” to describe their perceptions of the provision in the legislation that allows for
students to be classified without a full assessment of cognitive functioning:

Yes, I think there’s two camps out there... two, you know, sides of the fence; one
group of people sees the RTI process as sufficient to classify youngsters eligible
for special education, at least with regard to learning disabilities and the other
camp doesn’t want to throw the baby out with the bath water. They still appreciate
some of the information they get from those process assessments. (#3, p. 3)

Responses to this dichotomy varied along a continuum. Some participants felt
strongly that elimination of the assessment in the eligibility decision was fundamentally
flawed:

I think it’s throwing the baby out of the bath water, it doesn’t make sense. I think
you need information on learning stuff... To understand kids learning styles... I
think that there’s that piece where testing is the answer... In the RTI model, the
model is the curriculum. That is the failure. It’s going to be a house of cards,
that’s it. Ultimately, it is a different “wait to fail” model. (#4, p. 2)

Unfortunately it seems the pendulum swings way too far and so to look at
identifying the student as having a learning disability only on their response to an
intervention makes me uneasy. (#12, p.1)

Most of the other participants expressed more moderate views that value the
assessment process, and looked for a way to blend both RTI and traditional decision
making:

I just want to be careful about this whole process of not having a school
psychologist involved in working with the kid until they sort of wash out of the
RTI process. I want to make sure that people aren’t assuming then that just because they are not giving an IQ or an achievement test then you no longer need the assessment process. It’s like throwing the baby out with the bath water or that kind of thing. (#6, p. 6)

I’m not really ready to throw it out completely because I think there are some good things that are coming out of those kinds of evaluations and assessments. (#1, p. 19)

I think there’s a lot more to it … and so to say we need to throw testing away and go totally to curriculum based intervention and seeing how a child responds to that, I think is throwing the baby out with the bath water. (#12, p. 2)

The frequent use of the metaphor, “Throwing the baby out with the bath water” reflects a shared sense that something precious is being lost when they give up traditional assessment practices. One participant reflected on the metaphor and observed:

The one thing American psychology is known for is the creation of psychological tests. And they are better now than they ever have been. They are our babies and we are throwing them away because they don’t fit somebody’s new model. (#15, p. 6)

Embedded in the metaphor, “Throwing the baby out with the bath water” is the implicit recognition that there were some flaws in “the bath water” that need to be discarded. It also reflected the deeper feeling that while some changes are needed, these changes are coming quickly and as a result of speed some things of value will be lost in an impulsive act.

On another level, the psychologists themselves could be considered to be the
“babies” at risk of being discarded along with their unique contribution to the process: The way the [state and the feds] are going though it does appear like we are kind of like a vestigial organ, you know. Because the tests, they cannot tell you when the kids were learning disabled or not. So, why do we need you? (#4, p.11)

The wholesale change implied in the shifting paradigm resulted in an implicit, collective agreement on the need to maintain at least some aspect of the assessment process. This represented a dissonance reduction strategy employed by groups which seek to establish and maintain consensus (Matz & Wood, 2005). Shinn (2007) observed that many psychologists continued to struggle to accept that the RTI process was proposed as a remedy to the discrepancy-based eligibility process. Participants in this study confirmed his observation and reinforced the emergent nature of this inquiry. The details of how they are attempting to bridge the old and new paradigms are expressed in the subsequent section.

**Reshaping and accommodating.** Participants attempted to hold onto some of their previous practices, while making at least some accommodations to the new legislation and professional trends. These attempts to make sense of the ambiguous and changing professional landscape resulted in idiosyncratic accommodations that put increasing pressure on existing mental models.

Davison and Blackman (2005) observed that in order for a flawed mental model to be rejected, some perception of difference must occur on either a conscious or unconscious level. As participants experienced sufficient dissonance with the flaws in the discrepancy model, they began to subtly reshape their approaches. As one said, “You start to unconsciously thwart the system” (#13, p.8). This participant continued,
describing his response to the pressure he felt to move beyond the traditional model:

Invariably, if you are a purist, you will encounter a kid, usually through their teacher, who will say, “How can you not find that kid LD?” If this occurs enough, you feel the pressure to deviate from the model but you still need a rationale to explain your decisions. What do you do? You tinker around the edges with a hybrid model. (#13, p. 8)

School psychologists began using internal clinical judgment more flexibly. “Really, it is an atypical application of the discrepancy model. It turns into, “I rely on my own intuition, my gut instinct more than I trust the formula” (#3, p.4). A participant described her approach to identification as relying much more on her clinical expertise than the required processes:

I almost have these norms in my head so I know when I look at something I can feel...I can feel when I go through record review, I can feel ...you could just feel when you knew that they needed more or you would listen to the parents and you would know. It just seemed like they were struggling for so long that you know if you read between the lines you can see it when you do a record review, you can just kind of feel what’s happening. It just felt right to me and it just felt like that’s how I had to argue the case for the child. (#2, p. 6, 13)

In the absence of a clearly understood and universally applied process, psychologists and the systems they represent created idiosyncratic models in an attempt to make sense of the complexity (Chapman & Ferfolja, 2001). The team of professionals who worked together at the Committee on Special Education constructed a shared mental model unique to the setting. One of the consequences of locally developed models was
widespread variability from one school to another, often within the same district. Each site developed a unique local identity and psychologists adjusted their practices to accommodate the variability within the system:

People would want to get the kids referred by second grade where I could take a look at them because they knew that once they got to elementary school there is no way they were going to be eligible. (#6, p.1)

If enough people supported the youngster’s participation in a special education program… If enough people really felt that the youngster was eligible for special education then obviously we went ahead with the evaluation. We pretty much resorted to the second method, which was a little muddy eclecticism. (#3, p.2, 6)

This muddiness resulted in inequities and deepened the dissonance of professionals who considered themselves grounded in a research-based science. “There is no equity I guess is my point…my point is there is no…There isn’t any equity across the county” (#1, p. 16). Another participant noted that a child could move to a neighboring district and just by crossing the town line end up being declassified. “You begin to wonder if there is any science behind the decision making process. Maybe it is all opinion and politics” (#4, p. 9).

Elements addressed in the first category in this inquiry largely concerned the internal processes experienced by the participants. They acknowledged a growing realization that their paradigm for conceptualizing learning disabilities and their roles in the identification process were based on a flawed model. With this understanding, personal and collective dissonances surface. Each participant experienced the need to
suppress or reconcile this dissonance and several strategies were consistently employed. These included (a) trivialization, (b) denial of responsibility, (c) modification of dissonant elements, and (d) self-affirmation. Ultimately, the participants engaged in a hybrid process that includes new procedures and roles while attempting to maintain the importance of preexisting roles and skills. With these changes in role and function came additional challenges to status, relationships, and professional identity. These dimensions are explored in the next section which addresses the external adaptations associated with the adoption of RTI.

**Category 2: Recreating Roles and Relationships**

Fullan (1991) observed that change could strike deeply at the established roles, sense of competence, and self-concept of educators. As participants began to reshape their traditional roles in response to the changes in legislation and district expectations, they experienced a range of challenges to previous patterns of interaction and influence. The category Recreating Roles and Relationships describes the external process of adaptation experienced by the participants. Dimensions of the theme address changes in status, collaborative roles, and skill sets. The first dimension refers to the changes in prestige and status experienced by participants who moved outside of their traditional roles as assessment experts.

