Transactions Among Early Reading Development and Individual and Environmental Conditions: A Case Study

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ABSTRACT

Transactions Among Early Reading Development and
Individual and Environmental Conditions: A Case Study
(Under the direction of Jill Fitzgerald)

The purpose of this study is to examine the transactions among a first-grade struggling reader's reading abilities, reading-related cognitions, reading motivation, classroom behavior, and her individual and classroom reading instruction. In addition, I examined whether the transactions vary over time within the context of the Rural Early Literacy Initiative. Using a case study methodology, I analyzed observations of individual and classroom instruction, interviews of the teacher and student, assessments of the student's reading abilities, and teacher questionnaires.

This study provides early evidence of the complex, reciprocal relationships that exist across multiple child and instructional domains related to reading. Within the child's system, I observed transactions among reading instructional level, all reading sub-processes, reading motivation (particularly reading self-efficacy and reading involvement), and classroom behavior (particularly distractibility, independence, and task orientation) for one first-grade African-American girl. Most striking, her reading instructional level, reading sub-processes, and reading motivation reciprocally interrelated to one another, as mediated by reading practice. I also observed the ways in which her reading abilities and motivation affected her classroom behavior and witnessed suggestive evidence that this relationship was bi-directional.

Individual reading instruction that was matched to the student's instructional needs displayed clear transactions across the child system. To a less observable degree, I also saw ways in which classroom instruction transacted with individual instruction as well as the child system. The most notable instructional influence, the teacher-student relationship, exerted a strong reciprocal influence on reading sub-processes and instructional level, reading motivation, classroom behavior, and individual and classroom instruction, mainly via the dramatic increase in positive instructional and emotional exchanges between the student and teacher.

The transactional variations over the course of the study belong to one of three types of systems: a dysfunctional system, then a rapidly self-correcting system, and finally a self-sustaining system.

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CHAPTER 1

INTRODUCTION AND RATIONALE

The purpose of this study is to examine the transactions among a first-grade struggling reader's reading abilities, reading-related cognitions, reading motivation, classroom behavior, and her individual and classroom reading instruction. In addition, I examine whether the transactions vary over time within the context of the Rural Early Literacy Initiative. The research questions are: 1) For a struggling first-grade reader, what are the transactions: a) among selected student characteristics—reading instructional level, selected reading sub-processes, selected reading-related cognitions, reading motivation, and classroom behavior; and b) among selected student characteristics (those just named) and individual and classroom reading instruction? And 2) Do the transactions vary over time within the context of the Rural Early Literacy Initiative? In the following section I will discuss the rationale for this study and define key constructs.

Rationale

> *[R]eading disability may be approached from the perspective of the neurophysiologist interested in brain processes; from the perspective of the cognitive psychologist interested in isolating information-processing functions that explain reading ability; and from the perspective of the social-constructivist theorist interested in how social structures define, support, and suppress certain literacy acts based on the social value assigned to various activities. The issue of contention is whether the views deriving from the different perspectives can be integrated (Stanovich, 1999, pp. vii-viii).*

Examining the complex, developing *transactions* during reading instruction has the potential to significantly impact a student's reading development. We know that what

teachers do can influence students' reading growth. For instance, explicit instruction in the code improves word recognition ability (NICHD, 2000; Snow, Burns & Griffith, 1998). Similarly, instruction in vocabulary improves students' comprehension (Beck, Perfetti, & McKeown, 1982), as does comprehension strategies instruction (NICHD, 2000). Effective instruction has also been shown to help struggling readers, in particular, improve their reading achievement (Torgesen et al., 2001; Vellutino, Scanlon, Sipay, Small, & et al., 1996).

We also know that what the student brings to the reading task, such as cognition, motivation, and behavior, also relates to reading growth. A child's phonological awareness strengths, for example, support early word recognition learning (Blachman, 2000). Early vocabulary knowledge ability also correlates with later reading achievement (Share, Jorm, Maclean, & Matthews, 1984). In the motivation realm, strong self-efficacy is linked with intrinsic motivation for reading, which is related to increased reading practice and reading achievement (Guthrie & Wigfield, 1999). Student behavior, too, has been found to be predictive of future reading difficulties (Nelson, Benner, & Gonzalez, 2003).

It is also highly likely that in addition to instruction and child characteristics influencing reading development, characteristics of the child may influence a teacher's instruction. Imagine a first grader with poor phonemic awareness. During small group instruction, the teacher asks the child to build words based on the rime, "at." The student repeatedly fails to meets the demands of the task. How does the teacher respond? Does her instruction shift because of the child's difficulties? In what ways? Real-life complexities, such as the relationships among a child's poor reading-related cognitive ability, a teacher's small group instruction, and the teacher's response to a child's failures, are best examined from a *transactional* perspective. Dewey insists that the transactional view allows the

scientist to “see together” that which is often inappropriately isolated or separated (Dewey & Bentley, 1949). A transactional perspective acknowledges the need to understand the dynamic relationships among factors internal and external to the child. It also might help researchers and practitioners “move away from ‘the search for pathology’ (Sarason & Doris, 1979) and toward the specification of the conditions under which a student can and will learn” (Wixson & Lipson, 1994, p. 561).

Transactional Model of Early Reading Development

The study employs a Transactional Model of Early Reading Development (Figures 1 and 2) that I developed. It has its roots in the child development literature (see Bronfenbrenner's ecological model, 1979; developmental systems theory, Pianta, 2005; and Sameroff & Fiese's transactional model, 2000) and in a model of reading as a socio-cultural process (Ruddell & Unrau, 2004). It describes the transactions among a) the child’s reading instructional level and reading sub-processes, reading-related cognitions, reading motivation, and classroom behavior and b) individual and classroom reading instruction for a struggling first-grade reader. While Ruddell and Unrau (2004) adopt the term, “interactive,” for their model of reading, I have opted for the word, “transactional,” to evoke the connotations of development, change, and growth more commonly associated with Sameroff and Fiese’s transactional model (2000). In the Transactional Model of Early Reading Development, a child’s reading level is the developing product of the dynamic interplay between internal (child) factors and external (teacher instruction) factors. While at any given instant, one could probably not distinguish an interaction from a transaction, the word transaction evokes the connotation of ongoing interactions—an ebb and flow of interactions that repeatedly feedback on one other. I hypothesize that multiple child factors influence instruction and,

Figure 1

Transactional Model of Early Reading Development

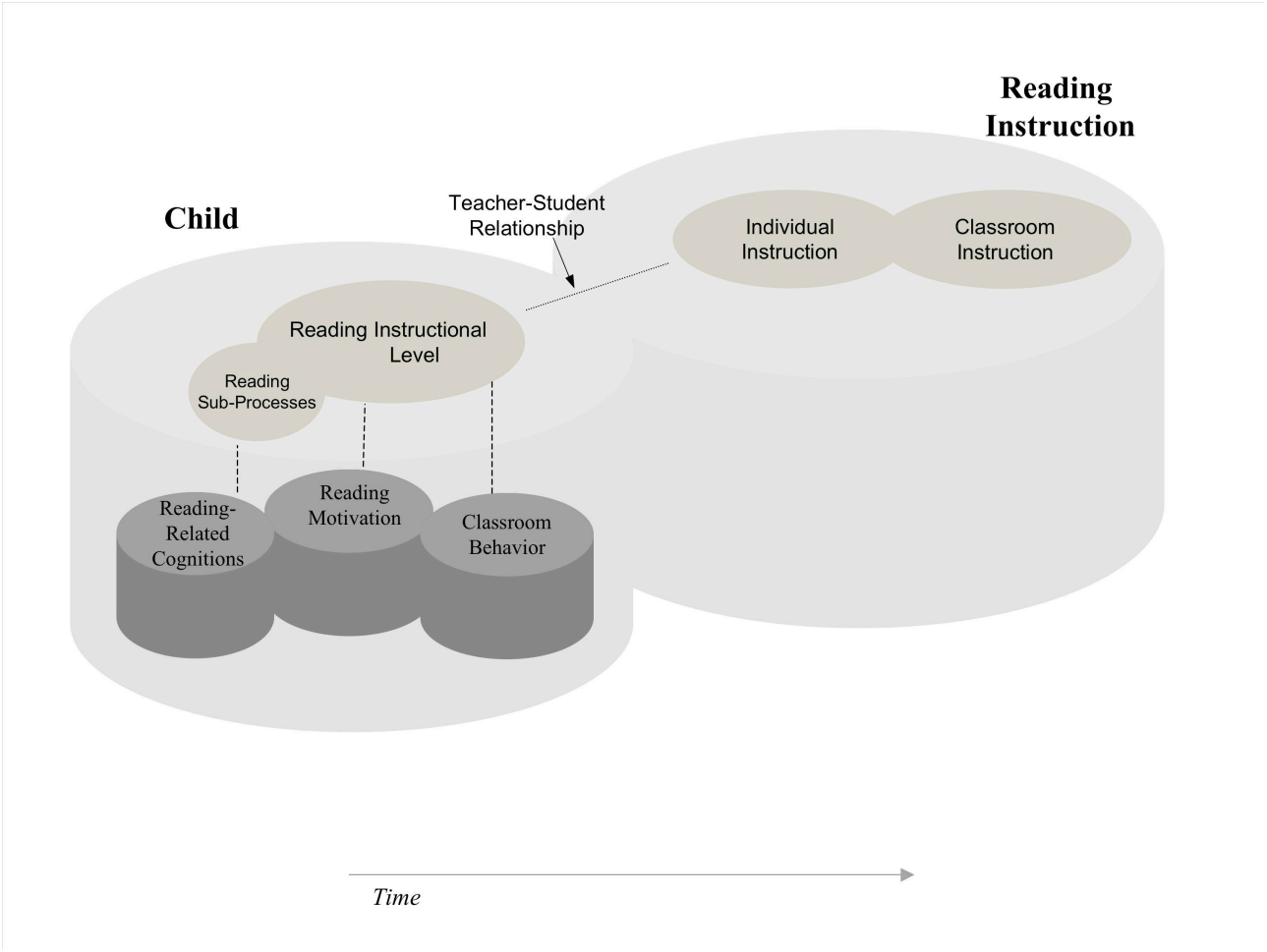
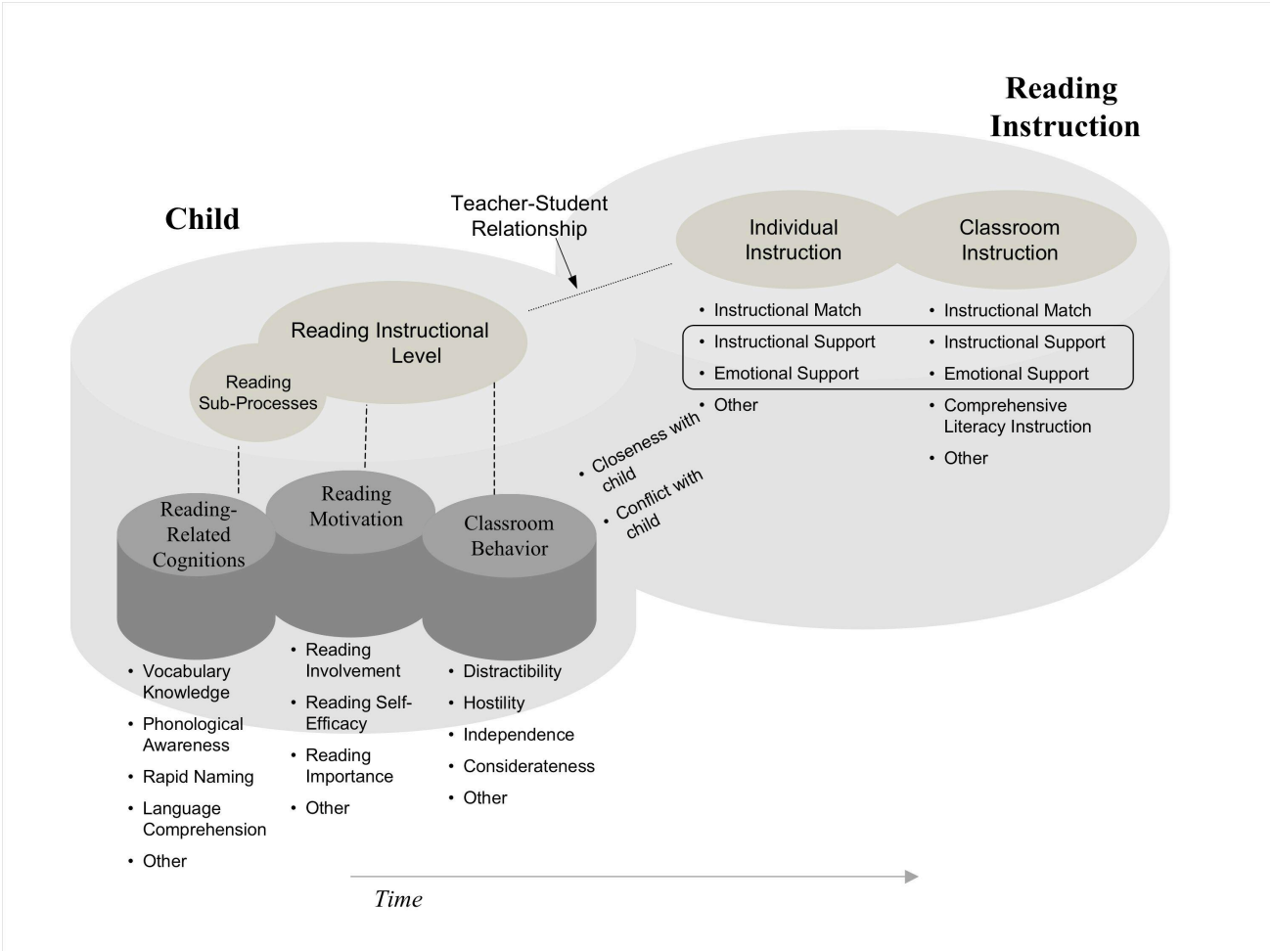


Figure 2

Transactional Model of Early Reading Development – Expanded



similarly, instruction influences reading level and several child factors (see Spear-Swerling & Sternberg, 1996; Wixson & Lipson, 1994). The hypothesized transactional relationships among child and instructional factors are expected to modulate with one another inextricably, although some factors may exert a stronger influence at certain times.

For more detail on the transactional perspective, consider each of the model's domains and how they influence one another (Figures 1 and 2). First, a child's specific cognitive skills impact the development of her reading abilities. Most notably, early preschool success in phonological processing, vocabulary knowledge, and language comprehension frequently presages future strong reading achievement (Blachman, 2000; Scarborough, 1998). Reading achievement, in turn, has a reciprocal relationship with phonological processing (Ehri, 1992), vocabulary knowledge and language comprehension (A. E. Cunningham & Stanovich, 1998). For example, a child's ability to identify initial phonemes may facilitate early grapheme-phoneme relationships and word learning. As the child's knowledge of grapheme-phoneme relationships and sight words deepens, she reciprocally develops greater phonemic awareness sensitivity because of her attention to specific orthographic patterns and their connection to phonological information.

Second, cognition alone paints an incomplete picture of the child's internal potential to read the English code, as motivation and behavior also affect her reading level (Spear-Swerling & Sternberg, 1996). For example, a person's self-efficacy (an aspect of motivation) in reading is often linked to reading outcomes. Self-efficacy is "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performance" (Bandura, 1986, p. 391; quoted in Guthrie & Wigfield, 2000). This definition highlights the connection between people's internal motivation and their behavior. Children

with high self-efficacy believe they can conquer challenging tasks, such as recognizing new words, and are willing to persist in behaviors that result in success. On the other hand, children with low self-efficacy may be more likely to give up in the face of similar challenges because of an assumption that they cannot be successful at the task. A person's self-efficacy in a particular domain, however, is not a constant, so repeated success or failure has the potential to engender either high or low self-efficacy for the given task.

The classic "Matthew effects" study by Stanovich (1986) is an excellent example of how success in reading words and particular beliefs and behaviors transact over time, yielding vastly different reading achievement levels. He describes the all-too-typical scenario where children's poor entering aptitude and knowledge of early reading skills causes initial frustration with learning to read. These early failures bring about low self-efficacy in reading, which, in turn, leads to less exposure to print. The results of these transactions are even less ability to read words, and over time, significantly diminished vocabulary knowledge, interest in reading, written language comprehension, and background knowledge. In this scenario, we see self-efficacy and other beliefs of the child reciprocally influencing cognitive characteristics and environmental conditions, such as exposure to print.

Finally, forces external to the child, especially teacher instruction, play a dramatic role in shaping reading level, and, as hypothesized by the Transactional Model, by indirectly influencing the child's cognitive, motivational, and behavioral development. For example, early preschool instruction can prepare children for the concept of the alphabetic principle, in part, through phonological awareness games and activities. Even before encountering explicit instruction in reading, phonological awareness interventions have been shown to improve the cognitive skill of phonological awareness as well as later reading achievement

(Blachman, 2000). If phonological awareness is highly teachable, experiential influences are likely to be important in its development over the course of a young child's life. Consider how individual or classroom instruction in phonological awareness can stimulate this ability in the child (cognitive ability), thereby laying the ground work for the child to have an easier transition in learning to recognize words in context (reading instructional level), which may kindle the child's positive motivational and behavioral choices. A child's reading achievement and classroom behavior may also positively impact the teacher's perception of the child, which may result in differential instruction and grouping practices and in an improved teacher-student relationship. Therefore, it is incomplete to study phonological awareness outside of the external forces that help it develop *and that react to its sophistication, or lack thereof.*

The relationship of a child's cognitive, motivational, and behavioral characteristics on a teacher's instruction is less well-studied in reading research although some evidence does exist. For example, researchers from a socio-cultural perspective have suggested that children's social and behavioral traits do affect teachers' organization and instructional decisions (Rist, 1973; cited in Coles, 1987; Vernon-Feagans, 1996). In a study of children in a poor, minority school from kindergarten to second grade, Rist observed that the kindergarten teacher grouped children on the eighth day of school, according to their behavior, language, appearance, and social background. The teacher believed her decisions were made objectively based on "ability," yet she did not assess the children, nor did she have any assessment information available. Significantly, the groups of children received differential instruction and expectations that related to academic outcomes in second grade. In this example, we see the complex transactions among child and external factors.

Presumably, within the context of school, the children's traits influenced the teacher's evaluations of them, which, in turn, guided her classroom exchanges with the children and influenced some of their cognitive abilities and eventually later achievement.

A hypothetical example of the transactions between child and instruction may help instantiate the concepts represented in the Transactional Model of Early Reading Development (Figures 1 and 2). Consider a child with intrinsically low-average phonological processing abilities. Her kindergarten teacher happens to spend little instructional time targeting phonological awareness whereas her first-grade teacher relies on phonics instruction without much phonemic support for her reading instruction. Therefore, much of the phonics may be useless to the girl because she lacks the phonological "ear" through which to make sense of the phonics information. By second grade, the girl is struggling with the code and with school in general, but her struggle is not "caused" just by her cognitive abilities—it developed through the dynamic interplay of her cognitive abilities, motivation, behavior, and instruction. However, her poor early elementary outcomes may be improved if she has developed particular motivational and/or behavioral attributes, such as persistence (Spear-Swerling & Sternberg, 1996).

Other outcomes may have been achieved by this child with only slight adaptations to her experiences. For instance, it is possible that explicit instruction in kindergarten in phonemic awareness could have improved her underlying cognitive ability, giving her more early success in word recognition, which may have then helped her to develop positive motivational and behavioral responses. Her teacher's instruction also may have been affected by the child's higher reading level, cognition, motivation, and behavior. She might have offered different instructional and emotional support to her, thereby potentially

reinforcing the upward spiral of positive transactions among the child and instructional factors.

Significance

To my knowledge, other researchers have not examined the complex transactions among child and instructional factors in the context of reading instruction and how they vary over time. If the Transactional Model of Early Reading Development is validated for a struggling first-grade reader, early elementary teachers may have a better understanding of how their instructional and emotional supports for a struggling reader can impact the child's reading level, cognition, motivation and behavior. Rich descriptions of such transactions may yield vivid images in teachers' minds of the cascading effects between the child and teacher in the midst of reading instruction.

I also expect that reading researchers may benefit from a preliminary validation of a model that expands contemporary theories. In particular, reading researchers who attempt to predict which children will have reading difficulties as well as those who attempt to remediate reading difficulties in young children could have a more complete vision with a transactional model of early reading. For example, instead of just measuring cognitive and socioeconomic status differences, a scientist might be more compelled to examine other child and/or instructional factors, such as child motivation or teacher's reading instruction, when predicting reading outcomes or when testing an intervention's effectiveness. Thus, an in-depth case study that describes a transactional model of early reading development can offer both practical and theoretical value to the literature.

Definition of Constructs

Reading

Reading instructional level is the level of reading material at which a student can look at and pronounce words and understand the content. The selected *reading sub-processes* are *phonological* and *orthographic development, phoneme segmentation, phonological decoding, fluency, phonics knowledge, and sight-word reading*. *Phonological* and *orthographic development* represents changes in the sophistication and accuracy of spellings of isolated words. Spellings are considered more sophisticated and accurate when they demonstrate more advanced phonological (sound-based) representations or orthographic (spelling-based) representations, or both (Bourassa & Treiman, 2003; Treiman & Bourassa, 2000). *Phoneme segmentation* is the ability to separate the phonemes (sounds) in a word (Wagner & Torgesen, 1987). For example, the word "meat" can be segmented into three phonemes: /m/ /ee/ /t/). *Phonological decoding* refers to the ability to translate the written word to speech (either inner speech or spoken), activated by symbol-sound correspondences (grapheme-phoneme relationships) either at the level of single or multi-letter groups (Share, 1995). For the purposes of this study, *fluency* has two meanings. Primarily it is the ability to orally identify words in a connected text with speed and accuracy (Fuchs, Fuchs, Hosp, & Jenkins, 2001) and, secondarily, it is the rate at which a given reading-related task is performed. For example, phonemic segmentation fluency is the rate at which the student is able to segment words by their phonemes. *Phonics knowledge* is oral identification of the paired-associate task of various symbol-sound (grapheme-phoneme) relationships (M. J. Adams, 1990). For example, the symbol "s" can be the sound /s/ and the symbols "wr" can be the sound /r/. *Sight-word reading* is the oral identification of words in isolation rapidly, or automatically,

from memory. Identifying words from memory excludes the use of a strategy, such as decoding or analogizing (Ehri, 2005).

Reading-Related Cognitions

Cognition refers to the mental "processes or faculties by which knowledge is acquired and manipulated" (Bjorklund, 2000, p. 3). For this study, three cognitions highly related to reading—*phonological processing, vocabulary knowledge,* and *language comprehension* (Scarborough, 2001)—are what I examine. *Phonological processing* refers to the aural awareness, acquisition, and retrieval of the phonological (sound-based) properties of our language (Wagner & Torgesen, 1987). It is described as consisting of three constructs: *phonological awareness, phonological memory,* and *rapid naming.* Phonological awareness and rapid naming are the two constructs that I focus on. *Phonological awareness* is attunement (awareness) and access to units of sounds in words and to individual sounds (Wagner & Torgesen, 1987). "*Rapid naming* of objects, colors, digits or letters requires efficient retrieval of phonological information from long-term or permanent memory" (Wagner, Torgesen, & Rashotte, 1999, p. 6). *Vocabulary knowledge* is the understanding of the meanings and uses of specific words. *Language comprehension* is the ability to receive and express thought in words, and it relies on background knowledge (including vocabulary knowledge), language structures, verbal reasoning, and written language knowledge (Scarborough, 2001).

Reading Motivation

Reading motivation is another multifaceted construct consisting broadly of the intrinsic and extrinsic purposes for reading (Wigfield & Guthrie, 1997). Specific aspects of reading motivation important to this study are reading involvement, reading self-efficacy,

and reading importance. *Reading involvement* is the "child's enjoyment of immersion or absorption in a text. This is often referred to as 'getting lost in a book'" (Guthrie & Wigfield, 2000, p. 407). *Reading self-efficacy* refers to a child's expectancies for accomplishing various reading tasks (Guthrie & Wigfield, 2000). *Reading importance* is the value that the young child places on reading and on learning to read.

Classroom Behavior

Five aspects of a child's *classroom behavior* at school are considered: *distractibility, hostility, independence, considerateness,* and *task orientation. Distractibility* is the ease with which the student remains focused on a given task and screens out extraneous stimuli. *Hostility* is the anger and aggression the child exhibits to other children in the classroom. *Independence* is the ability of the child to engage in classroom activities with little additional support from the teacher. *Considerateness* is the extent to which the child puts the needs of others ahead of her own. *Task orientation* is the degree to which the child completes a given task, despite interference.

Reading Instruction

Individual reading instruction refers to the regular, one-on-one reading instruction the student received from her classroom teacher as part of the teacher's plan to intervene with struggling learners to accelerate their rate of reading growth. The regular, one-on-one reading instruction intervention is a time set aside daily for the teacher to target instruction for a struggling reader and is a significant component of the *Rural Early Literacy Initiative* (RELI). RELI is one project of the new National Research Center for Rural Education Support. The RELI scientists are researching a sustainable, professional development model in literacy for kindergarten and first grade teachers, with particular attention to their

struggling readers. The *individual reading instruction* variable incorporates *instructional match*, *instructional support* and *emotional support*. *Instructional match* occurs when the task size, nature, and level of difficulty allows the student to be successful with the teacher's help. *Instructional support* includes instructional match, as well as other aspects of good instruction, such as scaffolding, instructive feedback, and coaching for independence. *Emotional support* refers to sensitive and positive feedback and responsiveness (Hamre & Pianta, 2005).

Classroom reading instruction refers to the daily whole group and small group reading instruction that the entire class received from the classroom teacher and/or her teaching assistant. The *classroom reading instruction* variable also includes *instructional match* and *instructional* and *emotional support* as described above. In the context of this study, as I observed classroom reading instruction, I watched primarily for these support mechanisms for the case study student. Additionally, *comprehensive literacy instruction* is another variable that I expect will relate to the other child and instructional conditions. For the purposes of this study, comprehensive literacy instruction refers to evidence-based instruction in reading and writing that includes explicit instruction in word recognition, fluency, comprehension strategies, vocabulary, and process writing with frequent exposure to a variety of texts (NICHD, 2000; Snow, Burns, & Griffin, 1998).

Teacher-Student Relationship

The *teacher-student relationship* is another relevant facet of this study as it is an embedded component of individual instruction and classroom instruction. The teacher-student relationship is, in part, the teacher's level of closeness and conflict with the student, as well as other aspects of the interpersonal connections the teacher and student may have. I

conceive of the teacher-student relationship as being influenced by the instructional and emotional support the student receives from the teacher (Hamre & Pianta, 2005).

Struggling First-Grade Reader

For this study, a *struggling first-grade reader* is a student whose reading instructional level would be considered pre-primer, as assessed by the classroom teacher in January 2006, using the North Carolina K-2 Literacy Assessment (Public Schools of North Carolina, 2005). This level is significantly behind that of her typically-developing first-grade peers. The pre-primer instructional reading level is a *beginning* first-grade level.

CHAPTER 2

CRITIQUE OF RELEVANT LITERATURE

In this study, I have drawn upon theories and research of learning and reading development that suggest that the study's multiple variables would, indeed, be expected to transact with one another. With the present critique, I will delineate those theories and research that have shaped the creation of the Transactional Model of Early Reading Development. First, with a wide angle, I will describe the theory and research behind the transactional view of learning development in general. Then I will narrow my focus to review the research that lends support to the conception that the particular variables in the child system (reading-related cognitions, reading sub-processes, reading instruction, reading motivation, and classroom behavior) would reciprocally interrelate with one another and with the variables in the instructional system (individual and classroom instruction).

The Transactional View of Learning Development

> Three-year old Kyra, with pen and pad of paper in hand, proudly asserts to her sister, "I'm working on my dissertation" (Observation, 2006).
>
> …I argue that the roles of the individual and the social world are mutual and not separable, as humans by nature engage in social activity with their contemporaries and learn from their predecessors….[O]ur cultural stress on the individual must be balanced with recognition of the interdependence of children and their social partners in cultural contexts, in order to understand the processes and goal of cognitive development (Rogoff, 1990, pp. viii, ix).

As Rogoff implies, human learning is a contextual process. Changes within the mind of a child or an adult learner are not separable from the environment in which they developed. The learner's development is not just influenced uni-directionally by the

environment. Rather, both learner and environment mutually influence one another in an ongoing process. Neither are unchanged after having encountered one another.

Dewey and Bentley (1949) popularized the importance of the *transactional* perspective, "in which is asserted the right to see together, extensionally and durationally, much that is talked about conventionally as if it were composed of irreconcilable separates" (p. 120). Their scope was wide, defining procedures for encompassing all of human learning. They were passionate about not shattering "the subjectmatter into fragments in advance of inquiry and thus destroy[ing] instead of furthering comprehensive observation of it" (p. 120). For example, when we isolate three reading-related cognitions and use them to explain reading achievement, we fragment the inquiry and disallow a complex lens of study on reading achievement that would include cognitions and many other aspects of the interconnected puzzle.

Dewey and Bentley's transactional view has rippled across numerous fields of discourse, from anthropology to sociology, including Rosenblatt's transactional literary theory (1969). The manifestation of the term "transaction" that I adhere to for the present study is better exemplified by Sameroff and Chandler (1975) and extended by Sameroff and Fiese (2000). These authors argue for a lens on the "development of the child [that] is seen as a product of the continuous dynamic interactions of the child and the experience provided by his or her family and social context" (Sameroff & Fiese, 2000, p. 142). In 1975, Sameroff and Chandler challenged the prevailing views that poor child outcomes were the direct causal result of early brain abnormalities. The development of the child was not simply a linear connection between poor beginnings and poor outcomes. Sameroff and Chandler reviewed research that argued for a more complex transactional model of development. For example, a

mother has a baby born under difficult circumstances. The stress of the event and her interpretation of the event cause her to handle her baby anxiously. The underweight baby, in turn, develops sleeping and eating habits that are difficult to manage. The parents conclude that the child has a difficult temperament, and the mother avoids interacting with the child. The child may later exhibit poor language abilities. So, was the child's low verbal abilities the direct result of a difficult birth? Or, was this poor outcome the result of the transactions among child, mother, family, and culture over several years? Both Sameroff and Chandler (1975) and Sameroff and Fiese (2000) conclude that the latter is a better frame for considering the development of the child. Other writers have similarly theorized of child development as occurring via nested systems of interaction, including the biological, psychological, cognitive, and environmental systems (see Bronfenbrenner's ecological model, 1979; Pianta's developmental systems, 2005).

These dynamic, bi-directional influences between the child and the family are not to be conceived of as a ping-pong ball bouncing back-and-forth between two fixed walls. A better metaphor would be that of an intimate tango between the child and the environment—each leading the way, winding across the dance floor. The uniqueness of each child's experience with his environment is why Rogoff argued against separating the child from the context—writing "the whole does *not* equal the sum of the parts; the whole has an essential character and process that must be studied for itself" (1990, p. 28). In sum, the transactional perspective considers how children develop in the context of their environment through dynamic relationships between the child and the environment that modulate with one another inextricably.

Transactional Model of Early Reading Development

I adopt the transactional perspective for the creation of a Transactional Model of Early Reading Development (Figures 1 and 2). The model interprets a young child's reading level as the developing product of the dynamic interplay between internal (child) and external (teacher instruction) factors. Based on theory and research, I selected for the model the child and teacher factors most expected to influence reading level in the first-grade year. Specifically, it describes the transactions among a) the child's reading instructional level and reading sub-processes, reading-related cognitions, reading motivation, and classroom behavior, and b) individual and classroom reading instruction for a struggling first-grade reader. In the following sections, I will elaborate on the theory and research that validate the expected transactions between these particular child and instructional variables.

The Transactional Model of Early Reading Development springboards from the model of reading as a sociocognitive interactive process by Ruddell and Unrau (2004). They describe the reading process at the juncture of the reader, the text and the classroom, and the teacher. In the midst of the reading process, "these three components are in a state of dynamic change and interchange while meaning negotiation and meaning construction take place" (p. 1464). According to Ruddell and Unrau, the teacher and reader's cognitive and affective conditions and their use and control of knowledge are all bi-directionally interconnected. The Transactional Model of Early Reading Development also embraces the importance of context and the mutual interdependence of cognition, processes (or knowledge use), and motivation, and it augments these domains by incorporating classroom behavior and teacher-student relationship. More significantly, a different model for the development of early reading is appropriate for the current study, as the historic sociocognitive interactive

model does not elaborate on the uniqueness of the word identification acquisition process or include contemporary research of word acquisition. As a child learns to identify words, she faces unique challenges that more advanced or adult readers do not face, so the Transactional Model of Early Reading Development integrates contemporary theories and research of early reading processes and development.

The Multiple Transactions Integrate Multiple Theories

In keeping with Dewey and Bentley's (1949) admonition to "see together" things and events, I will integrate four research-based reading theories that usually skim past one another to describe how child and instructional factors would be expected to transact with one another. Using the theoretical lenses of Share's self-teaching hypothesis (1995), Stanovich's Matthew effects explanation for developmental differences in reading (1986), the model of reading as engagement (Guthrie & Anderson, 1999), and early literacy development in the context of the teacher-child relationship (Pianta, 2006), I will attempt to depict a comprehensive picture of early literacy development embracing reading and its sub-processes, cognition, motivation, behavior, instruction, and teacher-student relationships.

The Self-Teaching Hypothesis

First, the self-teaching hypothesis (Share, 1995) provides an excellent frame for explaining the cognitive mechanisms that lead to successful word acquisition. Share contends that the experience of phonologically decoding (which Share terms "phonological recoding")—supported by the text's context—provides the young reader with opportunities to self-teach more about the phonological (sound-based) and orthographic (spelling-based) properties of novel and known words. The phonological decoding process relies on phonemic awareness and grapheme-phoneme knowledge sufficient enough for the young

reader to deduce the novel word. Each word-learning opportunity provides her with another chance to learn slightly more about both the phonological and orthographic properties of the word and of letter combinations typical to English words, in general. The more successful the reading practice, the more likely the student will absorb more information about the "inside parts" of words.

What explains the variation in students' facility to absorb this orthographic information is still in debate. One perspective favors rapid naming, as measured with a Rapid Automatized Naming (RAN) task, as the best explanation for a secondary causal factor in explaining reading acquisition differences. Rapid naming is a complex neuropsychological construct involving the integration of a host of cognitive processes: the attentional, perceptual, memory, semantic, phonological, and motoric processes must all operate together in a precise temporal sequence. Maryanne Wolf (1991) credits Geshwind (1965) as having set in motion a now surging interest in the cognitive research world between naming speed and reading. He hypothesized that an early indicator of a child's future reading achievement would be his ability to name colors. Naming colors accurately, he thought, would show the child's incipient skills in learning to attach a verbal label with the printed word. This connection bridging visual/perceptual encoding with the retrieval from memory of a lexical referent has stayed the course of nearly 40 years of research in reading, although for several decades lexical processes (including phonological processes) have been the greater focus of cognitive psychology researchers. Naming speed frequently receives credit by researchers as explaining more variance in early reading achievement than is explained by phonological awareness, IQ, or attentional capacities alone (Ackerman &

Dykman, 1993; Blachman, 1984; Wolf, 1991; Wolf & Bowers, 1999; Wolf, Bowers, & Biddle, 2000).

Wolf and colleagues (Wolf, 1991; Wolf & Bowers, 1999; Wolf, Bowers, & Biddle, 2000) presume a psycholinguistic model of reading to explain the sub-processes involved in the act of naming in hopes of elucidating a possible theory of how this construct relates to reading. When presented with the RAN task, a child first must attend to the page, visually scan the symbol, and integrate it with stored mental representations, both orthographic and phonological. Then this integrated representation calls up phonological labels, incorporating semantic information. Finally, these sub-processes allow the articulation of the symbol. Although these processes were described in a linear fashion, instead, a better conceptualization would depict the simultaneous activation of these sub-processes. Wolf and colleagues emphasize that the very complexity of the task described above suggests that naming speed entails much more than just phonological processing. Theoretically, naming speed describes the integration of other cognitive processes that further explain individual differences in reading achievement, beyond phonological processing alone.

However, the other perspective puts forward orthographic knowledge, as measured with orthographic learning tasks, as a better conceptualization of another cognitive ability that supports word learning (A. E. Cunningham, 2006; A. E. Cunningham, Perry, & Stanovich, 2001; Stanovich, 2000; Stanovich, West, & Cunningham, 1991). In some studies, young elementary students' prior orthographic learning, rather than RAN, explains additional variance in word learning ability beyond general decoding ability (A.E. Cunningham, Perry, & Stanovich, 2001; A. E. Cunningham, 2006). Regardless, scientists from both perspectives

agree that both phonological and orthographic processing are interrelated, yet separate, core cognitive agents in word acquisition.