_Reconsidering status, power, and influence._ All of the participants had been in the field for at least ten years, the majority at least 20 years, and several for more than 30 years. Prior to IDEA 2004 psychoeducational assessment constituted the bulk of their professional practice. For some, this was based largely on the discrepancy model, while others were not as significantly bound by these guidelines. The element that all
participants shared was an undisputed expertise in assessment and a role as a key decision maker in the eligibility process. This theme addresses the changes in status, professional power relationships, and patterns of influence that resulted from the legislative changes.

Schein (1984) observed that there is an implicit consensus within organizations regarding the allocation of power and status. Psychologists' power arises from several sources. First, in many instances psychologists have formal authority associated with their roles. When they serve as the chairperson of a Committee on Special Education, they have the formal power to make classification decisions. Many psychologists also function in quasi-administrative roles and share supervision and coordination responsibilities for special education departments.

An equally important source of participants' power emanates from their status as experts. Because of their unique expertise and skill set, they experience the power conferred upon an expert (French & Raven, 1959). They have knowledge, advanced training, and skill that is specialized and outside of the experience of other educators, including school administrators. This is expressed clearly by one participant who noted, "In this job there are not a lot of people telling you "no" because they don't really understand what you do" (#2, p. 13). At decision-making meetings, the school psychologist is often the most influential participant, even when he or she is not the formal chair. As one said, "You went to the meeting and the school psychologist was 90% of the discussion" (#6, p. 9). Several participants spoke about the dynamic at meetings where all eyes would turn in their direction whenever it came to a difficult decision:

I'll bet you hear in most districts that they say that it's a multidisciplinary team
that makes decisions, but they always ask, "And what do you (the psychologist) think? Your decision is what? What did you write down at the conclusion of your report?" (#4, p.4, 5)

We’ll say you know that the psychologist does have a fair amount of pull not just at the Committee on Special Education, so sometimes... you could make a case for a youngster, it wasn’t a very good case but because of the strength of your position people would sometimes go along with you. (#3, p.2)

Psychologists also exercised their expert power by serving in the role of the “gatekeeper” during the classification process. As one said, “People saw me as a person that they had to get past. I was the gate keeper and they knew that the testing process had to be part of that” (#3, p. 2). Another participant agreed, and commented that she felt this was an invaluable role, “I’ve always been a gate keeper ... I hold the gate closed... because otherwise everybody would insist on taking kids out of general education” (#2, p.16).

Moving away from the test-refer-place model altered the way that participants experience and exercise their expert power. The gate keeper function is significantly altered in both positive and negative ways by the shift to RTI. One acknowledged the shift saying, “There are pretty big changes in here. I’m less in the role of the ... the gatekeeper of the services and I’m feeling that’s pretty big trying to make that shift” (#1, p. 1). Another agreed, noting, “You couldn’t do a special education referral without a school psychologist in the past” (# 6, p.7). Some participants even questioned their ability to make the shift needed to continue to make an expert contribution, saying, “Am I capable of changing of this point? Am I going to be able to provide service with this
model? Where do I fit...?” (#5, p. 2)

Coming to terms with changes in one’s own expert status requires an acknowledgment of the expertise of others:

I thought to myself, “I’m going to be an evaluator, you know, I’m going to go in there with my little test kits and I’m going to be so good. I’m going to come out with this little IQ score. I really thought ... that I was really smarter than everybody. It was very interesting until I ran into ... some teacher who’s really, really good you know...I was like, ‘Wow she really kind of knows what she’s doing. (#2, p.10)

The changes in status and skills extended to aspects of the psychologists’ roles beyond assessment. For example, consultation with teachers and administrators shifted from an expert consultation to a more collaborative, peer-to-peer process:

Before, you didn’t have to consult in a collaborative kind of way. You were an expert. It was a very different kind of consultation model. It was an expert consultation model where you were sharing your expertise with somebody...that’s a big change. (#3, p.7)

This participant continued to describe how he would need to respond to this changed expectation in order to maintain his expertise:

Instead of being an expert with regard to these process oriented tasks and only an expert with regard to those process oriented tasks, I now need to know much more about curriculum. I can’t divorce myself from that, you know. Prior to this, if the school had a conference day and it was around reading comprehension strategies that you could use in your reading program, I pretty much said, “I’ll find a better
way to spend my time.” Now I’m not going to do that because I need to know as much, if not more, than the classroom teachers do, about everything having to do with instruction. (#3, p.1)

Participants recognized that this change in expertise-based consultation threatened their job security and sense of professional identity:

So, you know... the average run-of-the-mill school psychologist ... looks around and looks at all the other professionals that are on staff and they’re going to say to themselves, “Gee, there’s overlap of their knowledge base and their skill set and mine. There’s nothing unique about what I do, so I’ve just got to do what the system requires that I do at least as well, if not better than those other people whose skill set I share. (#3, p. 19)

They’ll get somebody else who will be an expert and then the members of school psychology will start to dwindle because school systems won’t find them as valuable a commodity as they had in the past when they were actually essential. (#6, p.7)

The participants’ status as perceived experts has the potential to impact their performance. Thomas-Hunt, Ogden, and Neale (2003) demonstrated that perceived experts assume responsibility for facilitating discussions about shared and unique information. The extent to which participants questioned their own expertise, or had their expertise challenged by others, had the potential to limit the dissemination and coordination of new information about RTI. When asked if they were ready to lead the change process, several participants indicated that they were holding back and deferring to other school leaders, especially administrators because they no longer considered
themselves experts:

I feel, even I think it has to be done by the administrators you know, I don’t know, ...in a system like ours people just have to be told what to do ... it doesn’t come from a psychologist you know. It always comes from the administrators. (#7, p.11)

Another acknowledged that while she is willing to be considered a leader, she couldn’t describe herself as an expert:

But I just... I just feel I’m... I will... it’s kind of.... that’s the exciting part but it’s... I’m a little fearful of not doing it right. I’m a little you know not leery but I want to make sure I know what I’m doing before I jump in full ... force. (#11, p. 12, 24)

While all psychologists have undisputed formal power as a consequence of their legitimate authority and expert status, perhaps the most important type of social power experienced by participants is their personal, referent power. Referent power is defined as social influence that arises from a sense of identification and attraction to another person, or group (French & Raven, 1959). According to Yukl et al. (1996), the influence of experts and those with legitimate power is inconsistent and secondary to the influential power of individuals with high referent power. The ability to powerfully influence others extends beyond the content of the issue. That is, individuals under the referent power of others are willing to change their values and behavior in order to remain aligned with the referent agent.

Referent power is particularly important to school psychologists for several reasons. While their education level and skill set were unique, in most cases,
psychologists and teachers were still in a linear relationship in terms of supervisory authority. Psychologists had no formal authority to compel a teacher to follow through on recommendations, and were limited in their ability to monitor the extent to which these recommendations were implemented with integrity. As one said, "Psychologists haven’t put down the line before and teachers, I think, are very formidable sometimes" (#11, p. 19). It is therefore imperative that most psychologists cultivate and maintain positive working relationships so students can benefit from their recommendations. Most of the participants in this inquiry reported an active and purposeful approach to establishing such relationships. For many school psychologists, the importance of referent power was deep and widespread:

Any psychologist in the district definitely knows, we have a lot of ... I don’t know what the word, is a lot of prestige. Administrators consult with us and they’ll seek our opinion, and teachers trust us and they will take our advice. (#8, p.9)

Psychologists are accustomed to using their positional and personal power to influence decisions, directly or indirectly. This became especially important as the clarity and prescriptive nature of the discrepancy formula began to fall away. Within idiosyncratic models, the psychologist’s ability to leverage his or her influence in the school became essential. Referent power is highly linked to interpersonal influence. Yukl et al. (1996) illustrated a number of effective influence tactics, including (a) inspirational appeals, (b) consultation, and (c) strong rational persuasion. Participants described how they employed these tactics in their settings:

I could just make the case because I would argue and argue and argue and sort of talk her in circles. I just try and advocate for the kid and make the best decision I
think that will help. (#2, p.4)

Another participant commented on the role of an inspirational appeal in making the case for classification, “I was able to get kids into program by making those passionate kinds of arguments where they probably shouldn’t have been by law” (#4, p.7).

Many participants perceived a change in the balance of interactions with teachers as a result of the paradigm shift to RTI. As regulations evolved, psychologists experienced changes in their individual and collective roles and associated status. These challenges to their self-identity and perceptions of status created personal and professional stress:

Your status changes. Before it was and I don't remember the exact terms, but sometimes you got status as a result of being an expert. And sometimes you got status as a consequence of your ability to help somebody. Or referent power, as opposed to having that power as a consequence of what you knew, you know, the role carried with it some power like a king and the king could be an ineffectual person but the king is the king. Now, no more king so what are you? (#3, p. 8)

Bolman and Deal (1991) described the relationship between change and feelings of loss, noting, “Change disrupts existing patterns of roles and relationships, producing confusion and uncertainty” (p.393). Change also creates feelings of loss, especially for those who are on the receiving end of change, rather than the initiators. This loss response takes several forms for participants, including a personal loss of the trusting partnerships many had established with co-workers. Many participants spoke of their personal feelings of loss in the changed relationship with teachers as a result of the shifting identification and intervention paradigm:
Trying to bring everybody else on board has been...is not the easiest of things especially... I’m thinking and feeling and struggling with that. I think I kind of lost a little bit with teachers in terms of some credibility. I think that teachers say, “I know it when I see it right?” I know it when I see it, now we ask them to show it. (#1, p.5)

This participant continued:

Teachers have taken a little bit of a burn to that...some have...not all but some people who have been around for...a little bit longer and they’re feeling a little bit under the pressure. So I think I lost a little bit in terms of what I think is really important in that relationship. I think it’s a piece. It’s lost for sure. I’m sensing that’s really kind of important to me and I think it’s a tough one to lose that. (#1, p.5)

The changed relationship between psychologists and teachers created more than interpersonal tension and a feeling of loss. Thomas-Hunt et al. (2003) reported that social status impacts the acceptance of new knowledge in unexpected ways. For example, individuals were more irritated by contradictory opinions when they were expressed by those with whom they had a social connection. As a consequence, psychologists with high referent power might unconsciously suppress divergent information so they didn’t distance their peers.

We’ve had a couple of in-service [training sessions] with the teachers, just introducing them to what it [RTI] is ... but that has, you know, raised the level of ...it’s not making a difference except to heighten anxieties.... So we’ve stopped the in-services. (#11, p.3)
Psychologists’ experienced a range of negative reactions when they began to implement the RTI protocols:

I think that the burden is on me to prove RTI. You know that these aren’t just graphs we’re throwing out there because this is the “soup for the day.” Which was what some teachers thought. I think I have, and I think probably every psychologist has a lot more knowledge than they think they do, but this is a different way to use it. They haven’t had to put down the line before and teachers, I think, are very formidable sometimes. (#11, p.10, 22)

Another participant agreed that he was facing a similar interpersonal challenge noting, “This is kind of a big monster right now for our people, you know. I don’t know where the common ground is for us” (#7, p.5).

Attempts to influence another person’s thinking are more likely to meet with success when the agent of influence has higher referent power (Yukl et al., 1996). Participants experienced challenges to their referent power along with corresponding changes in their interpersonal relationships, thus making them less likely to be influential.

“I think that I’m well respected but, as far as being able to say, ‘All right here’s what needs to be done,’ that’s the thing that I don’t have as much confidence in” (#8, p.8).

I see it as a consultation kind of thing. You know, getting somebody to buy into something that he may not want to do. It takes convincing people that it’s an understandable idea and it makes sense. So again, it makes the consultation piece really important, working with my staff and it messes with the relationship you had before. …And I wonder if they’re going to listen to me and respect what I say. (#7, p.12)
This sentiment was echoed by another participant:

> You know, you are going in there and telling them what to do and what you know, in a nice, in a way that’s helpful. I think it can be hard. You know, as psychologists we have sat in our offices and done the testing. (#11, p.23)

Participants characterized these challenging responses along a continuum. Some perceived a vague feeling of having been insulted and feeling questions to their motivation. Others reported outright rejection and confrontation to their requests and recommendations.

> I do I think it takes a while to get used to that, that whole notion of teachers...coming to you wanting a service, and now it is more like, well, let’s turn that round and let’s take a look at what we’re doing a little bit differently. (#1, p. 2)

> I think some people actually felt insulted that I would ask them, “What have you done prior to coming to this meeting that ensures that we have exhausted everything within your power?” So I think people felt insulted that...I wouldn’t trust their professionalism. (#3, p. 1.)

Other participants described situations where coworkers confronted them and challenged their actions and intentions:

> But they (the teachers) used to always come to IST [Instructional Support Team] meetings and their agenda was getting help, getting tested. That was the big T word. Test them, get them tested. And if I decided I didn’t want to, it would sound like I was getting lazy you know... So, I was the case manager for this case and I had a feeling based on what the teacher was telling me, I was worried about
language, it sounded like it was probably a language problem. So in the process of the IST, I asked the speech therapist if she could at least take a look at it or see what she thought and her response to me in front of everybody was, “I won’t test until you will.” She wanted to ... put me on the spot... when (the process) doesn’t come out what they want it to be then somehow it’s my fault you know? (#2, p. 14, 15)

Another participant experienced a similar rejection when she requested that a teacher track a student’s progress:

And the teacher’s very frustrated because we’re not going right to CSE. So it’s a little bit of, “The referral processes are already in place for CSE and now you’re telling me with RTI, I’m going to have to do other things?” I think there’s a balking at documenting it, “Well, we’ve done everything and he just hasn’t succeeded.” ... so then somebody needs to get in there and say, “Well, what exactly have you done?” I think teachers are upset when that happens because I’m not a teacher and I’m asking them, “Show me what you’ve done and prove it.” (#11, p. 5)

The reality of the changes in skills, relationships, and the mental model of the role of school psychologist created a change imperative.

At some point you have to stop defending your self-esteem and start asking yourself, “What skills and knowledge do I need to have to stay viable in the marketplace? Is there a way that I can parlay the skills I have into something of value or do I need to go back to school and learn something entirely new?” (#13, p.12)
Participants addressed the changes needed to regain and maintain their status within the system in the following theme.