The following example may help instantiate how these processes may operate with one another. Consider a young learner who attempts to phonologically decode an unfamiliar word in the context of connected text. Her partially correct decoding attempt, along with semantically- and syntactically-based guessing, triggers a correctly identified word. Not only does she accomplish the task of recognizing the word, she has the power to induce more refined phonological and orthographic information about that word as well as about words that have similar letter strings. For example, our dear reader encounters the sentence, "Henry and Mudge walked by the grocery store." She correctly identifies the words, until she pauses at the word, "grocery." She begins her attempt, "/grō--/," and then pauses because she cannot think of any word that would fit in the story that sounds like /grōk/, her initial mental guess. After almost instantaneously considering the picture and the previous parts of the story, she determines the word is "grocery" and she continues reading. From this one encounter with the word, "grocery," her pattern-seeking mind (M. J. Adams, 1990) would have the opportunity to file away both the orthographic information that "c" can be read with a /s/ sound and the phonological information that what she had previously heard as /grō shree/ is actually pronounced /grō su ree/. This "positive learning trial" (Jorm & Share, 1983) provides the opportunity for refining both phonological and orthographic mental representations. Share's model of word learning helps clear up the confusing research that suggests that phonological awareness is both a prerequisite and an outcome of reading (Ehri, 1992; Frost, 2001; Mann & Wimmer, 2002; NICHD, 2000; Perfetti & et al., 1987; Share, 1995; Stanovich, 1986, 2000). The child with sufficient phonological sensitivity has more

prospects for more carefully discriminating among slight variations of both phonological and orthographic information. With repeated exposure to print, she builds a more and more sophisticated sight-word bank. Thus, phonemic awareness, phonological decoding, sight-word reading, and reading practice are reciprocally interrelated.

The Matthew Effect

Second, although phonological awareness is a prime causal agent explaining cognitive variation in early reading acquisition, it does not, of course, explain all sources of cognitive variation. Researchers have also shown that general language comprehension and vocabulary knowledge correlate consistently with literacy development (Chall, Jacobs, & Baldwin, 1990; A. E. Cunningham & Stanovich, 1997; Feagans & Short, 1984; Hart & Risley, 1995; Scarborough, 2001). Stanovich's oft-cited Matthew effects theory of reciprocal influences over the course of reading development explains individual differences in several cognitive domains (1986). The term "Matthew effects" comes from Jesus' parable in the gospel of Matthew, "For everyone who has will be given more, and he will have an abundance. Whoever does not have, even what he has will be taken from him" (NIV; 25:29). The analogy popularized by Stanovich is that those children who enter school well-equipped to learn to read will continue to gain in achievement while those ill-equipped will only grow in their frustration. In addition to elaborating on the significant, bi-directional relationships between phonemic sensitivity and early word recognition development, Stanovich explains how early reading success often spurs extensive reading practice, which, in turn, results in enriched vocabularies and general language use.

Further research continues to support the Matthew effects phenomenon with regard to language and reading. Pre-school and kindergarten oral language experiences and

achievement predict vocabulary development and reading comprehension in early elementary (Hart & Risley, 1995; Scarborough, 2001). Later reading practice predicts vocabulary and comprehension, as well, even after partialing out cognitive ability (West & Stanovich, 1991). Given that reading achievement is associated with reading practice (Anderson, Wilson, & Fielding, 1988; A. E. Cunningham & Stanovich, 1997; McBride-Chang, Manis, Seidenberg, Custodio, & et al., 1993), these relationships do, indeed, suggest another reciprocal causation mechanism as Stanovich purports—this time between vocabulary and reading achievement.

Reading As Engagement

Other non-cognitive outcomes are also implicated by the Matthew effects proposal. Stanovich writes, "the initial specific problem may evolve into a more generalized deficit due to the behavioral/cognitive/motivational spinoffs from failure at such a crucial educational task as reading" (1986, p. 393). It is at this juncture of cognition, motivation, and behavior that I invoke the engagement model of reading (Guthrie & Anderson, 1999) in order to integrate these three domains. Stanovich and Share both hint at the motivational necessities for a learner to have ample exposure to print but do not expand on the theory and research that explain why a child might elect to read. Guthrie and Anderson explain how an engagement theory of reading fills this void:

> Reading traditionally has been defined as a set of skills or competencies (Anderson, Hiebert, Scott, &Wilkinson, 1985; Huey, 1908; Ruddell, Ruddell, & Singer, 1994)….We believe this achievement-oriented view of reading is accurate but incomplete. In our view, reading should be conceptualized as an engagement….[E]ngagement in reading is a motivated mental activity with vital consequences for world knowledge and social participation (1999, p. 17-18).

They contend that engagement in reading is a "dynamic system" consisting of motivation, knowledge, strategies, and social interactions (1999). While Share (1995) and Stanovich (1986) elaborate on the reciprocal relationships between knowledge and strategies for the

early reader, Guthrie and Anderson highlight motivation as a mediating, bi-directional factor in children's reading experiences. "As motivation increases, engagement increases. When students are intrinsically motivated, they learn to use cognitive strategies for reading…As students gain conceptual understanding, their sense of self-efficacy grows and their motivations for reading increase…" (1999, p. 20).

Numerous aspects of reading motivation have been described and researched (e.g., Baker & Wigfield, 1999; Wigfield & Guthrie, 1997). Two intrinsically-related aspects of motivation, self-efficacy and involvement, have been found to correlate strongly with exposure to print (Wigfield & Guthrie, 1997)—the variable hypothesized by Share (1995) and Stanovich (1986) to be a powerful mediator of reading achievement. Self-efficacy is "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performance" (Bandura, 1986; quoted in Guthrie & Wigfield, 2000). The self-efficacious reader elects to read more, which, by virtue of the importance of reading practice, often leads to greater reading achievement. The involved reader enjoys "the experience of 'getting lost' in a book" (Guthrie & Anderson, 1997; p. 21) and is more likely to search out more opportunities to read. Aspects of intrinsic motivation, such as self-efficacy and involvement, predict exposure to print (Wigfield & Guthrie, 1997), and we know that exposure to print predicts reading achievement (Anderson et al., 1988; A. E. Cunningham & Stanovich, 1997; McBride-Chang et al., 1993). Thus, motivation may mediate the reciprocal relationship between reading-related cognitions and reading achievement, via the importance of reading practice.

Classroom Behavior

In addition to motivation, Stanovich predicted another "spinoff" from an early failure to learn to read: problem behavior. A student's difficulty with the prime task of his school day, reading, may cause an increase in his disengagement with reading and possibly with school in general. Or, perhaps underlying characteristics of the child develop into both difficulties with reading and problem behaviors. In an influential review (1992), Hinshaw explains that inattention and externalizing behaviors (e.g., defiance, disruptiveness, aggression or hyperactivity) both correlate with early academic difficulties, and these connections grow stronger as students move through primary, middle, and high school (see also S. B. Miles & Stipek, 2006). The early co-occurrence is suggestive of an underlying causal connection, and the strengthening of the relationship is suggestive of a feedback loop. Hinshaw found that externalizing behaviors commonly have their routes in low socioeconomic status, subaverage IQ, language deficits, and neurodevelopmental delay, so their effects are expected to be diverse and not overlap completely with reading or academic difficulties. Indeed, he writes, "[g]iven the interactions and transactions among social, familial, linguistic, and neurobehavioral variables that may culminate in the overlap between underachievement and externalizing behavior, teasing apart the effects of any single background factor is likely to be quite difficult or even misguided" (1992, p. 151).

Experimental evidence from two small studies points to the importance of reading sub-processes and achievement as mediating variables in reciprocal relationships with classroom behavior. In one study, seven first-grade students from five different classrooms who were identified by their teachers as having externalizing behavior and poor reading abilities were provided a phonological awareness-based reading intervention in small groups. Multiple baseline analysis of the changes indicated that as beginning reading abilities

(phonological decoding and fluency) rose, externalizing behaviors in the classroom and playground diminished. The authors concluded that "for some first-grade children, secondary interventions targeting academic skills resulted in positive collateral effects on behavior" (Lane, O'Shaughnessy, Lambros, Gresham, & Beebe-Frankenberger, 2001, p. 1071). Similarly, another experiment tested the effects of reading tutoring for 10 kindergarten through second-grade children whose teachers identified them as low in academic skills and high in aggression. Most of the tutored students improved in their reading abilities and their classroom time-on-task, but only a small minority of non-tutored students made gains. The greater the gain in reading abilities, the greater the gain in time-on-task (Gest & Gest, 2005). Gest and Gest conclude, "[t]he most parsimonious explanation is that promoting reading skill development provides children with the prerequisite skills to engage in classroom tasks that require some form or reading" (2005, p. 41).

The conclusion of Gest and Gest leads us full-circle back to the first variables described in the child domain of the Transactional Model of Early Reading Development. Cognitive, motivational, and behavioral traits of children relate to early reading development, and they transact dynamically over the first years of school (Snow et al., 1998; Stanovich, 1986). Cracking the code is a necessary, but not sufficient, component of reading development. Reading-related cognitions such as phonological awareness and general language abilities certainly relate to early reading achievement, yet they interrelate over the early years of learning to read with motivation, reading practice, and classroom behavior. Each domain represents a crucial piece of the puzzle of early reading development.

The Teacher-Student Relationship

For most children, the teacher stands at the nexus of the child's incipient reading system. The extent to which a teacher is able to provide the student what she needs instructionally and emotionally will likely account for much of the student's success or difficulty. Pianta (2006) conceives of the successful literacy system developing within a teacher-student relationship that provides sufficient instructional and emotional support. Reading researchers are accustomed to considering the powerful influences of teachers' instructional actions on students' reading achievement. For example, researchers have shown the difference that storybook reading has on language and reading achievement (Bus & et al., 1995; Dickinson & Smith, 1994), the impact of phonological awareness instruction on future reading achievement (Ball & Blachman, 1991; Blachman, 2000; NICHD, 2000), the significance of fluency instruction (NICHD, 2000; Rasinski, 1990; Rasinski & et al., 1994), the benefits of vocabulary teaching for vocabulary and comprehension (Beck et al., 1982; NICHD, 2000), and the effectiveness of teaching comprehension structures and strategies on reading comprehension (Fitzgerald & Spiegel, 1983; Gersten, Fuchs, Williams, & Baker, 2001; NICHD, 2000; Spiegel & Fitzgerald, 1986).

Not only is the content of instruction important, but the form or organization of instruction has been shown to have significant predictive ability on students' achievement (Connor, Morrison, & Petrella, 2004; Connor, Morrison, & Slominski, 2006; Pressley, Gaskins, Solic, & Collins, 2006; Taylor, Pearson, Clark, & Walpole, 2000; Wharton-McDonald, Pressley, & Hampston, 1998). For instance, researchers have studied the ways in which schools in high-poverty areas "beat the odds" by demonstrating greater student achievement than would be predicted by school demographic characteristics (Taylor et al., 2000; Wharton-McDonald et al., 1998). In addition to finding the importance of explicit

reading instruction and encouraging feedback, these researchers highlight the importance of instructional conversations and instructional density; high-quality teachers have students with higher achievement and often provide more literacy instruction to their students. Instead of relying solely on whole-class instruction, high-quality teachers more often teach in small groups and their students more often read independently.

Besides the importance of instructional support via effective content and organization, the teacher-student relationship also depends on emotional support, which is less often considered by reading researchers. However, scientists are more recently showing interest in emotional support as a critical variable explaining reading achievement. For example, in an analysis of 787 first-grade students from the NICHD Study of Early Child Care and Youth Development, Connor and colleagues (2005) found that students with classroom teachers who were rated as emotionally responsive and who offered more academic instruction time were more likely to have higher vocabulary knowledge and word recognition. Similarly, in another large-scale study, Hamre and Pianta (2005) found that students at risk for academic and behavioral difficulties in kindergarten had academic achievement and student-teacher relationships like their low-risk peers at the end of 1st grade—if they were in a classroom with a teacher who provided high-quality instructional support. They characterized teachers providing high-quality instructional support by their effective literacy instruction, feedback, conversations, and encouragement of independence. These studies and others (Bogner, Raphael, & Pressley, 2002; Dolezal, Welsh, Pressley, & Vincent, 2003; Pressley et al., 2006) contribute to a growing evidence base that the teacher-student relationship influences reading outcomes mainly through instruction and emotional support.

Interestingly, some studies have also found a bi-directional relationship between students' characteristics and teachers' behaviors (Klem & Connell, 2004; Skinner & Belmont, 1993; Thijs, Koomen, & van der Leij, 2006). In a description reminiscent of Stanovich's Matthew effects (1986), Skinner and Belmont found strong support

> for reciprocal effects that are magnificatory, in which positive student engagement elicits positive teacher behaviors. Teachers respond to children who have initially high behavioral engagement with more involvement, more autonomy support, and even to a degree, more contingency and consistency, and they respond to children who are more passive with correspondingly more neglect, coercion, and even inconsistency. Because these supports have an impact on children's subsequent engagement, this means that children who have high behavioral engagement are treated in a way that is likely to increase their active participation in class, whereas teachers deal with children who have lower behavioral engagement in a way that will exacerbate their initial passivity and withdrawal from learning activities (1993, p. 578).

Thus, instructional and emotional support impacts the teacher, who in turn is influenced by student characteristics and behaviors.

Unfortunately, scientists have uncovered ways in which teacher assumptions and organization also appear to bias their treatment of children with differing economic, cultural, and racial backgrounds (R. Rist, 1970; R. C. Rist, 1973; cited in Coles, 1987; Vernon-Feagans, 1996). Both Rist and Vernon-Feagans found that early elementary teachers grouped their low socioeconomic students into low ability groups, with no regard for the children's true abilities. Low ability groups also received poorer instructional support and challenge. Rist (1973; cited in Coles, 1987) found these differential treatments also related to diminished academic outcomes by second grade.

These transactional processes between student characteristics, teacher practices, and student outcomes can be viewed through the lens of self-fulfilling prophecies (Jussim & Eccles, 1992). A teacher's expectations for an entering student based on characteristics of

the student may influence how she responds to a child. A lowered expectation of a child's potential may limit the challenge that a teacher sets before the child and may limit the extent to which she pursues acceleration of the student's achievement. Given the powerful impact of a teacher, these lowered expectations and challenges could cause weakened student outcomes. In sum, quality of instruction and related achievement is somewhat influenced by reciprocal relationships between child traits and abilities and teacher beliefs and practices.

Instantiating the Implications of a Transactional Model of Early Reading Development

Given the complexity of the theoretical argument that reading develops transactionally across multiple child and instructional factors, a hypothetical example may help instantiate the potential relationships. Consider a boy from a low-income household entering kindergarten. He has average general language abilities and has occasionally been read to by his single mom, but he has not yet shown an interest in print, and he has little phoneme awareness. He knows how to spell and recognize his name but has no other sight word knowledge. He also knows the names of several letters but only three letter-sounds.

During kindergarten he receives considerable whole-group instruction in letter names and practices writing them, yet he does not attend to the teacher's instruction all of the time and he does not make a connection between that activity and reading words and books. He forms a weak or non-existent concept of the alphabetic principle. In other aspects of literacy, the teacher often reads books aloud, which he generally enjoys, yet he rarely engages in instructional conversations with her or his peers about these books. As the year goes on, his difficulty in learning letter-sounds at the same rate as the top half of the class is likely a result of the transaction among his low entering phonemic awareness and letter-sound knowledge, his limited understanding of the alphabetic principle, the teacher's instructional content and

form, her response to his struggles, and his moderately immature attentional and self-regulation systems.

With few interactions with her, over time he loses some of his intrinsic motivation to complete handwriting and letter name worksheets, and occasionally he gets in trouble after wandering off-task. The teacher perceives him to be "a slow learner" who is also not trying his best. She determines that he cannot be expected to understand some of the more complex discussions she has with the "top students," and she does not encourage him to look at or read books on his own. As he leaves kindergarten "behind in reading," with attenuated motivation and a slight history of behavior problems, his position at the bottom of the educational hierarchy may already be fixed, unless a caring, knowledgeable teacher, or several such teachers or family members interject an unusually intense amount of instructional and emotional support. Thus, his potential to succeed is inextricably intertwined with his environment's potential to succeed with all children.

In summary, this hypothetical example displays the transactional network of relationships between child and instructional systems and emerges from contemporary theories and research. The child's cognitive, motivational, and behavioral characteristics reciprocally interact with one another, in addition to reciprocally interacting with his relationship with the teacher, who provides instructional and emotional support. The child's developing reading abilities, then, are the continuously adapting product of child and instructional factors. The transactional lens provides a comprehensive perspective of the complex, unfolding early reading development of young children.

CHAPTER 3

METHODOLOGY

In this section I will detail the methodology for the case study. First, I will provide an overview of the study design. I then describe the participants and setting of the study, including the context of the broader study, the Rural Early Literacy Initiative (RELI). I also explain my own researcher background and perspective as a key context for the study. Next, the data collection section describes each data source, including instruments, observations, and interviews. This section is followed by the data collection schedule. Tables 1 and 2 in the appendices are helpful overviews of the data sources, variables, and timing. I end the methodology section with my data analysis plan.