*Retooling.* School psychologists have a long established tradition of expertise in all aspects of assessment. As one said:

Quite frankly, any item, any questions that came up regarding measurement, it went to the school psychologist for at least an opinion about that kind of stuff, even if it didn’t have anything to do with the tests that we gave...people would ask for our opinion about things. (#3, p. 7)

The shift away from a primary focus on assessment and eligibility decisions represented an opportunity and challenge to their professional identities and skill sets. Participants experienced shifts in thinking about their professional roles. They also identified a number of areas for professional growth and *retooling.*

Learning to look at children in a new way reflects a rethinking of the psychologists’ primary role. One participant commented, “So it’s not, “what’s wrong with this kid?” That’s not the question anymore” (#1, p. 2). Another participant added:

This is a whole different way of looking at a student. You’re not bringing them out of the class and looking at a discrepancy and then taking them somewhere and hoping that special education will make them [better]. (#11, p. 18)

My mind-set is changing because of RTI. I’m thinking more...it has shifted my way of thinking to what the student needs. I know it sounds obvious but we don’t do it...think about what the student really needs, you know besides, again besides classification. I’m focusing more on, “Here is what to do rather than here’s what the test results are.” The numbers alone are not as...Not as much as
Participants recognized that they previously had a narrow focus on assessment to identify and classify, rather than to direct intervention:

There are some changes I think that I have undergone in my thinking, in terms of what we do and about the tools that we use for assessments. How meaningful are some of those [tools] and how translatable are some of those tools into actual interventions? (#1, p. 1)

We were taught the discrepancy model and we were taught how to compare IQ to achievement. We weren't really taught really well how to analyze the achievement results to target instruction. So it really was based on just identifying learning disabilities … I felt like my assessment wasn’t helping to target instruction, that I couldn’t make good recommendations out of it that really were going to help the child. (#8, p. 17)

Moving beyond using assessment primarily to identify a problem, rather than to design an intervention posed a problem for some participants:

I’m absolutely convinced that the major obstacle that school psychologists have to curriculum based assessment is they don’t know how to do it. They don’t have the experience of having done it, and so it’s foreign to them and it’s scary because they don’t know how to do it. And so they’d rather not do it. (#3, p. 13)

Increasing comfort and proficiency in order to maintain effectiveness would demand changes in skills and acquiring new knowledge. Participants identified the need to know about intervention, curriculum, and collaboration:

What is the intervention going to be? I think I’m not well versed at this point in
fitting the intervention to problems. It’s like, okay, I’ll grab from here and put it to
this problem... I want to get more comfortable with... I’m not... as comfortable
going in and looking at this intervention and that’s where I’m not as comfortable.
(#11, P.6)

Now I would say, “You better know a lot about curriculum.” And even
though you’re a school psychologist and you’re supposed to know how to assess
and do counseling, now ...you better know curriculum. (#4, p. 10)
The shift in roles and ways of looking at students requires a different relationship
between teachers and administrators. “I think it is important to look holistically but again
that should be kind of a team approach and where do I... where is my fit in that?” (#5,
 p.10)

I think it’s forcing us to work together with teachers... to really think through
what they’ve done and really trying to exhaust it. I don’t think we did that in the
past...and I think it’s forced us to take... much more of an ecological kind of an
approach to things... much more than ever before and really pushes on that. (#1,
P. 2)

The collaboration and support that comes from working closely with other
professionals was important to the following participant, “The encouragement of having
this be a team process that nobody has to own this or hold all the marbles, so to speak,
that we all need to work together” (#5, p.3).

There is widespread agreement among the participants of the importance of
collaborating with building and district administration. All of the psychologists expressed
the opinion that their personal and professional power to influence the cultural and
behavioral shifts required by RTI was limited or enhanced by the role and attitude of their administrators. It is clear that some participants felt their hands were tied by the belief systems of building and district leaders, while others felt that the administration was going too far in adopting RTI and changing the role of the psychologist substantially and unilaterally. Many participants were looking to their leaders to define the scope of their practice, while others experienced a more collaborative relationship and acted in partnership with those in leadership roles.

Recreating Identity

The collective experience of the school psychologists as they responded to implementation of Response to Intervention mandates and protocols is represented in the core category Recreating Identity. The initial stages of internal and external recreation of professional identity are embedded within the emergent model. The internal process, Recognizing a Flawed Mental Model, begins with a process of responding to the flaws that includes dawning awareness, denial, and belief persistence. The theme of reducing dissonance introduces elements of cognitive dissonance and attempts to reduce this dissonance, followed by reshaping of mental models and selective accommodating to the new reality. Attempts to bridge the old and new paradigm are represented in the metaphor “Throwing the baby out with the bath water.” Contexts and conditions driving the internal changes are (a) updates to legal mandates, (b) challenges to the empirical foundation of the discrepancy model, and (c) the absence of clearly defined and validated alternatives to the previously established process.

The external change process, Recreating Roles and Relationships, reflects adjustments in professional practice and relationships that arise from the contextual
changes. The theme of *reconsidering status, power, and influence* explicates the elements of (a) challenges to expert and referent power, (b) reestablishing status within a new role, and (c) creating new patterns for collaboration. *Retooling* represents changes in skills, collaborative relationships, and leadership roles required by accommodation to the new paradigm.
Chapter 5: Summary and Implications

Introduction

The purpose of this study is to understand the cognitive changes experience by school psychologists as they explore the new paradigm for identifying students who need special education. Understanding the cognitive shifts that occur when educators undergo a far-reaching change in established practice will inform educational leaders who seek to facilitate such systemic change.

This qualitative inquiry into the phenomenon of interest uncovers a conceptual model of the initiation phase of the change process. This model, *Recreating Identity*, explicates the internal and external aspects of a change process that occurred within a context of changing legal mandates. This chapter summarizes the research process that uncovered this model. The major features of the conceptual model are then discussed. Implications for practice, professional development, education, leadership, and further research are explored. This chapter concludes with limitations of the study.

Summary of the Research Process

Creating and sustaining system-wide educational change requires a reexamination and realignment of knowledge, skills, and beliefs about learning (Fullan, 2005). This study explores the experiences of school psychologists as they begin to implement the new paradigm of *Response to Intervention* as a part of their professional practice.

Changes in the federal legislation regarding the identification of children with learning disabilities (IDEA, 2004) established the context for this shift in thinking and
practice. The legal definition of learning disabilities was written in 1975 with the passage of Public Law 94-142 which also established the foundation for a specific role for school psychologists. As mental health professionals responsible for evaluating students, psychologists were an essential part of the process of documenting the presence of a learning disability. A prevailing approach to this identification process included calculation of a significant discrepancy between intellectual ability and academic achievement (Ysseldyke, 2005). In spite of sustained debate in the scientific literature that questioned the use of the discrepancy model, school psychologists using this method played a major role in the identification of learning disabilities for many years (Shapiro, 2000). The reauthorization of IDEA in 2004 created alternative identification processes that emphasize formative, curriculum-based assessments, problem-solving protocols, and intervention support teams (Marston et al., 2003). Generally referred to as Response to Intervention approaches, these represent a significant paradigm shift for education in general, and specifically the role of the school psychologist (Reschly & Ysseldyke, 2002).

The changes implicit in this legislation extend beyond application of new skills, and include changes in the underlying beliefs, values, and assumptions known as mental models. Mental models are implicit, deeply ingrained, and often untested and unexamined (Senge, 1990). They serve as perceptual filters, rejecting information that is inconsistent with these implicit models (Shelton & Darling, 2003), making change exceedingly difficult. The impact of the shift in thinking needed to move away from the test-refer-place paradigm to RTI was anticipated and widely acknowledged (Reschly, 2004, 2005; Truscott, Cantanese, & Abrams, 2005), but has never been the focus of direct
The significance of this study arises from its potential to provide information about the cognitive change process experienced by professionals engaged in school reform activities. The sustainability of reform efforts is largely dependent upon changing the underlying values and beliefs of those involved (Fullan, 2005). Creating conditions that support explication and reshaping of values and beliefs represents a leadership challenge and area for further study and knowledge creation. The timeliness of the study is validated by the recent changes in federal mandates (IDEA, 2004) and the subsequent processes established in New York State.

This study employs qualitative methods to answer the following research question: “How do the mental models of school psychologists change as they begin to implement Response to Intervention approaches into their professional practices to support sustainable school reform?”

Qualitative inquiry seeks to understand the meaning of a phenomenon as experienced by participants themselves (Creswell, 2003). Evolving and emerging phenomena are best explored through a qualitative lens (Creswell, 2007). The process of paradigm change implicit in the transition to RTI represents a personally and professionally relevant event that is currently unfolding for the study participants and was well suited to an in-depth, qualitative investigation.

This study employs the systematic and constant comparative method of data collection, coding, and analysis described by Glaser and Strauss (1967) and known as grounded theory. Concepts that emerge from the data analysis are integrated into an emerging theory of changing mental models of the participants.
Study participants were intentionally selected for their potential to inform the inquiry (Corbin & Strauss, 1990). The initial, purposive sample included 13 school psychologists from western New York State. These participants met the following criteria, they: (a) had a minimum of 10 years of experience; (b) were currently practicing; (c) were members of state, local, or national professional associations; and (d) had participated in at least one RTI-related learning experience. These criteria helped to establish the participants’ background knowledge which enhanced their capacity to meaningfully inform the inquiry. Three additional participants were included as a theoretical sample. These participants were identified through a “snowball” technique (Creswell, 2007) and their insights were used to deepen the data for targeted topics of interest.

Study participants agreed to engage in semi-structured, in-depth interviews which were audio recorded and transcribed. The emergent theory of the initiation phase of changing mental models is uncovered through a constant comparative process of coding, categorizing, and integration of concepts (Corbin & Strauss, 2008). Throughout the iterative process of data collection, analysis, and integration, member checking is employed to ensure credibility of the process and findings. Additional measures are employed to ensure dependability of the results. Extensive memos serve to deepen the analysis and add to the transparency of the process. Substantial quotes from the participants are reported which add to the richness and resonance of the findings.

Summary of Findings

The paradigm shift at the heart of this inquiry involves a change in the statute governing the identification process for students with learning disabilities and the
resulting impact on the professional identity of school psychologists.

The process by which school psychologists began to change their mental models is visually depicted in the conceptual model entitled **Recreating Identity** (see Figure 5.1). This model represents an evolving experience with loosely sequential, internal and external processes of adaptation and accommodation. Changing legal mandates, a growing recognition of the flaws in the discrepancy model, and challenges to the efficacy of the established protocols for identifying students for the needed services coalesced into a change imperative. This created dissonance and challenges to professional status and patterns of influence. This model demonstrates the awareness of dissonance and the reactions and responses generated by the participants. It explicates the dynamic and recursive nature of the process and explores the interrelationships between multiple external contexts and the internal schemas generated to maintain equilibrium in power, status, and influence.

Categories embedded within this model are (a) Recognizing a Flawed Mental Model, and (b) Recreating Roles and Relationships. These categories are further expanded into the themes of: (a) **responding to the flaws**; (b) **recognizing and reducing dissonance**; (c) **reshaping and accommodating**; (d) **reconsidering power, status, and influence**; and (e) **retooling**.
Figure 5.1. Conceptual Model of Recreating Identity

The first category, Recognizing a Flawed Mental Model, establishes the initial context for the subsequent stages of paradigm shift. Students became eligible for special education based on a discrepancy between measured ability and academic achievement known as the discrepancy model. This model was widely implemented and required by school and state authorities as a part of the classification process. This occurred in spite of widespread and longstanding criticism in the field (Shinn, 2007). Ultimately, legislative changes (IDEA, 2004) presented alternatives to this model and created a legal
requirement that effectively eliminated the singular use of a discrepancy criterion in the eligibility process. Participants were faced with the recognition that the model was flawed and without empirical foundation. Participants progressed through varied dimensions of dawning awareness in distinct and overlapping trajectories.

One group of psychologists gradually came to the realization that the discrepancy model represented a flawed paradigm. This dawning awareness occurred without conscious recognition but was characterized by a subtle alteration of thinking over time, in a manner consistent with Freyd (1987). Many of these participants described the dawning awareness as a by-product of their attempts to make sense of their roles, “It didn’t make sense to me...I eventually stopped reporting it” (#4, p.2). This process of personal sense making reflects Gardner’s (2004) observation that individuals can be motivated to change their mind-sets when they experience information that resonates with their personal beliefs.

Other participants were impacted by external drivers such as the professional literature, legislative changes, and opinions of experts in the field. This group of participants evidenced the belief persistence that accompanies anxiety associated with the unknown. Consistent with Schein (1984), these individuals needed the catalyst of an external event to drive their change process, “It was foisted on us. If (IDEA) 2004 hadn’t come along, we would have continued with a quite discrepant system, all under the trappings of a discrepancy model” (#13, p.9).

Ultimately, a process of dawning awareness resulted in the realization that the existing paradigm was inadequate to address problems encountered in the field. Some of the problems experienced by the participants included: (a) the lack of empirical support
for the discrepancy model; (b) the wait-to-fail consequences of the model for students; (c) the test until you find it phenomenon; (d) the increasing mechanization of the decision-making process; (e) the fact that school psychologists could diagnosis, but not fix the problems they identified with reading, writing, and math; and (f) the inconsistencies that occurred from district to district. This growing sense of crisis was a necessary prerequisite for the deconstruction of the existing paradigm (Kuhn, 1970). This deconstruction was accompanied by some dimension of cognitive dissonance and the resultant need to reduce this dissonance.

Cognitive dissonance refers to a state of psychological discomfort that arises when there is inconsistency between attitudes and actions. The discomfort creates a drive to avoid or reduce the dissonance (Festinger, 1957). Recognition of the flawed mental model created a dissonance between participants' beliefs, past practice, skill set, and current realities. One source of cognitive dissonance was related to the lack of empirical foundation for the discrepancy model which each participant recalled being taught to use. They were influenced by noted authorities in the field who gave the model added credibility and aided its perpetuation, in spite of its known flaws. When it was understood to be flawed and without empirical basis, the resulting dissonance called into question the foundational teachings of the profession. This dissonance extended to distrust of the expert opinions that are now advancing the new paradigm.

The experience of dissonance generated the next property of the conceptual model, reducing dissonance. Argyris (1994) suggests that defensive routines are triggered when dissonance arises between existing mental models and current problems. Defensive mechanisms are employed to suppress negative feelings and to maintain control. Several
dissonance reduction strategies were employed by participants, including (a) trivializing the new paradigm, (b) denying responsibility for using the flawed model, (c) rationalizing previous work, and (d) self-affirmation. Trivializing the paradigm shift took the form of calling into question the experts recommending the new protocol and minimizing the differences between current and proposed approaches. Participants distance themselves from involvement with the discredited process.