Design

For this case study (Yin, 2003), I selected one first-grade teacher and one struggling first-grade reader in her class from the RELI experimental school. I utilized RELI data sources of the child's reading instructional level, phonological processing, and vocabulary knowledge collected in December 2005, and of teacher-reported child behavior and teacher-student relationship collected in January 2005. I began collecting additional child assessments, teacher and student interviews, and observations of both individual and classroom instruction in March and completed data collection in early May 2006 (see Table 1). I assessed reading abilities once a week, interviewed the teacher and student once a month, observed individual instruction twice a week, and observed classroom instruction

Table 1

Data Sources by Research Construct

Construct	Type	Variable	Sources	Participants	Timing
Reading Instructional Level	Instrument	Reading Instructional Level	Qualitative Reading Inventory-3 (QRI-3; Leslie & Caldwell, 2001)	Student	December, March, April, & May
Reading Sub-Processes	Instrument	Phonological and Orthographic Development	Treiman-Bourasso Early Spelling Test (T-BEST; Treiman & Bourasso, 2000)	Student	March & May
	Instrument	Phoneme Segmentation	Phonemic Segmentation Fluency--Dynamic Indicators of Basic Early Literacy Skills 6th Edition (DIBELS; Good, Kaminski & Smith, 2002)	Student	March and weekly thereafter
	Instrument	Phonological Decoding	Nonsense Word Fluency--Dynamic Indicators of Basic Early Literacy Skills 6th Edition (DIBELS; Good, Kaminski & Smith, 2002)	Student	March and weekly thereafter

Table 1 – Continued

Data Sources by Research Construct

Construct	Type	Variable	Sources	Participants	Timing
	Instrument	Fluency	DIBELS Oral Reading Fluency--Dynamic Indicators of Basic Early Literacy Skills 6th Edition (DIBELS; Good, Kaminski & Smith, 2002)	Student	March and weekly thereafter
	Instrument	Phonics Knowledge	Researcher-made assessment	Student	Early & late March & May
	Instrument	Sight-Word Reading	Researcher-made assessment, using list by Fry et al., 1993	Student	Early & late March & May
Reading-Related Cognitions	Instrument	Vocabulary Knowledge	Peabody Picture Vocabulary Test-Third Edition (PPVT-III; Dunn & Dunn, 1997)	Student	December & May
	Instrument	Phonological Awareness	Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen & Rashotte, 1999)	Student	December & May

Table 1 – Continued

Data Sources by Research Construct

Construct	Type	Variable	Sources	Participants	Timing
	Instrument	Rapid Naming	Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen & Rashotte, 1999)	Student	December & May
	Observation	Language Comprehension (Individual Reading Instruction)	Transcription & Field Notes of Individual Reading Instruction	Student, Teacher, & Researcher	Twice a week
	Observation	Language Comprehension (Classroom Reading Instruction)	Field Notes of Classroom Reading Instruction	Student, Teacher, & Researcher	Early & late March & May
Reading Motivation	Interview	Reading Involvement	Conversational Interviews with Student	Student & Researcher	Early & late March & May
	Interview	Reading Self-Efficacy	Conversational Interviews with Student	Student & Researcher	Early & late March & May
	Interview	Reading Importance	Conversational Interviews with Student	Student & Researcher	Early & late March & May

Table 1 – Continued

Data Sources by Research Construct

Construct	Type	Variable	Sources	Participants	Timing
	Observation	Reading Involvement (Individual Reading Instruction)	Transcription & Field Notes of Individual Reading Instruction	Student	Twice a week
	Observation	Reading Involvement (Classroom Reading Instruction)	Field Notes of Classroom Reading Instruction	Student, Teacher, & Research	Early & late March & May
	Observation	Reading Self-Efficacy (Individual Reading Instruction)	Transcription & Field Notes of Individual Reading Instruction	Student	Twice a week
	Observation	Reading Self-Efficacy (Classroom Reading Instruction)	Field Notes of Classroom Reading Instruction	Student, Teacher, & Research	Early & late March & May
	Observation	Reading Importance (Individual Reading Instruction)	Transcription & Field Notes of Individual Reading Instruction	Student	Twice a week

Table 1 – Continued

Data Sources by Research Construct

Construct	Type	Variable	Sources	Participants	Timing
	Observation	Reading Importance (Classroom Reading Instruction)	Field Notes of Classroom Reading Instruction	Student, Teacher, & Research	Early & late March & May
Classroom Behavior	Instrument	Distractibility (Teacher report)	RELI Child-Specific Questionnaire	Teacher	January & May
	Instrument	Hostility (Teacher report)	RELI Child-Specific Questionnaire	Teacher	January & May
	Instrument	Independence (Teacher-report)	RELI Child-Specific Questionnaire	Teacher	January & May
	Instrument	Considerateness (Teacher-report)	RELI Child-Specific Questionnaire	Teacher	January & May
	Instrument	Task Orientation (Teacher-report)	RELI Child-Specific Questionnaire	Teacher	January & May

Table 1 – Continued

Data Sources by Research Construct

Construct	Type	Variable	Sources	Participants	Timing
	Observation	Student Behaviors (Observed During Individual Reading Instruction)	Transcription & Field Notes of Individual Reading Instruction	Student, Teacher, & Researcher	Twice a week
	Observation	Student Behaviors (Observed During Classroom Reading Instruction)	Field Notes of Classroom Reading Instruction	Student, Teacher, & Researcher	Early & late March
Individual Reading Instruction (Instructional Match, Instructional Support, & Emotional Support)	Observation	Reading Instruction (Individual Reading Instruction)	Transcription & Field Notes of Individual Reading Instruction	Teacher & Child	Twice a week
	Observation	Teacher-Student Relationship (Individual Reading Instruction)	Transcription & Field Notes of Individual Reading Instruction	Teacher & Child	Twice a week

Table 1 – Continued

Data Sources by Research Construct

Construct	Type	Variable	Sources	Participants	Timing
Classroom Reading Instruction (Instructional Match, Instructional Support, Emotional Support, & Comprehensive Literacy Instruction)	Observation	Reading Instruction (Classroom Reading Instruction)	Field Notes of Classroom Reading Instruction	Teacher & Classroom	Early & late March & May
	Observation	Teacher-Student Relationship (Classroom Reading Instruction)	Field Notes of Classroom Reading Instruction	Teacher & Classroom	Early & late March & May
	Instrument	Teacher-Student Relationship (Teacher Report)	RELI Child-Specific Questionnaire	Teacher	January & May

about once a month (see Table 2). I used two dominant modes of analysis: *time series analysis* and *explanation building* (Yin, 2003, p. 109).

Participants and Setting

Rural Early Literacy Initiative

This study takes place in a school that is part of the Rural Early Literacy Initiative (RELI) study of the effectiveness of a professional development intervention in rural schools targeting literacy, teacher-student relationships and struggling learners. Eight kindergarten and first-grade teachers at one southeastern, rural school, which I will call Eastwood Elementary, received coaching in strategies for struggling learners from myself and another university-based, literacy specialist. During the first year of the RELI (2005-2006) intervention, three schools in one county in North Carolina were participating; one school was experimental and two were control schools. Eastwood Elementary was 72 percent black, 23 percent white, and 4 percent Hispanic, and 96 percent of the students were eligible for free or reduced-price lunch. The kindergarten and first-grade teachers and teaching assistants at Eastwood participated in a two-day professional development summer institute (August, 2005) and will be receiving ongoing professional development support from a RELI consultant across two years (2005-2007).

The RELI intervention designers suggested that the classroom teachers identify five students whom they believed would struggle to succeed in school, especially in reading. Each teacher was expected to work one-on-one for about 15 to 20 minutes with a given struggling reader for several weeks across the school year using a Targeted Reading Intervention (TRI) framework. Beginning with the first summer workshop and continuing

Table 2

Data Collection Timeline

December 2005	January 2006	3/10/06	3/14	3/17	3/24	3/27	4/4	4/11	5/13	5/9
RELI assessor administers QRI-3; PPVT-III; CTOPP	RELI Child-Specific Question.	Current study begins.								RELI assess. admin.: QRI-3; PPVT-III; CTOPP; RELI Question
		QRI-3						QRI-3		
		T-BEST							T-BEST	
		DIBELS		DIBELS	DIBELS		DIBELS	DIBELS	DIBELS	
		Phonics & Sight-word Reading				Phonics & Sight-word Reading			Phonics & Sight-word Reading	
		Student Interview			Student Interview				Student Inter.	
			Class. Observ.		Class. Observ.				Class. Observ.	

Note: *The observations of the Individual Reading Instruction also took place about twice every week from March 10, 2006, to May 3, 2006, for a total of 12 one-on-one observations.* Dates of these observations: 3/10; 3/14; 3/17; 3/24; 3/28; 3/30; 4/4; 4/7; 4/11; 4/13; 4/26 (student sick this day—no assessment given); and 5/3.

across the two-year period, the teachers are receiving consultation in how to implement the TRI.

The suggested TRI 15-minute lesson framework includes Re-Reading for Fluency (2 minutes), Word Work (6 minutes), and Guided Oral Reading (7 minutes). In the Re-Reading for Fluency lesson, the teacher asks the student to re-read a selection that he/she read at least once the previous day, and the teacher times and charts the student's reading speed. The Word Work lessons include multi-sensory strategies for manipulating, saying, and writing words and individual graphemes. These lessons are designed to: demonstrate the nature of the code (the alphabetic principle); to help students learn sound-symbol (phoneme-grapheme) relationships; to develop students' segmenting and blending abilities (phonemic awareness tasks); and to help students learn to recognize sight words. The Guided Oral Reading lesson involves the student reading aloud a text at her instructional reading level with the teacher providing comprehension strategies and word recognition support. Ongoing, daily diagnosis of a student's strengths and needs is a key aspect of the TRI implementation.

For the 2005-2006 school year, I served as the RELI First-Grade Literacy Consultant and was charged with collaborating with the first-grade teachers to develop their teaching knowledge and abilities in literacy and teacher-student relationships, especially those related to struggling learners.

Eastwood Elementary, Mrs. McBride and Cierra

I purposively selected one first-grade teacher, who I will call Mrs. McBride, at Eastwood Elementary because she more consistently worked with her students using the TRI, and she was also willing to participate in the additional case study. I also purposively selected one of her struggling first-grade readers, who I will call Cierra, who was already

participating in the broader RELI intervention. Her instructional reading level was determined to be pre-primer, based on Mrs. McBride's assessment of her instructional reading level, using the North Carolina K-2 Literacy Assessment.

Eastwood Elementary. Looking back across the year as a literacy consultant and researcher working in Eastwood Elementary, I summarize it as a year of crisis for many of the staff. It was their third year in a row with a new principal and the newest one immediately clashed with the teachers. Several teachers either resigned or retired over the course of the year, attributing their decisions to their difficulties in working with the principal. In addition, the status of a small town school in a county that has been persistently poor for thirty years created an unusual burden for the teachers to overcome. Indeed, demographically-speaking, Eastwood Elementary would be expected to struggle as 96 percent of students received free or reduced-price lunch. Most of the teachers I worked with, other than Mrs. McBride, considered their students' educational destinies as outside of their control. Rather, they identified the parents as the source of their students' problems (Knotek & Gallagher, 2006). All but one of the teachers were raised and educated in the surrounding rural communities and most had worked in the system for over 25 years.

Mrs. McBride. Mrs. McBride is a thirty-something, enthusiastic teacher of European-American descent with 10 years of elementary teaching experience. She had spent most of her career teaching older elementary students at a school with a history of strong leadership and school-wide student success relative to the broader school system. After taking a short leave of absence for family reasons, she returned to the classroom in January 2005 at Eastwood Elementary. She took over one first-grade classroom from a teacher who retired in December after 33 years of teaching. Early on, Mrs. McBride admitted to me that she was a

good teacher but that she was challenged by the newness of first grade in particular, and by the students' behavior, which she perceived to be much more difficult to manage as compared to her prior students. Previous professional development targeting her fourth-grade instruction had prepared her well to guide students to enhance their comprehension. She had confidently run a readers' workshop and coached students in comprehension strategies. However, she said she felt ill-equipped to teach beginning reading, particularly word identification. She also wondered how to manage and organized the classroom to support students' early reading growth, especially in light of their "difficult behavior." The other first-grade teachers did not regularly use the reading basal, yet the only other organizing framework they drew from was the district's skills-based pacing guide, which emphasized grammar, punctuation, and sight words, and teacher guides for making words (Cunningham & Hall, 1994) and sight word mini-books. As a literacy coach, it appeared to me that Mrs. McBride's limited professional development for teaching first-grade specifically, coupled with the un-comprehensive nature of the school and district materials, prepared an unstable foundation for Mrs. McBride's foray into first-grade reading instruction.

Perhaps as a result of the confusion in how to plan for reading instruction, Mrs. McBride eagerly embraced the RELI intervention and never wavered from her commitment to learning the new TRI techniques or from her desire to use the TRI with her struggling readers. She did express, however, on several occasions how much she had to learn about it since she missed the summer institute. So we agreed that she would watch our professional development videos and observe me as I modeled the TRI strategies with other students of hers. After a couple of short sessions of coaching, Mrs. McBride dove right in and began

adopting the TRI with another student in February 2005. In March 2005 she began working with Cierra, and I was there from the beginning to observe many of their one-on-one instructional sessions.

Cierra. Cierra is a high-energy, bubbly seven-year old of African-American descent who repeatedly demonstrated her eagerness to work with Mrs. McBride by bounding over to us, looking up and saying, "Am I gonna work with you today?" Cierra was always carefully dressed with hair bows and styles that changed daily to match her clothes. She was rarely still; even when she was focused on her classroom assignment, Cierra might be simultaneously standing, swaying, and writing. On several occasions I observed her jumping rapidly from filling out a response on her paper to talk to a friend, to provoke another child, or to fiddle with her clothes or something in her desk. This hyperactivity was balanced, however, in many instances by her prompt return to her work. She lives with a younger brother and her mom, who completed the tenth grade. In a neighboring town live her father, who completed high school, and her older siblings.

Just the day before this case study began, Cierra had been sent home by the principal for attacking another girl in her class, pinning her on the ground and scratching the other child's face considerably, so that Mrs. McBride expressed shock to me that such a young child would react that way. Despite this inauspicious beginning to the study, on my many visits to Mrs. McBride's classroom I observed Cierra respond with more typically-developing self-restraint and an eagerness to please. It was my privilege to observe her and talk with her individually.

Researcher's Perspective

I bring to this study a particular vantage point that is most influenced by my experiences and choices as a former classroom teacher, private reading tutor, teacher educator, teaching assistant in a master's program for reading education, and graduate student of literacy studies. During my years teaching language arts in middle schools, I began to develop a passion for guiding struggling readers to enjoyment and success in reading. Later, regularly putting on my problem-solving hat proved very gratifying to me as private reading tutor where I had the luxury of time to teach diagnostically. As a graduate student and teaching assistant in literacy, I gained a wider knowledge of contemporary theories, methods, and research in the field of reading.

From these experiences with people and texts, I have developed assumptions about literacy and literacy acquisition on which this study is based. The written word is largely a code for oral language. This suggests three things to me. First, learning language well from birth onward will facilitate acquisition of literacy, which is the emergent literacy perspective (Teale & Sulzby, 1986). Rich experiences with talk and texts will enhance a person's knowledge of the world, receptive and expressive vocabulary, reading comprehension and interest in reading. Reading instruction that capitalizes on the synergistic effects of read alouds and discussions of excellent literature will show stronger effects in students' world knowledge, literacy knowledge, and engagement.

Second, the complex nature of the English code is the biggest early hurdle for most people learning to read in English (Adams, 1990). When children traditionally begin formal instruction in learning this code in kindergarten and/or first grade, they almost always have speaking vocabularies and listening comprehension abilities that far outpace their ability to identify words. So, reading instruction in the early grades should prioritize word

identification skills and strategies in the context of meaningful literacy experiences to the greatest extent possible.

Third, English letters and letter patterns represent sounds, or phonemes, in words, so phonetically-driven word identification instruction tied to the spoken word will be more efficient than typical reading instruction which often arranges the code around visual patterns. "[L]earning to read written words is parasitic on spoken words already represented in memory. Creating precise representations of spoken words in memory close in time to teaching the phonological decoding process from the written word may enhance the probability that the connections between the spoken and written version of a word are computed" (Berninger, 2000, p. 180) .

Finally, I believe reading is a highly enjoyable activity that is also a learned love. Learning to love to read is usually contingent on environmental conditions that foster both reading achievement and reading enjoyment. When a child dislikes reading, I suspect he may lack either a strong ability in reading or positive experiences with reading for personal enjoyment and learning, or both. As difficulties with early reading achievement all too often derail a child's future academic abilities and expectations (Juel, 1988; Stanovich, 1986), I attempt to prioritize both reading achievement and enjoyment when I work with students in classrooms or as a tutor or when I coach teachers. Looking simultaneously to achievement and enjoyment is consistent with the engagement model of reading (Guthrie & Anderson, 1999). The engagement model includes strategies, conceptual understanding, social interactions, and motivations as interactive domains that influence a student's level of engagement with a given text. I assume that access to the code is a fundamental early step in acquiring reading strategies from which engagement in reading is built. I also assume that

one-on-one instruction is often the best means for propelling both reading achievement and enjoyment, as the teacher is usually able to more precisely individualize and personalize lessons, activities, and texts.

These assumptions about best practices for literacy learning not only influence how I view a student's reading achievement and a teacher's instruction; they also impact this study through my other role as a consultant of the Rural Early Literacy Initiative (RELI) intervention within which this study is situated. I served first-grade teachers for professional development in literacy, teacher-student relationships and struggling learners at a RELI experimental school, which is a high-poverty, rural school in the southeast. Thus, as a facilitator I offered coaching and support to the first-grade teacher in this study, and as a researcher, I assessed, interviewed, and observed relevant participants. My "embedded-ness," then, in the lives of the teacher and student, in particular, is an important context and a potential influence on the transactions in the proposed study.

Data Sources, Variables, and Reliabilities

I collected most of the data myself with the support of a RELI assessor who administered some reading-related measures and collected the RELI Child-Specific Questionnaire from the classroom teacher. The RELI assessor is a former classroom teacher with a master's in education and was the lead trainer for all RELI assessors. Table 1 describes each data source (instruments, observations, and interviews) by construct and shows the variables created from the data sources for each construct. It also identifies the participants involved in each data source and the data collection periodicity. Table 2 is a condensed view of the timeline for data collection. I utilized the following instruments, observations, and interviews for this multimethod case study:

Instruments

Descriptions of the instruments are presented according to the Transactional Model of Early Reading Development (Figure 1), including reading instructional level and reading sub-processes, reading-related cognitions, classroom behavior, and classroom reading instruction.

Reading Instructional Level. Qualitative Reading Inventory-3 (QRI-3; Leslie & Caldwell, 2001)—Instructional Reading Level. The QRI-3 is an individually administered informal reading inventory (IRI) providing diagnostic information about word identification, reading rate, and narrative and expository text comprehension. Like other informal reading inventories, reading instructional level using the QRI-3 is determined through a series of graded passages that the student reads. The administrator guides her to read progressively harder passages until her upper-most reading instructional level is found. In this study, reading instructional level is the level at which the student reads with 90-95% word identification accuracy and understands at 70%. Reading instructional level is scored as either zero, pre-primer, primer, first, second, etc.

Conceptually, a reading specialist would likely consider an informal reading inventory one of the best measures "true" reading ability, and it is widely used for reading diagnostic purposes (McCabe, Margolis, & Barenbaum, 2001). It has also been shown to correlate well with standardized reading measures (McCabe, Margolis, & Barenbaum, 2001; Leslie & Caldwell, 2001). First, second, and fourth grade correlations between QRI-III instructional level and standardized tests of reading achievement (either California Achievement Test or Iowa Test of Basic Skills) are .86, .65, and .66, respectively (Leslie & Caldwell, 2001). Reliabilities for the QRI-3 (Leslie & Caldwell, 2001) were obtained as

interscorer reliability (.94-.99), internal consistency (standard error of measurement: .12-.22), and alternate-forms (.80 or higher).

Reading Sub-Processes. Phonological and Orthographic Development. Treiman-Bourassa Early Spelling Test (T-BEST; Treiman & Bourassa, 2000)—Real Words Test. The T-BEST is an informal measure that can be used to evaluate early spelling development by analyzing phonemic and orthographic sophistication (the variable "*phonological and orthographic development*"). A typically-developing reader relies on the integration of phonological and orthographic processes to expand her word recognition (Bourassa & Treiman, 2003; Share, 1995), so the T-BEST serves as useful tool for analyzing each of these sub-processes in depth. The examiner asks the student to spell 10 words of increasingly orthographic complexity. The composite spelling score is determined by evaluating "both phonological and orthographic features of the children's spellings" (Treiman & Bourassa, 2000, p. 193). Phonological features of the children's spellings are those that represent a reasonable sound-based approximation (e.g., "kik" for "kick" is phonologically accurate, whereas "kig" would be less phonologically accurate). Orthographic features are those that reflect knowledge of conventional spelling patterns (e.g., "kno" for "know" shows the ability to spell the unusual "kn" spelling, but not the "ow" spelling). Scores for each word range from 0 for attempts that do not include any letters to 8 to 11 for maximum point values for conventional spellings. For example, for the word "lap," a response of "ty" would earn two points for containing letters, but not ones related to the sounds in the word, yet a response of "lanp," with each phoneme represented with conventional graphemes and an intrusion, would earn six points. The correct spelling of "lap" would earn eight points. Raw scores range

from 0 to 93, and no national norms have been determined for the T-BEST (Treiman & Bourassa, 2000).

Phoneme Segmentation, Phonological Decoding, and Fluency. Dynamic Indicators of Basic Early Literacy Skills 6th Edition (DIBELS; Good, Kaminski & Smith 2002)—Phoneme Segmentation Fluency, Nonsense Word Fluency, and Oral Reading Fluency. The DIBELS is a standardized, individually administered set of fluency-based measures for monitoring early reading progress (PreK through 3rd grade) and for screening at-risk readers. The DIBELS can be used for benchmark assessments or progress monitoring. For this study, the progress monitoring versions were used, and these measures each include 20 forms that may be given frequently. Scores for each test are the number of correct responses per minute and were evaluated qualitatively, looking at relative improvements and by comparing the student's scores with DIBELS grade-level goals.

The Phoneme Segmentation, Nonsense Word Fluency, and Oral Reading Fluency assessments are all one-minute measures. For the Phoneme Segmentation Fluency test, (PSF; the variable "*phoneme segmentation*") the examiner says one word consisting of three or four phonemes and the child is expected to say each phoneme (i.e., the examiner says, "mat," and the student says, "/m/ /a/ /t/"). The PSF has a two-week alternate-form reliability of .88 (Kaminski & Good, 1996; cited in Good, Kaminski, & Smith, 2002). The Nonsense Word Fluency (NWF; the variable "*phonological decoding*") measures both letter-sound correspondence and blending ability. The student is asked to read from a page of VC and CVC phonetically decodable pseudowords. The NWF in January of first grade has an alternate-form reliability of .83 (Good, Kaminski, & Smith, 2002). For both the PSF and NWF measures, scores are the total number of correct phonemes per minute.

The PSF and NWF permit the teacher or researcher to examine gradual improvements in specific reading sub-processes that repeatedly have been found to be pivotal in early reading development, such as the concept of the alphabetic principle, blending and segmenting phonemes, and phonological decoding (Adams, 1990; Blachman, 2000; NICHD, 2000; Share, 1995; Stanovich, 2000). In addition, the PSF and NWF have both been show to have concurrent and predictive validity with other measures that tap aspects of conceptually-similar constructs, such as phonological awareness, instructional reading level, and reading fluency (Hintze, Ryan, & Stoner, 2003; Rouse & Fantuzzo, 2006).

The DIBELS Oral Reading Fluency (DORF; the variable "*fluency*") measures a child's accuracy, reading rate, and fluency in connected text. The DORF consists of a collection of standardized, grade-level passages at each grade level. The child is asked to read as much as she/he can in one minute. Omitted and substituted words and words taking longer than 3 seconds are counted as errors. The oral reading fluency rate represents the number of correct words per minute. The DORF is based on research on Curriculum-Based Measurement of reading by Stan Deno (see Shinn, 1989) and test-retest reliabilities of CBM Reading for elementary students range from .92 to .94 (Good, Kaminski, & Smith, 2002). Oral reading fluency is considered a strong indicator of overall reading competence (M. J. Adams, 1990; Fuchs et al., 2001) and is especially useful in measuring gradual improvements in reading abilities that might not be tapped by other measures (Fuchs et al., 2001). It is highly correlated with standardized reading comprehension measures, much higher than either reading fluency of lists of isolated words or reading silently (Fuchs et al., 2001). While the administration of the DIBELS (Good, Kaminski & Smith 2002) fluency measures is standardized, no national norms have been determined.

Phonics Knowledge Test. The researcher-made, informal phonics knowledge assessment (see Appendix A) measures the student's ability to identify phoneme-grapheme (sound-symbol) correspondences in isolation. The first page consists of an array of consonants and vowels. The second page represents similarly arranged, more advanced phonics knowledge and is an array of consonant digraphs (i.e., "sh"), r-controlled vowels (i.e., "er"), and vowel combinations (i.e., "ou"). The student is asked to identify the sound of each grapheme. If she takes more than five seconds, the assessor encourages her to try the next one. I used raw scores of her correct responses out of a possible 60.

Sight-Word Reading Test. The researcher-made sight-word reading test assesses the student's ability to identify high-frequency words in isolation, using the 100 most common words in English (Fry, Kress, & Fountoukidis, 1993). The child was asked to identify each word on a probe sheet of 25 words. Each of the four probe sheets are graded by degree of frequency, so that the first page the student sees contains the most frequent 25 words, with each successive page consisting of the next 25 words in Fry and colleagues' list. I used raw scores of her correct responses out of a possible 100.

Both informal phonics knowledge and sight word measures are frequent tools in the arsenals of reading specialists and classroom teachers. The committee who penned *Preventing Reading Difficulties in Young Children* validated instruction in these key sub-processes in one of their key recommendations: "Beginning readers need explicit instruction and practice that lead to an appreciation that spoken words are made up of smaller units of sounds, familiarity with spelling-sound correspondences and common spelling conventions and their use in identifying printed words, "sight" recognition of frequent words, and independent reading, including reading aloud" (Snow, Burns, & Griffin, 1998, p. 7).

Reading-Related Cognitions. Vocabulary Knowledge. Peabody Picture Vocabulary Test-Third Edition (PPVT-III; Dunn & Dunn, 1997). The PPVT-III is an individually administered, norm-referenced test of receptive vocabulary knowledge that was originally published in 1959 (the variable "*vocabulary knowledge*"). The task of the test taker is to select the picture from four black-and-white illustrations that best represents the meaning of the stimulus word presented orally by the examiner. The raw score is determined by subtracting the number of errors above the basal from the ceiling item total. Raw scores are converted to a percentile score using a table corresponding to the child's age.

Alpha coefficients for the PPVT-III for elementary age students range from .92 to .95. The authors note that the PPVT-III can be used as achievement assessments of receptive vocabulary and as a screen of verbal ability (Dunn & Dunn, 1997). Correlations between the PPVT-III and the Verbal IQ scale from the *Wechsler Intelligence Scale for Children-Third Edition* (WISC-III; Wechsler, 1991) are .91 for one form and .92 for the second form (Dunn & Dunn, 1997).

Phonological Awareness and *Rapid Naming. Comprehensive Test of Phonological Processing* (CTOPP; Wagner, Torgesen & Rashotte, 1999)—Blending Words (BW), Sound Matching (SM), and Rapid Color Naming (RC) subtests. The CTOPP is an individually administered, norm-referenced set of measures assessing three domains of phonological processing: phonological awareness, phonological memory, and rapid naming (Wagner & Torgesen, 1987). Each of these three domains represents a composite area of several subtests. In this study, I utilized the subtests related to the *phonological awareness* (BW and SM) and the *rapid naming* (RC) domains.

In the phonological awareness domain, for the Blending Words subtest, the assessor says syllables or phonemes that make up a word and then asks the child what those sounds make (e.g., "What word do these sounds make? /bay/ /bee/.) For the Sound Matching subtest, the student looks at an easel consisting of several rows of four color pictures. The assessor asks the child to look at the first picture in the row and identify it and its beginning sound (or, later, its ending sound). Then she identifies the three remaining pictures and asks which of these three picture words begins (or, later, ends) with the same sound as the target picture word (e.g., "Which of these picture words starts with the /b/ sound like boat: can or bear?"). For each of the two subtests in the phonological awareness domain, raw scores are the number of correct items up to the ceiling.

In the rapid naming domain, the Rapid Color Naming subtest also uses an easel, this time consisting of rows of squares of six different colors, arranged in a random sequence. With a stopwatch, the assessor times the student's naming of each color on the page, and the raw score is the number of seconds the child takes to name the colors on both forms A and B. However, if the student misnames more than four colors on either form, no score is awarded. For all three CTOPP subtests, raw scores are converted to percentile scores using a table corresponding to the child's age.

Coefficient alphas for the composites range from .81 to .96, with the phonological awareness composite in the .90s. The CTOPP is associated with a vigorous reading research program (e.g., Wagner, Torgesen, & Rashotte, 1994; Wagner et al., 1997; Wagner & Torgesen, 1987) and is "rapidly becoming the standard tool for assessing phonological processing abilities" (Rathvon, 2004, p. 316).

Classroom Behavior and *Teacher-Student Relationship—RELI Child-Specific Questionnaire.* In January, the classroom teacher completed a 10-20 minute, RELI-developed questionnaire about the child's literacy abilities, adaptive language, classroom behavior, and about the relationship between the teacher and student. The RELI questionnaire is a Likert-type scale derived from existing items and inventories. In the current study, I employ the classroom behavior and student-teacher relationship subscales, which are widely-used measures.

Classroom Behavior subscale. Twenty items from the Classroom Behavior Inventory (Schaefer, Edgerton, & Aaronson, 1978) are incorporated (the construct "*classroom behavior*") and measure five different scales: distractibility (score range 3-15), hostility (score range 3-15), considerateness (score range 5-25), independence (score range 5-25) and task orientation (score range 5-25). Teachers evaluate the extent to which a statement is true of the given child from 1) not at all to 5) very much. Items include "ridicules and mocks others without regard for their feelings" and "tries not to do or say anything that would hurt another." Numerous studies have incorporated the Classroom Behavior Inventory, and the full CBI has been shown to have high internal consistency (.85 to .96) in addition to moderate interrater reliability (.40 to.70) (McKinney & Feagans, 1983; McKinney & Speece, 1986; Speece, McKinney, & Appelbaum, 1985).

Student-Teacher Relationship subscale. In addition, the short form of the Student-Teacher Relationship Scale (STRS; Pianta, 2001) is included in the RELI questionnaire, and it measures the teacher's perception of the student-teacher relationship (the variable "*teacher-student relationship [teacher report]"*) through the lenses of teacher *closeness* with child and teacher *conflict* with child. Closeness is tapped by questions such as, "I share an

affectionate, warm relationship with the child." Conflict is measured by questions such as, "This child and I always seem to be struggling with each other." Closeness scores range from 8 to 40 and conflict scores range from 7 to 35. The constructs of conflict and closeness have emerged as pivotal features of the teacher-student relationship from an extensive literature (e.g., Birch & Ladd, 1998; Hamre & Pianta, 2001) and the STRS is widely used (see Pianta, 2006). The long form of the STRS has an internal consistency of .92 for conflict and .86 for closeness using a sample of 1535 children (Pianta, 2001).

Interviews

Reading Motivation. Interviews with the Student. I interviewed Cierra briefly in March, April, and May. These conversational interviews probed three motivational constructs derived from the reading motivational literature (e.g., Gambrell, Palmer, Codling, & Mazzoni, 1996; Wigfield & Guthrie, 1997)—*reading involvement*, *reading self-efficacy*, and *reading importance*. Appendix B lists questions from which I drew. The interviews lasted about 5 to 10 minutes.

Interviews with the Teacher. I also interviewed Mrs. McBride three times across the course of my data collection period to explore her perception of the constructs instructional match, instructional and emotional support, and the teacher-student relationship. These brief, conversational interviews took about five to ten minutes (see Appendix C for questions from which I drew).

Observations

Individual Reading Instruction Observation. Twice a week, I observed the one-on-one *individual reading instructional* sessions that Cierra received regularly from Mrs. McBride for a total of 12 observations. I tape-recorded and discreetly took notes during the

sessions of approximately 20 minutes. I attended, in particular, to Mrs. McBride's reading and writing instruction, the teacher-student relationship, Cierra's reading sub-processes and reading-related cognitions, and Cierra's reading motivation and classroom behavior.

Classroom Reading Instruction Observation. I observed and took notes of Cierra and Mrs. McBride during a 90-minute *classroom reading instruction* period once a month. I attempted to capture data about classroom reading instruction, including instructional match, instructional and emotional support, comprehensive literacy instruction, and the teacher-student relationship—in addition to gathering data about Cierra's reading-related cognitions, reading sub-processes, reading motivation and classroom behavior.

Data Collection Schedule

RELI data collection with Cierra began in December 2005, and I began the additional assessments, interviews, and observations in March 2006. Data collection for this study concluded in May 2006. Table I shows the type of each data source. Table 2 depicts the timeline for data collection.

The RELI assessor administered these assessments to Cierra in December 2005: the *Qualitative Reading Inventory-3* (QRI-3; Leslie & Caldwell, 2001), the *Peabody Picture Vocabulary Test-Third Edition* (PPVT-III; Dunn & Dunn, 1997), and the *Comprehensive Test of Phonological Processing* (CTOPP; Wagner, Torgesen & Rashotte, 1999). Mrs. McBride also completed the RELI child-specific questionnaire in January 2006.

In March I assessed Cierra using additional reading measures, including the *Qualitative Reading Inventory-3* (QRI-3; Leslie & Caldwell, 2001), the *Treiman-Bourassa Early Spelling Test* (T-BEST; Treiman & Bourassa, 2000), the *Dynamic Indicators of Basic*

Early Literacy Skills 6th Edition (DIBELS; Good, Kaminski & Smith 2002), and the phonics knowledge and sight-word reading tests. I also interviewed her in March.

After this initial round of data collection, I commenced with periodic reading assessments, observations and interviews. Nearly every week I administered the three, one-minute, DIBELS fluency measures. Similarly, once a month I administered the informal phonics and sight-word reading measures, interviewed Cierra, and asked her to read the appropriate graded passage from the QRI-III (Leslie & Caldwell, 2001) to determine her instructional reading level. Twice a week I observed and tape-recorded Mrs. McBride's regular one-on-one individual reading instruction with Cierra. Once a month I also observed Mrs. McBride's classroom reading instruction for 90 minutes.

Data Analysis

I used two dominant modes of analysis: *time series analysis* and *explanation building* (Yin, 2003, p. 109) Also, I followed the theoretical propositions that led to the research (Yin, 2003, p. 109). A few different types of *data displays* assisted a systematic analysis of the data from the multiple constructs.

Time Series Analysis. First, data displays for each data collection time point facilitated a time series analysis. There were 15 time points for data collection and display (two "pre-study" time points and 13 time points for the current study). See Table 2 for details of what was collected at each time point. A data display, representing each data collection time point, assisted my systematic analysis of the data from the multiple constructs. First, I constructed a time series analysis by creating a data display—a *word table*—for each data collection time point. A word table is a page organized by the study's major constructs where I developed a profile of the student abilities and the transactions

among variables (see Table 3). A separate word table was used for each data collection point.

Specifically, I added quantitative data from the relevant instruments by construct type into the relevant word table (see Table 3). For example, for time point one, I recorded actual scores for the T-BEST, DIBELS, phonics knowledge, and sight-word reading measures along with descriptive qualifiers of these scores. In addition to the quantitative information, I also incorporated coded qualitative data into each word table. My process of coding followed the classic advice and examples of the grandparents of qualitative research (Bogdan & Biklen, 1998; Lincoln & Guba, 1985; M. B. Miles & Huberman, 1994). I read and re-read transcriptions of data, categorizing meaningful sections of text based on constructs derived from my theoretical model and based on new categories, or codes, which arose from the data. Miles and Huberman describe coding in a similar manner:

> A code is an abbreviation or symbol applied to a segment of words—most often a sentence or paragraph of transcribed field notes—in order to *classify* the words. Codes are *categories*. They usually derive from research questions, hypotheses, key concepts, or important themes (1984, p. 56)….
>
> Still other codes emerge progressively during data collection. These are better grounded empirically and are especially satisfying to the researcher who has uncovered an important local factor. They also satisfy other readers, who can see that the researcher is open to what the site has to say, rather than force-fitting the data into preexisting codes (1984, p. 60).

I identified patterns by looking for repeated codes or families of codes and by looking for repeated co-occurrences of codes. After I transcribed and coded qualitative data from the audiotapes and field notes, I entered pattern codes under the appropriate constructs and

Table 3

Example Data Analysis Word Table – Time Point 3

Reading Sub-Processes	**Reading Cognitions**	**Reading Motivation**	**Classroom Behavior**	**Teacher-Student Relationship (TRI context)**	**Individual Instruction**	**Classroom Instruction**
Phon. & Ortho. Dev. T-BEST *5.9 pts/word* *(poss. avg for 1st g.; seems low to me, though)* *0 correct* *(poss. low for 1st grade)*	Phon. Aware. CTOPP	Read. Involvement-Inter. *Claims to be high/Typical of most 1st graders?* Observation *??: attentive to Mrs. M in 1-on-1 setting*	Distracti-bility	T Conflict w/ S Observation *No conflict observed at all*	Instructional Match Observation *High; precise w/ vocab, comp, & PD (phonics knowledge, segmenting, except for blending)*	Instructional Match
Phon. Seg. DIBELS *22 phon./min.* *(below 1st grade goal)* Observations *Good seg. @ beg. & ends of words; Links conson. blends together*	Rapid Naming CTOPP	Read. Self-Efficacy Inter. *"A little bit."* Observation *appears pleased with her own attempts*	Hostility	T Closeness w/ S Observation *Closeness: High; modulating together, esp. T following S; T encouraging & sensitive*	Instructional Support Observation *T there at every error or sign of error; always supporting eagerly; PD, vocab, comp support*	Instructional Support
Phon. Dec. DIBELS *11 phon./min.* *(well below 1st grade goal)* Observations *weak even w/ 3 sound words*	Vocab Know. PPVT	Read Importance Inter. *Useful for the future…* Observation *??*	Consid-erateness	Other Relationship *Lots of time spent together; T says S's name lots*	Emotional Support Observation *Very High; careful modulation in response to child's emotional needs*	Emotional Support

Table 3 – Continued

Example Data Analysis Word Table – Time Point 3

Reading Sub-Processes	**Reading Cognitions**	**Reading Motivation**	**Classroom Behavior**	**Teacher-Student Relationship (TRI context)**	**Individual Instruction**	**Classroom Instruction**
Fluency DIBELS *37 phon./min. (near 1st grade goal)*	Lang. Comp. Observation *Receptive comp. normal; non-standard expressive syntax*	Other Motivation Observation *A.R.!! Extrinsic; yet few tests taken*	Indepen-dence		Other Ind. Instruc. Obs. *S always on task; engaged; pleased with own success* Obs. & Int. *T surprised with how well S could read and work with her*	Compre-hensive Literacy Instruction
Phonics Know. *24/60 (mostly consonants, 2 short vowels; few digraphs)*			Task Orienta.			Other C. Instruc.
Sight-Words *81/100 Above avg* Obs.*better sight word than P. D.*			Other Behavior			

Summary Finding: Cierra's low P.A, phonological decoding, & phonics knowledge interrelate and fit theories of word learning development as well as explain her low instructional level—including no noticeable growth in inst. read. level since early Dec. Her high rapid naming, sight word knowledge, & fluency (relative to other reading sub-processes) are likely interrelated as well based on theories of word learning. She has value for reading like typical first-graders, just beginning their reading/school career; however, she has little confidence in her reading abilities or initiative for reading widely other than the extrinsic notion that she'd like to receive an AR award. Mrs. McBride responds sensitively to Cierra at every turn, providing constant, encouraging emotional & instructional support; this often means a seemingly perfect instructional match in vocab, comp. & P.D. support, except for how to coach Cierra to decode words she can't blend. This intense scaffolding appears to keep Cierra engaged & learning.

variables, when applicable. Searching for such patterns within a given time point and across time points allowed me to discern the transactions among the constructs, when they occurred. Also, by analyzing patterns and pattern-matching from the coded data, I gleaned key, summary findings for each word table (M. B. Miles & Huberman, 1994; Yin, 2003).