Self-affirmation emerges as a significant dimension of the property of reducing dissonance. Individual and collective affirmation is reflected in the use of the metaphor, “Throwing the baby out with the bath water.” This collective statement of self-affirmation represents a shared belief that valuable aspects of the participants’ professional contribution are being impulsively and carelessly discarded along with acknowledged problems with the discrepancy model. All participants asserted their beliefs in the value and essential contribution that their assessment processes made to the eligibility decisions. No participant accepted a new decision-making process that eliminated psychoeducational assessment.

In contrast, Shinn (2007), a leading proponent of RTI, makes the case that eligibility decisions should be based on need and educational benefit, not the traditional ability achievement discrepancy process. Shinn further notes that most school psychologists are surprised that RTI arose as a remedy for the flawed discrepancy eligibility process. As Kuhn (1970) observes, during periods of paradigm shift each faction uses its own model to argue in that paradigm’s defense. The circular nature of the arguments for and against the opposing paradigms can be understood as a reflection of the early stages of paradigm shift addressed in this emergent model.
The metaphor, “Throwing out the baby with the bath water” also reflects the selective accommodation on the part of the participants to elements of the alternative paradigm. Most came to reject the use of the discrepancy model in theory or in practice. In its place, they created alternative, hybrid systems that melded assessment information, personal influence, and inspirational appeals to secure special education services for students. These varied and partial solutions do not reach the threshold needed for acceptance as a new paradigm (Kuhn, 1970). Rather, the resulting “muddy eclecticism” (#3, p. 6) deepened the dissonance of professionals who desired to be grounded in research-based decisions. “You begin to wonder if there is any science behind the decision-making process. Maybe it is all opinion and politics” (#4, p. 9). The ongoing spiral of dissonance created by perceived gaps, attempts to reduce dissonance through defensive routines and dissonance reduction strategies, and persistent discomfort continued during the period of this study.

The second category in the model Recreating Identity is Recreating Roles and Relationships. Change invariably impacts the roles, sense of competence, and self-concepts of educators (Fullan, 1991). The participants all acknowledged challenges to and changes in their status as experts within their work setting. The mechanisms of influence that they employed were altered as they experienced a shift in the patterns of consultation with teachers, moving from expert status to a more collaborative role. They identified gaps in their professional skill sets and the need for professional development to equip them to function in their new roles. Finally, their relationships with educational leaders were redefined.

The theme of reconsidering status, power, and influence represents the continuum
of change regarding the participants' status as experts. Psychologists have been recognized authorities in understanding highly complex student learning. They possess unique skills, training, and experiences and are widely regarded as experts. They are often invested with formal authority as decision-makers on important committees.

A third and important dimension of participants' power was derived from their personal capacity to influence others. All of the participants described how they used their referent power to effect decisions either through inspirational appeals or strong rational persuasion (Yukl et al., 1996). One described using his influence in this way, "I was able to get kids into program by making those passionate kinds of arguments where they probably shouldn't have been by law" (#4, p.7). The importance of these influence factors is further illustrated by the role that psychologists played as "gatekeepers" of the eligibility process. One participant noted, "People saw me as a person that they had to get past. I was the gatekeeper and they knew that the testing process had to be part of that" (#3, p.2). Alternately holding the door to special education open, or closed to prevent inappropriate referrals, the participants used multiple forms of power and influence tactics in this role. "We have a lot of ... a lot of prestige. Administrators consult with us and they'll seek our opinion, and teachers trust us and they will take our advice (#8, p.9)."

As the participants began to implement new protocols required by RTI, they experienced implicit and overt challenges to their status as experts and to relationships that had been at the core of their professional identity. Many struggled with the loss of trusting relationships they had with teacher colleagues. One described his feelings, "I think I kind of lost a little bit with teachers in terms of credibility" (#1, p.5). They
experienced conflict that arose when they asked teachers to demonstrate the use of evidence-based interventions. One observed, “So I think people felt insulted that... I wouldn’t trust their professionalism” (#3, p. 1). In some cases, participants met with outright rejection of their requests and confrontation about their motives. One participant shared this example:

I asked the speech therapist if she could at least take a look at it or see what she thought and her response to me in front of everybody was, “I won’t test until you will.” She wanted to put me on the spot. When (the process) doesn’t come out what they want it to be then somehow it’s my fault (#2, p. 15).

Rebuilding these relationships and finding common ground with coworkers is identified as a pressing challenge at this stage of the implementation process.

Implementing RTI required the participants to broaden their expertise beyond their traditional status as assessment experts. This led to recognition that they had skill gaps in the techniques needed for success in the new paradigm. They also experienced changes in the way that they conceptualized their roles. One participant expressed it in this way:

At some point you have to stop defending your self-esteem and start asking yourself, “What skills and knowledge do I need to have to stay viable in the marketplace? Is there a way that I can parlay the skills I have into something of value or do I need to go back to school and learn something entirely new?” (#13, p.12)

The theme Retooling represents the rethinking and skill development needs expressed in the model Recreating Identity.
One of the essential thinking shifts is occurring in the ways that participants look at students and the impact of their assessments. One participant expressed it simply, “I know it sounds obvious, but we don’t do it… think about what the student really needs, you know, besides classification” (#7, p. 8).

This shift from identification and classification pushed the participants to learn more about curriculum and intervention. Participants universally acknowledged that they needed a better understanding of school-based learning and curriculum. Specifically, the link between evidence-based academic intervention and assessment results is a growth opportunity. Learning this content and skills reflects the aspect of mental models described as procedural or operational (Kim, 1993) or system-structural (Raybould, 2000). Findings from the current study are consistent with Raybould, in that these structural elements were considered by the participants to be easier to alter than the underlying constructs regarding assessment implicit in their interpretive frameworks.

The changing face of collaboration with teachers and administrators represents another dimension of the theme of retooling. Working with teachers on a peer-to-peer basis versus the previous paradigm of expert consultation requires a different set of skills, and a shared ownership of students’ success. In many cases, this process upset the traditional power relationships and put teachers in the position of being more knowledgeable than the psychologists.

District and building administrators have their own shifts to make with respect to the RTI paradigm. Participants express interest in clarifying and recreating interdependent relationships between themselves and school leaders in ways that respect their unique contributions. Creating new, balanced relationships with an emphasis on
mutual investment in the outcome is welcomed by the participants, even as they express their uncertainty about their roles, "That should be a kind of team approach and where do I...where is my fit in that?" (#5, p. 10)

In summary, the findings of this qualitative inquiry into the process of changing mental models are represented in the conceptual model Recreating Identity. The process of shifting paradigms required internal and external changes that included recognition of flaws in both the discrepancy model and the eclectic attempts to work around those flaws. The dissonance created by this recognition led to a variety of defensive mechanisms and dissonance reduction strategies. The introduction of the RTI paradigm created challenges to participants' established patterns of power, status, and influence. In turn, this generated the need for retooling of collaborative relationships, skills sets, and attitudes. Recreating Identity is best considered an emergent theory of the phenomenon of interest and reflects the selective accommodation of participants' mental models to the new paradigm. Implications for practice, education, leadership, and research are explored in the following sections.

**Implications of the Findings**

Findings of this study suggest that shifting to a Response to Intervention approach to identification and intervention of learning disabilities will include significant changes in mind-sets, roles, and relationships for all educators. School psychologists are directly impacted by these changes and are currently experiencing personal and professional implications of the shifting paradigm. There are specific implications from this study for psychologists' practice and professional development during this change process. Developing the capacity of practitioners at all levels of the system to internalize the
changes in thinking and skills will be a prerequisite for sustainability of the implementation of RTI. Implications for educational leaders are detailed. Finally, implications for further research into the process of changing mental models are explored.

Implications for Professional Practice and In-Service Professional Development

There are numerous calls in the literature for professional development for school psychologists and other educators about RTI (Danielson, Doolittle, & Bradley, 2007;Kratochwill, Volpiansky, Clements, & Ball, 2007). These recommendations largely focus on defining the skills and content needed to support and sustain system-wide implementation. The magnitude of the paradigm shift involved in RTI is acknowledged (Danielson et al.); however, there is no explicit articulation of how to address the associated cognitive and interpersonal impacts. Insights from the Recreating Identity model suggest that attending solely to the content of the professional development is not sufficient. Professional development needs to be grounded in an explicit understanding of the practitioner's current paradigm and associated cognitive, affective, and interpersonal responses. In addition, best practice in professional development provides clear direction that skills and concepts learned in isolation from job-embedded applications are unlikely to be sustained over time (Porter, Garet, Desimone, Yoon, & Bierman, 2000). Therefore, recommendations from the current study reflect job-embedded and meta-cognitive professional development strategies. Explicit attention to the structural components and interpretive frameworks of mental models is addressed.

Adult learners approach their professional development with ambivalence (Illeris, 2003). Professional development efforts must reflect a delicate balance between
participants' genuine interest in expanding personal horizons and hope for enrichment with a respect for the fear and uncertainty that arises when one feels challenged above the threshold of his or her competence. Disregarding this balance may trigger counter-productive defensive routines and dissonance reduction strategies. Personal goal setting, learning in supportive contexts with peers, and focusing on skills that have the greatest potential for immediate use and success are strategies that can facilitate adult learning. Other strategies include creating a process for open reflection on existing paradigms and a mechanism for helping participants to proactively and safely address the associated dissonance.

Shifting from an established paradigm to a new mental model ultimately results in the deconstruction of the existing model and reconstruction of the paradigm (Kuhn, 1970). During the process of reconstruction, new guiding fundamentals, knowledge, and skills are established in a gradual process of transformation. One's profession, work-related knowledge and skills are inseparable from one's sense of self (Marsick, 1990). Confusion, shifting personal identity, and a loss of certainty are therefore likely during this transformation process (Meuser & Lapp, 2004; Brookfield, 1990). Participants who experience this challenge to identity need access to information about the nature of this transformational process. Professional organizations responsible for providing in-service learning experiences must become knowledgeable about these threats to identity and proactively address them.

Clarity about the purpose and rationale behind innovation is another essential element for sustained change (Fullan, 1997). In the case of RTI, participants report a range of understanding of the intent and empirical foundation of the new paradigm.
Developing a shared understanding of key concepts will help to limit the creation of idiosyncratic interpretations that ultimately undermine sustainability. Explicit information about the goals of the RTI paradigm should be disseminated within systems. Many of the participants in this study represent leaders-in-practice who are part of professional networks. Dissemination of evidence-based information through such networks is one way to build consistency and fidelity of the new model while dispelling misinformation. These leaders-in-practice can also serve as critical friends by actively seeking out disconfirming evidence and critically evaluating newly created processes throughout the region.

Specific knowledge gaps were identified by participants. These include (a) strategies for collaborative consultation, (b) deeper knowledge of evidence-based intervention techniques, and (c) curriculum and curriculum-based assessment.

Klingner et al. (2001) observe that professionals who belong to a community of practitioners with shared values are more likely to sustain innovation. Explicit development of collaboration skills based on new protocols and shared understanding is one way to foster such communities. Within the RTI paradigm, school psychologists collaborate with general and special education teachers to create intervention plans and other supports to help students achieve success. These plans require careful attention to problem identification, identifying targeted interventions with defined goals, and creating ongoing processes to measure progress. Collaborative problem-solving consultation represents a non-hierarchical helping process with shared ownership for the success of the consultation and the student outcome (Knotek, 2005).

Skills needed to successfully engage in collaborative problem solving include
reflective listening, explicit co-creation of roles and goals, and critical problem identification. Attributes that contribute to building the relationships needed for collaborative consultation include reciprocity and consistency (Cialdini, 2001). Psychologists may need to adjust the structure of their day to ensure that they are consistently available to support teachers, especially in the early stages of intervention plans. Demonstrating an overt commitment to success of the shared goals by piloting interventions is one way that psychologists can manifest an authentic desire to share responsibility for successful outcomes. Teachers are also more likely to accept recommendations from someone with whom they can identify. Psychologists who spend the time to create mutually supportive relationships with teachers are more likely to see their recommendations implemented than those who rely on evidence and data alone.

Successful collaboration also depends on the knowledge base of the consultant. Participants identified gaps in their knowledge about curriculum and evidence-based interventions. The literature currently contains a wide range of resources about interventions. Online resources provide research summaries and technical assistance. Active engagement in collaboration with teachers will increase psychologists' knowledge of the grade level standards and demonstrate the reciprocal nature of the collaborative efforts.

Implications for Education

All of the participants express concerns for the knowledge base of newly certified psychologists. They report that professional development programs are not adequately preparing new psychologists to understand curriculum and associated interventions. Careful attention to the content of training programs will need to account for these skill
areas. Consideration should be given to having psychologists-in-training add a core of education course work to deepen their knowledge of pedagogy.

Training programs also need to consider the skills set and orientation of practicum and internship supervisors against the current expectations. In some cases, student psychologists may not have any opportunities to experience RTI protocols, problem-solving consultation, or creation of intervention plans. Leaving graduate school without the actual experience of these processes would put new school psychologists at a disadvantage in the evolving system. This would be especially problematic for psychologists who seek employment in locations which are fully implementing RTI processes.

*Implications for Executive Leadership*

When habitual roles and responses don’t work, one needs security to tolerate the disequilibrium that results (Schein, 1985). An essential leadership function during such times is to provide guidance and structure balanced with enough discomfort to motivate change. Changes in the nature of collaboration are recognized in the model *Recreating Identity*. As participants move away from their status as expert consultants into a more collaborative consultation role, they experience interpersonal challenges and occasionally, rejection. These challenges threaten the effectiveness of their recommendations. Educational leaders will need to overtly support and validate psychologists in their roles until a new equilibrium can be established (Reid, 1986). A visible partnership between psychologists and building and district leaders will provide a powerful catalyst for sustaining innovation.

This partnership between school psychologists and educational leaders can help to
clarify and maintain focus on the essential core components of the innovation. This strategy will help to focus resources on these essentials and limit the potential for the system to become overloaded by information and conflicting views. It will also help to preserve the integrity of the new paradigm and avoid the confusion of idiosyncratic adaptations that would impede systematic progress.

Avoiding the trap of false clarity (Fullan, 1991) is another critical leadership function. This requires an understanding that some people will think they have changed their mental models, when in reality they have only adopted superficial behavior change without making fundamental shifts in thinking. Such superficial changes cannot be sustained and are barriers to system-wide change. Educational leaders must listen critically to the discourse that accompanies discussions of RTI and be alert for indications that educators, including psychologists, have prematurely shut down the dissonance associated with significant change. As the Recreating Identity model suggests, this is likely a dissonance reduction strategy and only a stage in the process, not a desired endpoint. Leadership behaviors that can avoid false clarity include: (a) creating a climate of inquiry that supports open dialogue; (b) modeling reflection and explication of thinking; (c) clear and consistent dissemination of information and evidence that supports the new paradigm; and (d) public recognition of the depth of discomfort associated with change.