For example, after my initial observation of the 15-minute individual reading instruction, I coded every moment related to reading motivation. Patterns in the codes or particularly noteworthy codes were reduced to a key concept, such as "low self-efficacy in reading," and entered into the third-time point word table. After completing the word table in this manner, I noted an early, summary finding for the entire word table: "In the midst of one-on-one instruction that is an instructional match with strong emotional and instructional support, Cierra's reading motivation, behavior, energy level, and attention to reading are high. Her reading sub-processes, vocabulary knowledge, and language comprehension all appear to be low as compared to typically-developing children her age."

After the initial assessments, interviews and observations, I constructed a word table of an initial profile of Cierra's reading abilities, reading motivation, and classroom behavior and their transactions with one another and with individual and classroom reading instruction. Later word tables allowed me to compare how her profile and the transactions among the variables changed over time—particularly useful for addressing research question two.

Explanation Building. As a next step, by drawing from the word tables and their initial, summary findings, I created hypotheses and potential rival hypotheses regarding transactions among the variables. I challenged working hypotheses by carefully re-reading the data at each level. This iterative, complex form of pattern-matching and revising is what

Yin (2003, pp. 121-2) describes as "explanation building." Through this process, codes and connections among codes were refined. Early working hypotheses allowed me to construct initial networks (a graphical display) of the transactions among the variables (M. B. Miles & Huberman, 1994). After building this initial network of the transactions, I cycled back through the data analysis process again, continually spiraling through the data via coding, time point arrays, word tables, working hypotheses, rival hypotheses, and network displays, to help me stay close to the data and answer the research questions (M. B. Miles & Huberman, 1994).

Trustworthiness

I am well aware of how my dual status as consultant and researcher may dilute the credibility of my findings for the reader. While my "embedded-ness" in the lives of Mrs. McBride and Cierra enhances my awareness and understanding of their experiences, it also challenges me to not to depict overly subjective findings. To enhance the trustworthiness of the following findings, I used the following reliability and validity checks.

Data Analysis Reliability. I ensured reliability, or dependability, (Lincoln & Guba, 1985) of the data analysis through two types of reliability checks. First, I asked a retired literacy specialist and teacher-educator to examine my field data and codes from three site visits, including selections of individual reading instruction audio-taped transcriptions, classroom instruction observation transcribed field notes, and child transcribed interview field notes. I explained my research questions and the study's numerous variables. She concurred with all of the codes I made. Second, my advisor examined three word tables and their initial summary findings. She believed that the summary findings were grounded in the data in the tables. These procedures help the reader assess the dependability of my data

analysis, which is an appropriate conceptualization of qualitative analysis reliability (Lincoln & Guba, 1985; Marshall & Rossman, 1999).

Validity

Construct Validity. The study's variables were selected from existing and created data sources that are based on the theoretical underpinnings of the study. Thus, the study meets the test of construct validity as set forth by Yin (2003, p. 35) by: 1) specifically defining the variables in which I expect to observe transactions and 2) by describing a plan to relate these observed transactions among the variables.

Internal Validity. Miles and Huberman (1994) contextualize internal validity for qualitative studies with terms such as "credibility" and "authenticity" (p. 278), while Yin (2003) notes that internal validity will be strengthened when a researcher follows systematic analytic tactics, such as pattern-matching, explanation building, and addressing rival explanations. The rigorous data analysis plan described above that includes: a time-series analysis, word tables, explanation building, and a plan for addressing rival hypotheses, provided me with the vision and tools to *credibly* depict the transactions I observed. Yet, the *authenticity* of my findings and discussion are the ultimate test of internal validity.

External Validity. While the transactions that I describe in the final analysis are not generalizable beyond Cierra and Mrs. McBride in the context of RELI, I attempt to generalize to theory—an appropriate intent of single case studies (Yin, 2003, pp. 38-9).

CHAPTER 4

RESULTS

As a reminder, the research questions are: 1) For a struggling first-grade reader, what are the transactions: a) among selected student characteristics—reading instructional level, selected reading sub-processes, selected reading-related cognitions, reading motivation, and classroom behavior; and b) among selected student characteristics (those just named) and individual and classroom reading instruction? And 2) Do the transactions vary over time within the context of the Rural Early Literacy Initiative?

To establish the context for the findings of transactions among child and instructional factors over time, I begin the following sections with an initial profile of Cierra as a student and reader and follow that with descriptions of Mrs. McBride's shifting literacy instruction. Then I address research question one in two parts—first considering the transactions centered on the child system (reading instructional level, reading sub-processes, reading-related cognitions, reading motivation, and classroom behavior) and then examining both child and instructional (individual and classroom instruction) systems. While a transactional lens theoretically begs that all systems be "seen together" (Dewey & Bentley, 1949), I attempt to simplify the description of the complex transactions by zeroing in on the child and then incorporating her larger classroom world into the transactional system. Finally, I answer research question two by explaining how the transactions varied over time.

An Initial Profile of Cierra as a Reader and a First-Grade Student

A Reader. Cierra was a below-grade level reader, reading at the pre-primer level for much of first grade, mainly because of difficulties with word recognition. Although she had strong sight-word reading abilities, she was very poor decoding phonologically. She could make reasonable guesses based on context. However, with very low phonological awareness, vocabulary knowledge, and language comprehension as well as moderately low phonics knowledge, she had few tools to attack an unfamiliar word.

As a result, Cierra struggled to keep up with the reading demands of her first-grade classroom. Either following a whole-class story in the basal reader or reading-along sentences from the board appeared to be too challenging for her word-reading abilities. She would eagerly parrot repeated phrases she heard orally, but she rarely demonstrated the ability to follow along with the text and her teacher in a whole class setting. My observations of her classroom performance were confirmed by reading assessments as well. In both early December 2005 and early March 2006, Cierra read a pre-primer passage successfully (QRI-III; Leslie & Caldwell, 2001) with 90% and 94% accuracy, respectively. Typically developing readers in the last few months of first grade will likely read at the primer or first-grade instructional level.

Like most struggling beginning readers, her greatest reading limitation was her inability to attack an unfamiliar word. She was mostly restricted to the use of context and to the sounds of the first, and sometimes last, letters of words. For example, during the guided oral reading portion of her first TRI session with Mrs. McBride, she encountered the text, "It can pick up its cub and go in." Cierra attempted "pick" as "park" before receiving feedback and then read "cub" as "cap." I also observed her mis-identify the sounds of most short

vowels numerous times and occasionally mis-call the sound of a consonant, especially "d" and "b"—reading "big" for "dig" and /b/ as the beginning of "den."

Blending sounds together to hear a word (a phonological processing skill) often stalled her smooth reading, too. Consider a few moments from the first TRI session when Mrs. McBride asked Cierra to read the word, "lost," as part of the Word Work activity Read, Write, and Say.

> Cierra: /l/ ooosed!
>
> Mrs. McBride: OK, let's...let's do each one first.
>
> Cierra: /l/ /ŏ/ /s/ /st/ (as Mrs. McBride points to each sound with finger)….list
>
> Mrs. McBride: /l/ /ŏ/ /s/ /t/ (spoken simultaneously with Cierra above).
>
> Mrs. McBride: OK, that says /ŏ/ /ŏ/ /ŏ/…(pointing to "o") /l/ /ŏ/ /ŏ/ /ŏ/. Say /l/ /ŏ/ /sssst/. Say…can you put it together? Now what is that word?
>
> Cierra: /l/ /ĭ/ list (seems to be waiting; looks at me).
>
> Mrs. McBride: Ok, now let's listen. OK, /l/ /ŏ/ /st/ (spoken with precision and very separate). Can you hear the word…that I'm saying?
>
> Cierra: /lll/ (uncertain)
>
> Mrs. McBride: You might do this if we were in the woods. You might get…
>
> Cierra: Lost! (with pleasure)
>
> Mrs. McBride: There we go! That was kinda hard wasn't it (smiling and looking at child knowingly)? Let's do that together.
>
> Cierra and Mrs. McBride: /l/ /ŏ/ /s/ /t/.

Even with the prompts of the correct sounds for each letter, Cierra was unable to blend the sounds to hear a word herself in this archetypal example.

Assessments of Cierra's reading sub-processes in early March corroborate her relative weakness in attacking unfamiliar words through phonological decoding. Her early March

DIBELS Nonsense Word Fluency (Good, Kaminski, & Smith, 2002) score of 11 phonemes per minute was well below the DIBELS end-of-year, first-grade goal of 50. She correctly identified 22 phonemes per minute on the DIBELS Phoneme Segmentation Fluency test (Good, Kaminski, & Smith, 2002), also below the DIBELS end-of-year goal of 35 for that measure. On a researcher-made phonics assessment, Cierra correctly recognized 24 out of the possible 60, missing four consonant sounds, three short vowel sounds, and three consonant digraphs (i.e., "th" and "ch"). She also did not recognize the sound of most vowel digraphs or combinations, such as "oo," "ow," or "ai." Her performance on these phonological and phonics sub-processing assessments was consistent with her oral reading performance as observed during whole-class and TRI instruction and in the instructional reading assessment from early March.

Three reading-related cognitions, phonological awareness, vocabulary knowledge and language comprehension, also relate theoretically to Cierra's difficulty in decoding phonologically. Her phonological awareness score from December 2005 placed her at the fourth percentile (CTOPP; Wagner et al., 1999). Lacking the ability to blend phonemes to make words or to segment phonemes in words, as also described above, impeded her mapping sounds to print, so phonologically decoding was a challenge. Although the theoretical connection between vocabulary knowledge and language comprehension and learning to read words is less understood, her vocabulary knowledge score (PPVT-III; Dunn & Dunn, 1997) at the ninth percentile and her observed non-standard syntax and weaknesses in answering conceptual questions mirror common research findings (Scarborough, 2001).

In contrast, Cierra demonstrated fluency levels reflecting typically-developing first-graders' reading abilities during the QRI-III (Leslie & Caldwell, 2001) reading rate

assessments in December (34 words per minute) and March (41 words per minute) and in the early March DIBELS Oral Reading Fluency (Good, Kaminski, & Smith, 2002) measure (37 words per minute). Her early March performance on a researcher-made sight-word reading assessment (81 correct out of 100) reflected another reading sub-process strength of hers. Reading speed and rapid visual recognition of known words were clear strengths of Cierra's. Her relatively strong fluency and sight-word reading relate theoretically to her strong performance on another reading-related cognition: rapid naming. On the December testing of her rapid naming (CTOPP; Wagner et al., 1999), Cierra scored at the 75th percentile, dramatically higher than her other reading-related cognitions.

The student. Cierra, the student, was characterized by her distractibility, hyperactivity, and volatility as well as by her limited successful literacy experiences and fewer still positive interactions with her teacher. She appeared to desire to perform well and please Mrs. McBride, but she lacked the reading achievement and motivation to overcome her hyperactivity and her emotional distance from Mrs. McBride. With a quick-to-flash temper thrown into the mix, she occasionally stirred up considerable trouble with her peers and was perceived by Mrs. McBride to be her most challenging student.

Her poor reading achievement was one central root of her behavioral difficulty within the classroom. Cierra and Mrs. McBride both commented on Cierra's struggle to read at grade-level expectations. When I asked Cierra in early March how good she was at reading, she responded, "A little bit." While this mild comment might not strike the reader as a powerful indicator of struggle, it is a mismatch with Cierra's surgent, confident personality and with the charmingly brazen confidence of most first-graders' self-assessments. Reflecting back to her observations of Cierra at the beginning of 2006, Mrs. McBride was

more blunt: “She was not independent at all. She…was very frustrated. She did not attempt the work that she did not know. She did not want to try.” Here Mrs. McBride implicitly makes the connection between Cierra’s low reading instructional level and her low reading motivation, especially her low reading self-efficacy and involvement.

While I observed a strong commitment in Cierra to completing worksheets, board work, and assigned journal entries, I did not observe a desire to read for its own sake. She appeared to have limited reading involvement. Indeed, during the first two hours that I observed her in literacy instruction, I saw no clear evidence that she had read more than a few isolated words. She may have silently read the sentences she copied from the board and the words on her spelling worksheets, but given that she usually read aloud, I suspect that she was simply copying visual symbols from one location to another. Her Accelerated Reader report through March also revealed little reading practice, at least as measured by taking tests of books read. Through early March, Cierra had taken Accelerated Reader tests on only 21 books. In contrast, the students who were more successful with literacy-related tasks had taken an average of 115 Accelerated Reader tests by late April.

In addition, during whole-class reading instruction, she would frequently disengage from the current class activity. If Mrs. McBride gave a direction to the class, Cierra would quickly attend to the activity, but just as quickly she would lose focus and dance, wiggle, play with her clothes or school supplies, or talk with a peer. I link her observed distractibility with her relatively low reading involvement and self-efficacy, yet it is difficult to separate her disengagement with classroom literacy practices from her high distractibility.

It was clear to Mrs. McBride, however, that Cierra was a behavior problem in her classroom. In her January RELI questionnaire responses, Mrs. McBride indicated that Cierra

was very high in distractibility and hostility compared with a sample of nine children from her class. She also reported that Cierra was very low for considerateness and moderately low on independence and task orientation. Based on these scores, it is not surprising that Mrs. McBride reported very high conflict with Cierra when reflecting on their relationship. She told me, "I don't know what to do with her" (Interview, March 9). Reflecting back on her early experiences with Cierra, Mrs. McBride said,

> "She was truly a challenge. She and I struggled as far as a relationship….I did not know at what moment when she came in the classroom what that day was going to be like. And if she was just going to snap and…lose it—what she was going to do? She was very unpredictable and very unstable with her emotions and her relationship with me" (Interview, July 6).

Mrs. McBride informed me of the incidents with Cierra battling other students soon after they happened, as in the day she repeatedly scratched another girl's face, yet I only witnessed less severe forms of behavior problems with her peers. She might challenge another student with, "Shut up!" (Observation, March 14) while Mrs. McBride was out-of-range, or she might tease a student who was picking up the class's journals by hiding hers.

Despite the occasional outburst against a peer and her frequent off-task behavior, I observed several times Cierra's desire to perform well and please her teacher. As she came out of a dancing reverie and heard anew what she was supposed to do, she would shoot her arm up in the air, looking for Mrs. McBride to call on her, or she would walk across the room with her journal entry to have Mrs. McBride pass approval on it. One time she actively expressed frustration and anger with Mrs. McBride when she was not called on two times in a row, and she ended her performance by pouting with her arms folded across her chest. She was disappointed, yes, but the disappointment was tied to her eagerness to attract the teacher's attention and, perhaps, praise. Unfortunately, Cierra enjoyed few instructional

interactions with Mrs. McBride during typical whole-class instruction, and Cierra's limited reading achievement also thwarted her desire to perform well for the teacher.

A Tale of Two Classrooms

Literacy instructional routines in the classroom changed periodically from January, when Mrs. McBride took over instruction from the retiring teacher, through May. When pressed by the routines of her predecessor or by her peers, Mrs. McBride's literacy instruction was entirely whole-group and skills-based, driven by individually completed worksheets and group chanting and reading. As she attempted to adapt to what she perceived to be necessary to meet the needs of her students, more of her instructional time was focused on multi-leveled literacy centers, individualized reading of leveled books and student-teacher reading conferences. Only the top third of the readers in the class appeared to profit by the former classroom routine; they were the students who frequently raised their hands or were called on and who more often had correct responses. Informal reading inventories done by Mrs. McBride and myself in January (she requested my help) indicated that these top readers were on or slightly above grade-level. The majority of the class, however, was reading below the first grade level, including six emergent readers. When Mrs. McBride opted for the classroom routine that included individual and small-group reading, nearly all of the readers in the class received more reading instruction and practice at their level.

Mrs. McBride confided in me at various times that in designing her classroom routines and instruction, she felt pulled in different directions. On the one hand, she wanted to follow some of the routines of the children's previous teacher, so as not to disrupt their expectations for learning. She also expressed a desire to follow the pattern of the first grade teaching team, especially since this was her first year in the school. The first grade team

usually met after school once a week to plan together the coming week's instruction. As a team, their literacy instruction was mostly whole-class and skill-based, featuring grammar terms and editing skills, weekly group spelling lists, a variation on making words (P. M. Cunningham & Hall, 1994), choral reading of sight-word copyable books to take home, and occasional teacher read-alouds. Advanced readers (about one-third of most classes) were encouraged to read independently and take Accelerated Reader tests with the help of the teacher or teaching assistant.

However, Mrs. McBride admitted that "whole class instruction does not work for these children" (Field Notes, March 14). About this comment, she elaborated that the reading work determined by the first-grade teaching team was too challenging for many of her students, and they lacked the self-discipline to sit still at their desks for lengthy periods doing the difficult worksheets. From my many opportunities to witness her classroom either as a literacy consultant or as a researcher, I can confirm that most students appeared unengaged with the whole-class literacy routines and many caused behavior difficulties during these times. The previous teacher, who retired, was wont to tell me that this classroom had an unusually high number of children with special needs, including behavioral challenges. On multiple occasions Mrs. McBride indicated to me that classroom management was a struggle for her, and she was eager to learn different routines to help the children engage in their work. She hypothesized that her students would be more engaged by small-group instruction at their own level. She had also recently attended a district-sponsored Reading First professional development workshop and felt both inspired and pressured to attempt literacy centers instead of following the whole-class instructional routines of the first-grade team. As her TRI literacy consultant, from the beginning I

affirmed the notion that children would likely benefit from reading instruction at their own level, and I provided ideas and materials to help support multi-leveled literacy centers and guided reading groups. Finally, another powerful force seemingly driving her instructional routine was the quarterly assessments in literacy and math that consumed much of her classroom time for two weeks at a time and disrupted the usual instructional patterns.