Educational leaders also need to recognize and address the reality that very often not everyone makes the needed shift in thinking (Kuhn, 1970). Systems for supporting those who are unable to shift their thinking must be established along with parameters for dealing with noncompliance. The success of RTI protocols relies very heavily on the
implementation of interventions with fidelity. The extent to which recommendations for changes in the classroom can be thwarted by educators who reject the changed paradigm cannot be ignored. Building systems for accountability balanced with efforts to enhance instructional capacity are essential components of a sustainable implementation of RTI.

Structural changes will be needed to support implementation of evidence-based interventions and a more ecological approach to student learning. District goals should reflect this as a shared priority. Allocation of psychological resources will need to be aligned with the change from assessment for eligibility to assessment for intervention. Psychologists will need schedules that support effective collaboration and relationship building. Long-term changes in practice will require revised policies and regulations.

Implications for Further Research

Participants in this study came from a narrow geographic region and all had 10 or more years of experience. The resulting conceptual model represents a substantive theory that is limited to these participants. Additional study including a more diverse group of psychologists and other educators is needed to further develop the emerging model of Recreating Identity into a middle range theory.

The model of Recreating Identity represents the early stages of implementation. Further study with the same participants after they have more experience with the RTI process is indicated. Fullan (1991) posits that some beliefs can be most effectively discussed only after people have some experience with the behaviors associated with the change. The importance of the metaphor, “Throwing the baby out with the bath water” suggests that changes to participants’ mental model are incomplete at the conclusion of this study. Additional study in several years will uncover whether this metaphor
continues to represent the participants’ thinking and beliefs.

Educational professionals outside of school psychology will be impacted by the changing paradigm for assessment and identification. Further research should include a broader range of educators impacted by the legal changes, including special and general education teachers, and educational leaders. System-wide implementation will be dependent on the collective efforts of all educators. Additional study of these educators will establish whether the process of Recreating Identity varies by educational specialty and help to identify strategies to facilitate systemic change.

Recreating Identity has implications for the ongoing professional development of psychologists and other educators. Research into the effectiveness of varied professional development approaches on changing mental models is indicated.

Limitations of the Study

This study uses a qualitative design, specifically ground theory. Qualitative designs are well suited for studies that seek to understand an elusive process in order to generate an explanation or theory (Creswell, 2007). But, limitations are inherent in such designs. The choice of a purposeful sample limits the generalizability of the findings (Creswell, 2003). The data collection and analysis processes used in qualitative designs also present limitations to the study. The subjective nature of the interview process and the possibility of misunderstanding or misinterpretation on the part of the participants or researcher further limit the study. A limitation implicit in the use of interviews relates to the assumption that what is shared during the interview is an accurate replication of the actual lived events and emotions (Nunkoosing, 2005).

The participants are in the early stages of implementation of the RTI processes.
The conceptual model of cognitive change is therefore limited to the initiation phase of the paradigm shift. Participants in the study were purposefully selected with a significant amount of experience so that they would perceive the cognitive shifts associated with RTI. Including participants with less experience may have resulted in a different set of findings.

Participants in the study are members of several professional associations and some knew each other before the study. The possibility exists that some may have engaged in conversations during the data collection process in a way that altered their personal responses. As active members of professional organizations, the participants were also likely exposed to position statements that may have impacted their responses. The researcher has some experience with RTI and special education referral practices through her professional role. While member checking was employed as a means of establishing the credibility and trustworthiness of the findings, it is possible that the researcher's professional experiences influenced the analysis.
References


Appendix A

Interview Protocol: A Grounded Theory Study of Changing Mental Models

Date of Interview: Time : Place: Interview Code:

Grand Tour: There have been changes in the way that psychologists think about the process for identifying children with learning disabilities.

Tell me about how this change in thinking has affected you.

Your thinking?

Your feelings?

What do you understand as the rationale for these changes?

How do you react to this rationale?

Do you feel that you are/have been a leader or a follower in this process?

As a leader, what obstacles/supports have you encountered/accessed?

As a follower, what obstacle/supports have you encountered/accessed?

What are drivers or influences for you to participate in the changes?

To avoid participation?
Describe your conversation with peers regarding these changes.

How have these conversations impacted you regarding the change?

How do you see your role a year from now with respect to these changes? Five years?

How will this be different from the way you see/feel about your role now?

How do you feel about these changes?

What are the lessons that you have learned during this process?

**Demographic details:**

Years in the profession: At this site:

Primary job functions in current role:

Highest degree attained:

Professional Affiliations:

Gender:

University Training Orientation:

With what school of psychology do you identify yourself?

Professional development within the past two years:
Can you recommend any of your colleagues who might be interested in participating in this study?
Appendix B

St. John Fisher College
Informed Consent Form

Title of study: A Grounded Theory Study of Changing Mental Models

Name(s) of researcher(s): Theresa L. Pulos

Faculty supervisor: Dr. Dianne Cooney-Miner
Phone for further information: 585 385 8472

Purpose of study:

The purpose of this study is to develop an understanding of the cognitive changes that accompany the implementation of Response to Intervention in schools.

Approval of study: This study has been reviewed and approved by the St. John Fisher College Institutional Review Board (IRB).

Place of study: a mutually agreed upon location
Length of participation: 45 – 60 minutes for the initial interview. A follow up interview may be scheduled, if needed.

Risks and benefits: The expected risks and benefits of participation in this study are explained below:

As a participant in this study there is a potential that you may feel uncomfortable with the interview process, especially when discussing a topic that may create some dissonance with your current practice. In addition, there is a time commitment on your part in that you are committing to at least one meeting of approximately 60 minutes with the potential for a follow up meeting.

You are free to discontinue your involvement at any time. You will not be
mentioned by name and all identifying information will be suppressed. Our meetings will be scheduled at your convenience in order to minimize disruption.

Your participation may benefit the field of education and school psychology by contributing to a deeper understanding of the change process. You may find the discussion to be personally and professionally stimulating.

Method for protecting confidentiality/privacy:

Audio transcripts will be transcribed by a professional transcription service and all written and audio recordings will be secured under lock and key for the duration of the study. These documents and recordings will be maintained for three years after completion of the study and then destroyed. All identifying information including names, details of work settings, professional affiliations, and university connections will be removed in order to protect confidentiality. Narrative quotes used to illustrate the concepts presented in the study will be selected and reported in a manner that preserves anonymity.

Your rights: As a research participant, you have the right to:

1. Have the purpose of the study, and the expected risks and benefits fully explained to you before you choose to participate.
2. Withdraw from participation at any time without penalty.
3. Refuse to answer a particular question without penalty.
4. Be informed of appropriate alternative procedures or courses of treatment, if any, that might be advantageous to you.
5. Be informed of the results of the study.

I have read the above, received a copy of this form, and I agree to participate in the above-named study.

Print name (Participant)  Signature
Date

Print name (Investigator)  Signature
Date

If you have any further questions regarding this study, please contact the
researcher listed above. If you experience emotional or physical discomfort due to participation in this study, please contact the Office of Academic Affairs at 385-8034 or the Wellness Center at 385-8280 for appropriate referrals.