Probably as a result of these various tensions and demands, Mrs. McBride's literacy instruction and classroom routines varied from month to month. During the weeks when she patterned her reading instruction off that of the rest of the teachers, she would typically begin the day with "board work"—grammar, copying, and math exercises on the chalk board that the children worked on individually at their seats. The board work period was commonly a time for many behavior difficulties, which I inferred stemmed from their lack of engagement with the activity. After reviewing the correct answers and taking a "dance break," which the children appeared to enjoy immensely, whole class instruction followed. A typical day's instruction would begin with a brief shared reading of a poem that was repeated for several days or weeks and that was followed by "calendar math." Mrs. McBride would then lead the children in oral spelling chants of each of the week's spelling words written on the board, which might be followed by a worksheet or two to be completed by each child independently. After a whole-class trip to the bathrooms, instruction might continue with a whole-group read-along lesson from the basal. The whole-group basal lessons were particularly difficult for many children to stay engaged with. For the most part, only the on-grade level and above readers were able to follow along in their own book. Based on another inservice, this one on writing workshop, Mrs. McBride also occasionally asked the children to write in their journals about a topic she provided, even though this was not a common

practice in the other first-grade classrooms. Finally, another mainstay of her literacy instruction was a variation on making words (P. M. Cunningham & Hall, 1994), using word families, such as "all" or "op." This lesson captivated most children as they waited quietly at their desks for the privilege of being called on to take the new word from the teacher and place it on the pocket chart.

For other weeks at a time, Mrs. McBride eschewed a few of the above routines and opted instead for literacy centers and individual reading conferences. During these times she kept the board work, spelling list practice and test, making words activity, and choral reading of the sight-word booklets, yet she replaced the multiple worksheets and choral reading from the basal story with a few literacy centers: reading along with a taped book or a book on a website, word work games and activities, and independent reading using leveled readers. During literacy centers, Mrs. McBride would manage the centers, offer coaching to a given student reading a book, or assess a reader. On literacy center days, as I waited in the classroom for the time to observe Mrs. McBride and Cierra (the times were unpredictable and varied), I was able to listen to students who proudly wanted to read their book to me and to observe a large majority of the class more engaged with reading and reading-related activities. However, when it came time for nine-week assessments or when her peers increased the pressure to "do the skills," Mrs. McBride switched back to the whole-class routines that included several language worksheets.

Transactions Within the Child System

Within the child system (reading instructional level, reading sub-processes, reading-related cognitions, reading motivation, and classroom behavior), I observed transactions among reading instructional level, all reading sub-processes, reading motivation (particularly

reading self-efficacy and reading involvement), and classroom behavior (particularly distractibility, independence, and task orientation). Most striking, I observed a pronounced pattern of positive reciprocal interactions among reading instructional level, reading sub-processes, and reading motivation. A new variable, *reading practice*, was a notable marker in the feedback loop, improving reading abilities and reading motivation. Secondarily, I observed a clear influence of the variables in the child system (instructional reading level, reading sub-processes, and reading motivation) on Cierra's classroom behavior (notably distractibility, independence, and task orientation), and I saw tentative hints that this relationship was bi-directional.

However, I was less able to register clear evidence of transactions among Cierra's reading-related cognitions and the other variables in her system. Her low performing cognitions (phonological awareness, vocabulary knowledge, and language comprehension) theoretically related to her initial weaknesses in reading level and reading sub-processes. Similarly, her one above-average cognition, rapid naming, theoretically related to her fluency and sight-word reading strengths. From the perspective of this study, however, I was unable to pinpoint the transactional relationships among reading-related cognitions and other system-wide variables.

The following sections provide evidence for the above findings in the child system. Even though the transactions are conceived of as interconnected systems, for the purposes of explanation, I detail one piece of the transactional puzzle at a time. First, I will demonstrate how growth in the reading sub-processes, especially phonological decoding, drove reading instructional level and reading motivation. Second, I will describe the positive feedback loop among these reading and motivation variables, including the new variable reading practice

(see Figure 3). Third, I will integrate classroom behavior into this sub-system of reading and motivation, explaining how reading abilities and motivation influenced classroom behavior and tentatively how behavior influenced the sub-system.

Phonological Decoding Development Drove Instructional Reading Level and Reading Motivation. As described in the initial profile of Cierra as a reader, she initially had low phonological decoding ability, a low reading instructional level, and low motivation for reading. She could not successfully read much other than words from her relatively strong sight-word bank; she lacked confidence in attempting an unfamiliar word because of repeated failures; in turn, she had low self-efficacy and reading involvement. Her difficulties negatively reinforced one another, suppressing her reading development and practice.

However, after three sessions of individual instruction and again after six sessions, some of Cierra's *reading sub-processes* (especially phonological decoding and phoneme segmentation) noticeably rose. Figure 4 displays the increases in her assessment performance on the DIBELS Phoneme Segmentation Fluency and the Nonsense Word Fluency (a phonological decoding measure) tests. Her scores changed from being far short of the suggested end-of-first-grade DIBELS benchmark to expected or above-expected levels over this short time period. Although not as marked, Cierra's phonics knowledge and sight word knowledge assessments similarly showed gains (see Figures 5 and 6).

In addition, she demonstrated her improved phonological decoding and phoneme segmentation abilities in the midst of the TRI sessions. Over the course of the 12 one-on-one observations, Cierra became much more facile with the Change One Sound activity. Change One Sound requires the student to manipulate phonemes in and out of words and taxes a

Figure 3

Reading and Motivation Sub-System

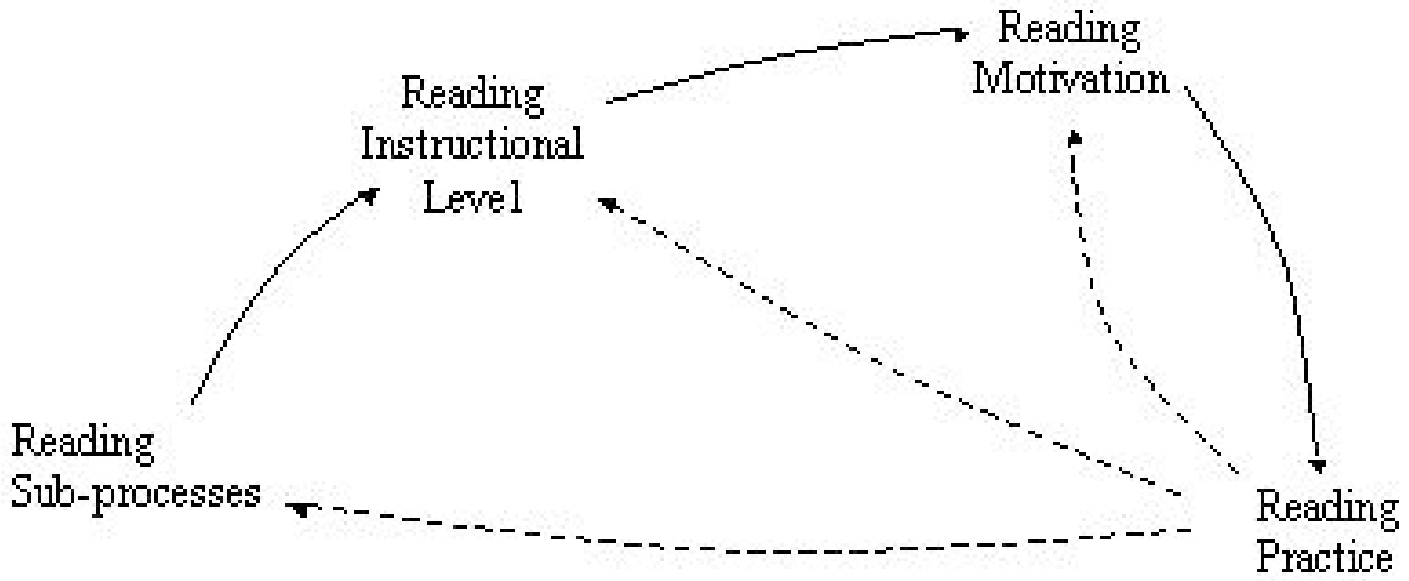


Figure 4

DIBELS Assessment Data

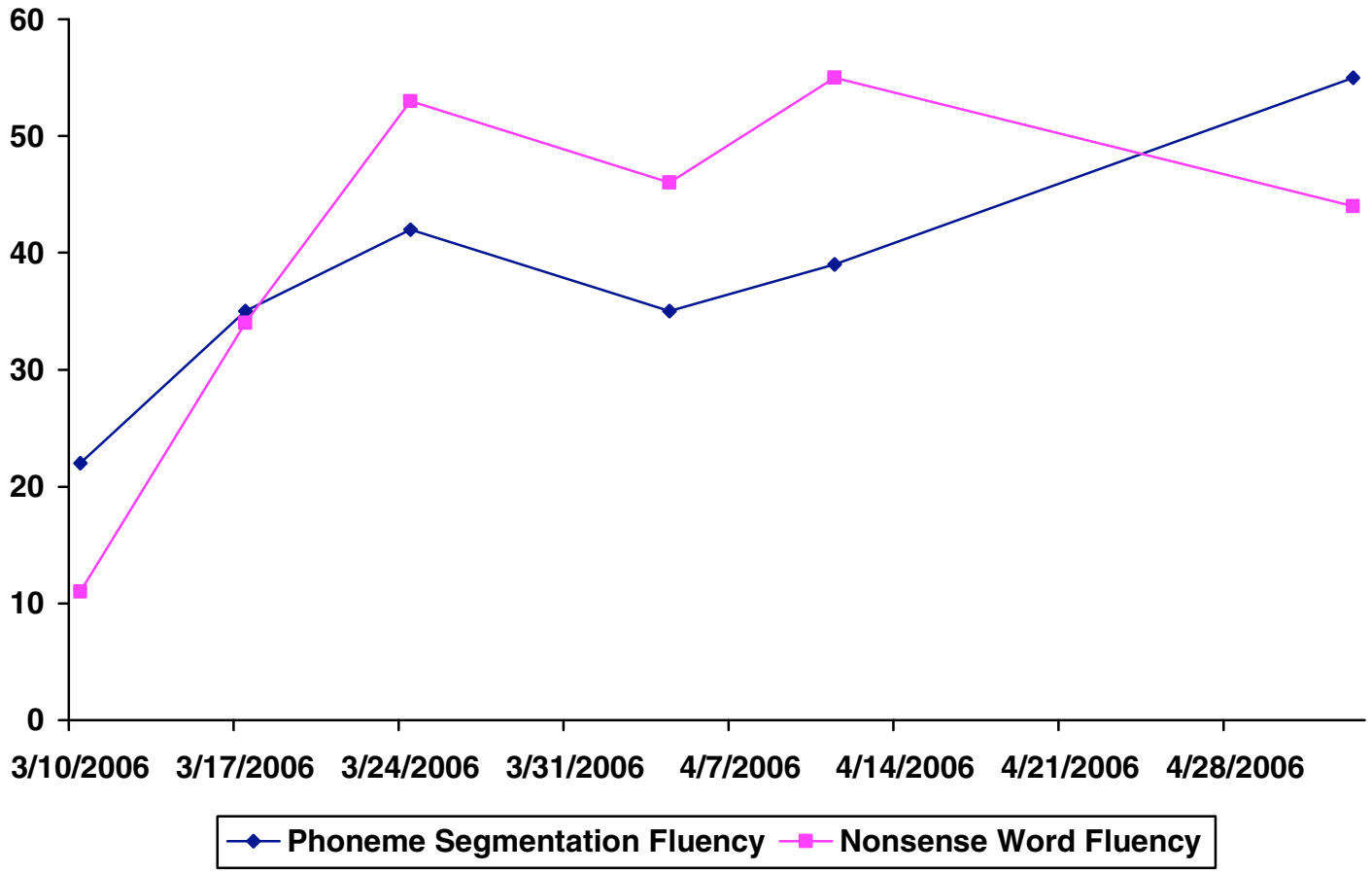


Figure 5

Phonics Knowledge

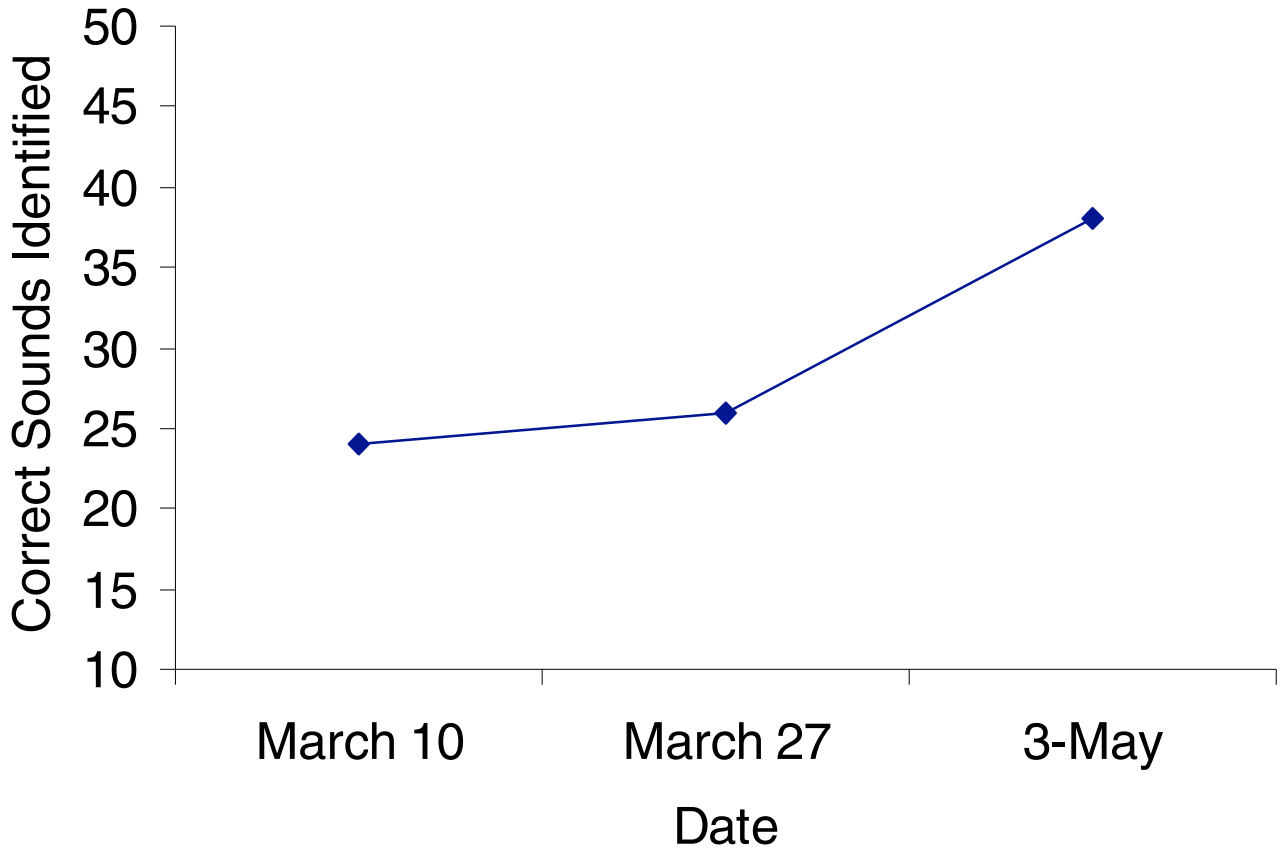
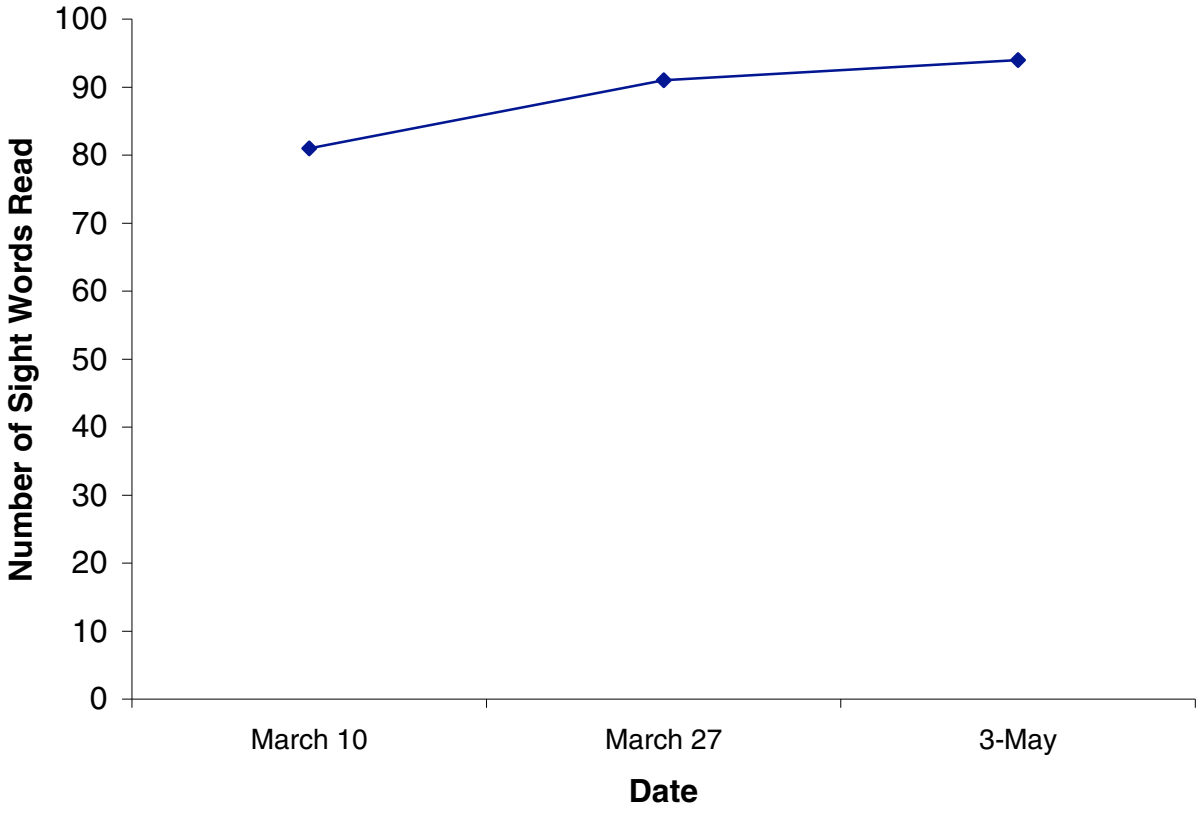


Figure 6

First Hundred Sight Words



child's phonics knowledge and phonemic manipulation and segmentation. For instance, she was asked to move letter-squares to make "slob" into "blob," and then "blob" into "block," followed by "block" to "back," etc. Although Mrs. McBride generally spent about the same amount of time on this activity, across the course of the sessions Cierra generally accomplished much more with this time (see Figure 7).

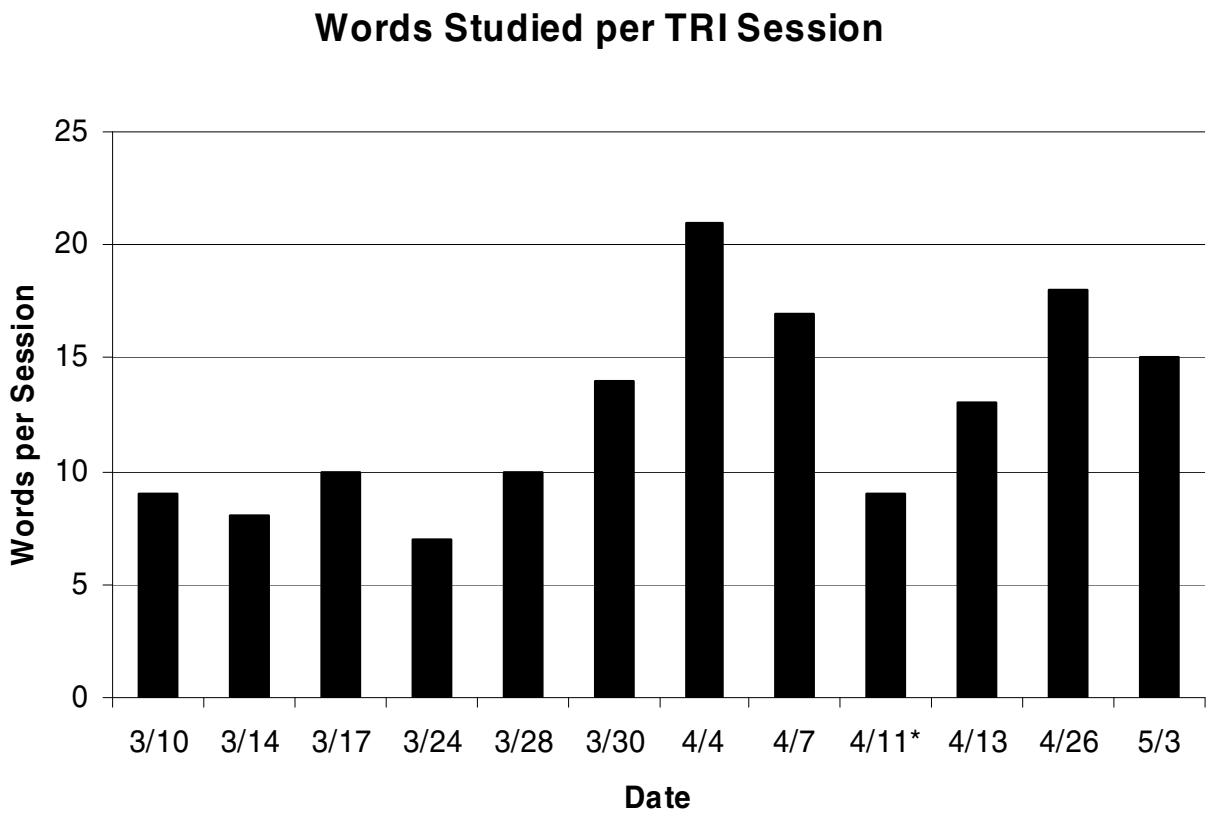
These improvements in her reading sub-processes helped spur her *reading instructional level*. During the guided oral reading portion of the TRI, Cierra improved her accuracy rate from 84 to 87 and then to 89 percent over a period of a week, despite the increasing text difficulty. These improvements in her accuracy rate during guided oral reading continued to remain high, near or above the 90th percentile (see Figure 8). By April 11, a month after I assessed her instructional reading level as pri-primer, Cierra successfully read a first grade level passage with 90 percent accuracy.

Cierra's reduced oral reading errors coupled with the increase in the challenge of the texts during the Guided Oral Reading portion of the TRI also indicate how her reading instructional level rose. For example, on a March 10th TRI session with Mrs. McBride, Cierra made the errors indicated in the passage below. (As Cierra read, Mrs. McBride supported her, helping her to read correctly unknown words before moving on. The text below indicates Cierra's attempts immediately before her teacher's support.)

Text:	Animals in the Cold
Cierra:	*Amilus*? [teacher offers support] in the Cold.
Text:	It is cold here.
Cierra:	It is cold *he*[teacher offers support].
Text:	It is not hot in the sun.
Cierra:	It is not hot in the sun.

Figure 7

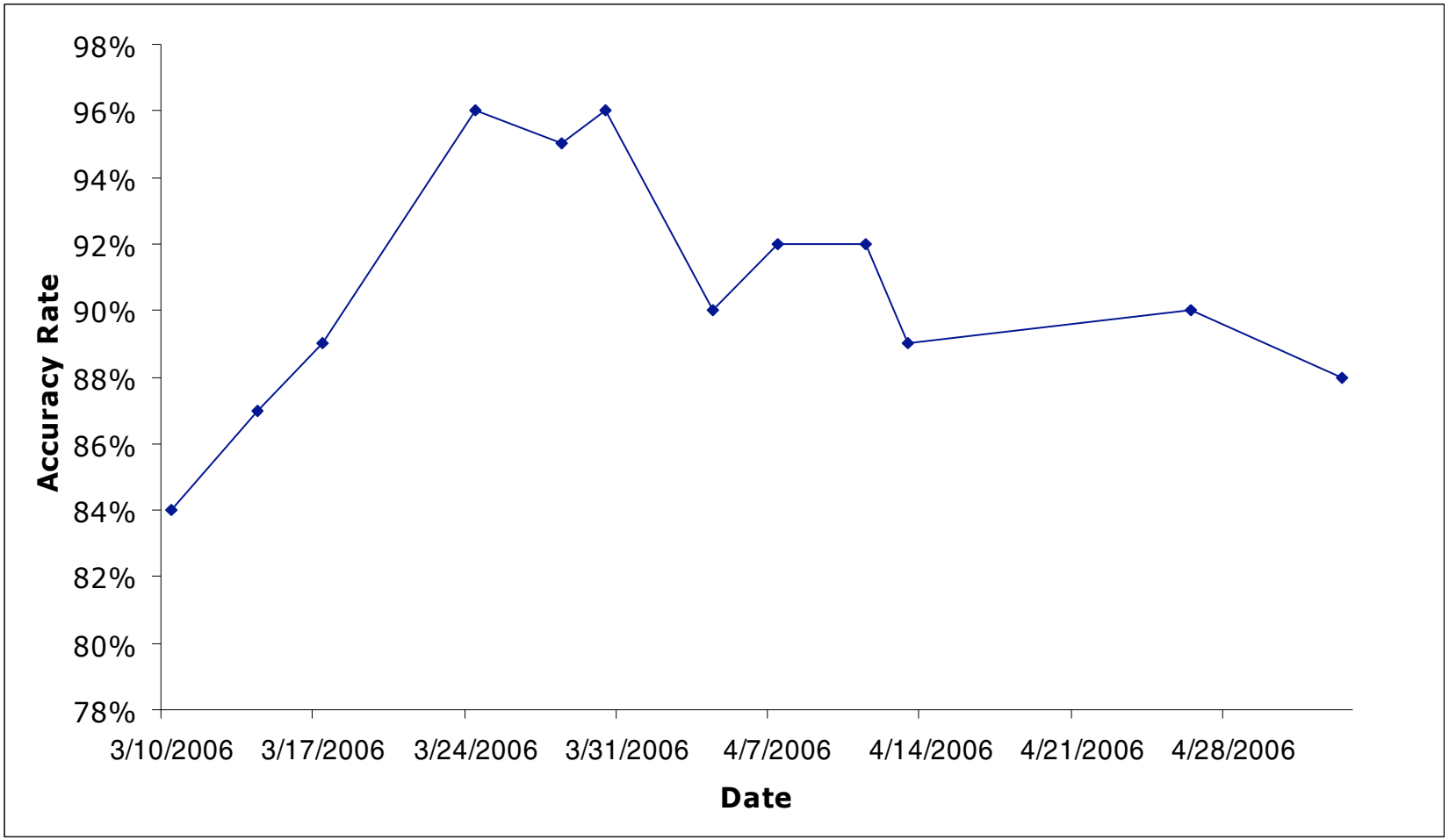
Words Studied per TRI Session



*Mrs. McBride introduced the new sound /ow/ on this day and its two spellings.

Figure 8

Accuracy Rate during TRI Sessions



* All of the relatively lower accuracy rates in April were with texts that were more challenging than the texts read in March.

Text: Lots of animals live here.
Cierra: *Losts*? [teacher offers support] of animals live here.

Text: They do not see buds.
Cierra: They do not see */b/ /yuh/*…[teacher offers support].

Text: Look! A big animal can dig a den.
Cierra: Look! A big animal can *big* [teacher support] a den.

Text: It can pick up its cub and go in.
Cierra: It can *park* [teacher support] up its *cap* [teacher support] and go in.

Text: Birds fall in and go for a dip.
Cierra: Birds *fl fla falling* [teacher support] in an go for a *bi*—[teacher support].

Text: They will get wet.
Cierra: They will get wet.

Text: A den is full of fox pups.
Cierra: A den is */f/* [teacher support] of fox *peepy*? [teacher support].

Text: They are not cold in the den.
Cierra: They are not cold in the den.

From this reading of 84% accuracy, I observe multiple phonological decoding difficulties—mostly with CVC (consonant-vowel-consonant) words.

Consider the contrast between the above reading sample on March 10 and her ability to read words during a later TRI session on March 24. (Again, Mrs. McBride's scaffolding of Cierra's word-reading error is not included here although she did help her to recognize the word before moving on.)

Text: It is winter.
Cierra: It is winter.

Text: It can get cold and wet.
Cierra: It can get cold and wet.

Text: Where do the animals go?
Cierra: Where do the animals go?

Text: Birds can go south.
Cierra: Birds can go *s…south.*

Text: Lots of animals will nap in winter.
Cierra: Lots of animals will nap in winter.

Text: A bear will nap in a den.
Cierra: A bear will nap in a den.

Text: Look who has a winter nap too!
Cierra*:* Look who has a winter nap too!

Text: It is not cold and wet in here.
Cierra: It is not cold and wet in here.

Text: The cold winter will pass.
Cierra*:* The cold winter will *press* [teacher offers support].

Text: Animals will look for spring.
Cierra: Animals will look for spring.

At the time I noted that she read several of these sentences with ease and speed. In addition to her fluency, I notice that she had a much higher accuracy rate (96%) and she correctly read several words, such as "south," "winter," and "spring," which I would not have expected her to be able to read based on reading assessment data from a week-and-a-half prior. Progress monitoring of Cierra's oral reading fluency, another marker for instructional reading level (Fuchs et al., 2001), similarly showcased Cierra's improvements (see Figure 9).

Cierra's Accelerated Reading (AR) report also signifies her improved reading level. The average reading level of the books she selected for AR tests prior to her observed improvement in reading sub-processes and instructional level was .78, which is equivalent to a pre-primer reading level. In contrast, her average reading level after her sub-processes jumped was 1.1, which is equivalent to an early first grade reading level (see Figure 10). Thus far, I conclude that Cierra's enhanced phonological decoding abilities spawned an improvement in her reading instructional level.

Figure 9

Oral Reading Fluency (DIBELS)

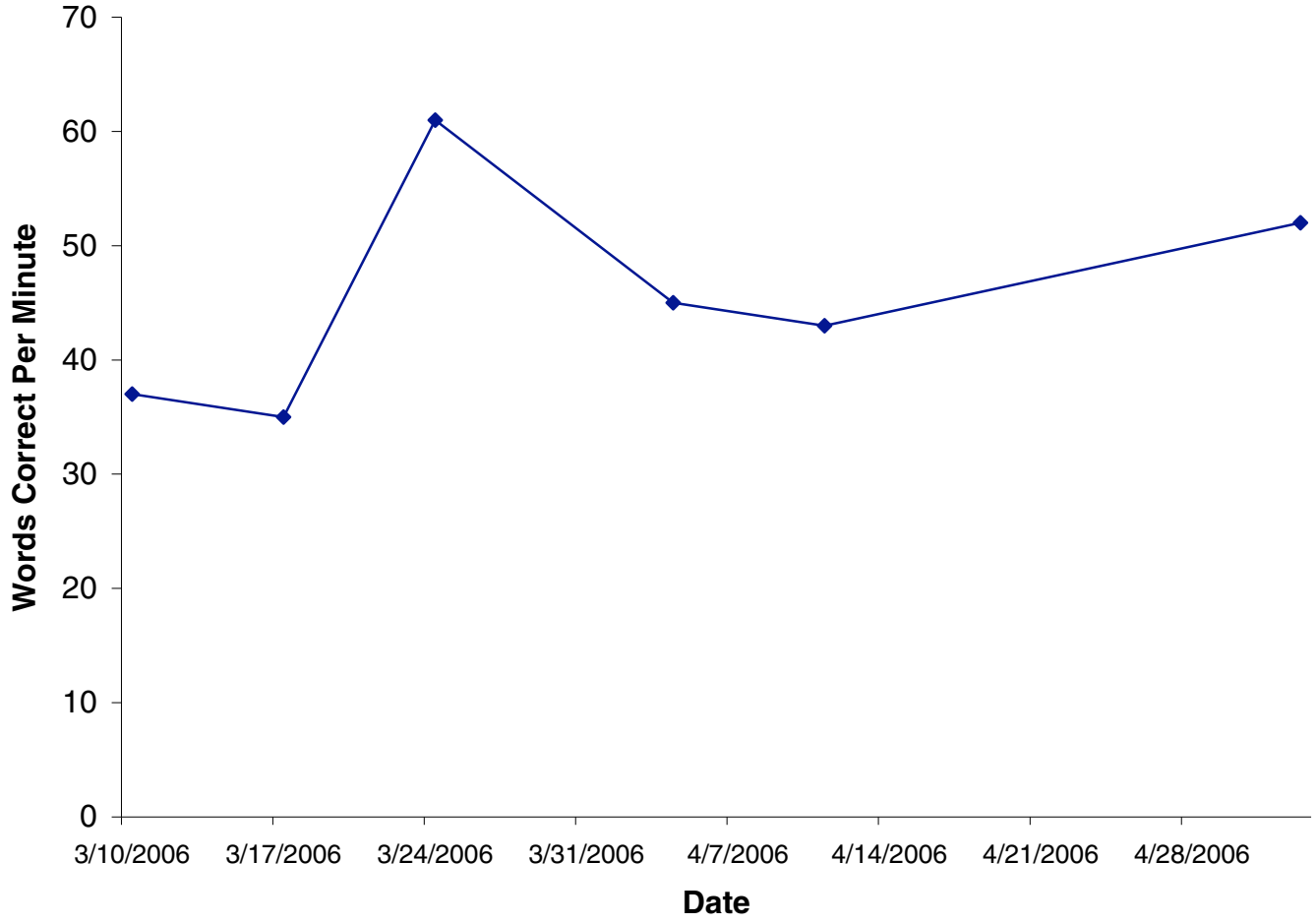
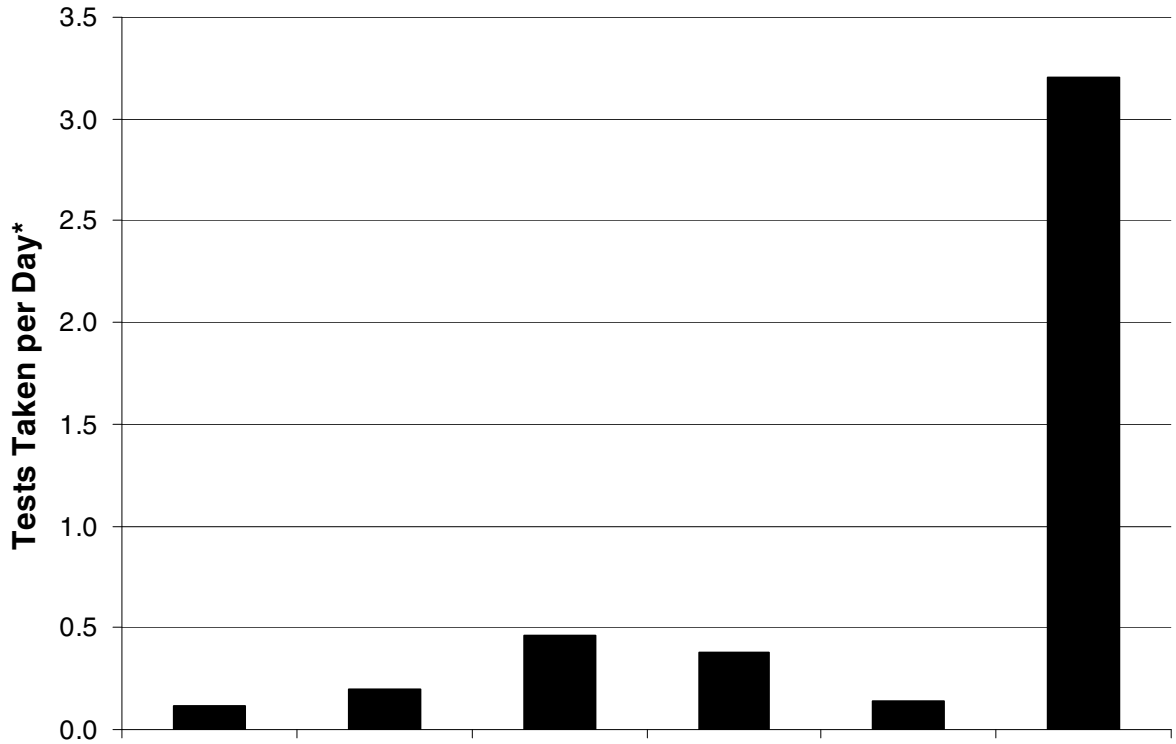


Figure 10

Accelerated Reader Assessment Data



	Nov	Dec	Jan	Feb	Mar 1-20	Mar 21-April 24
Avg Level	1.15	0.73	0.58	0.77	0.65	1.11
Avg Score	70.0	73.3	85.0	80.0	80.0	92.3

*total number of tests taken per period divided by the number of school days in the period

Soon after Cierra demonstrated early development in some reading sub-processes and reading level, she began an unprecedented burst of reading practice, which highlighted her newfound reading *self-efficacy* and reading *involvement*. These significant, connected changes in her performance and in her choices, along with their timing, build a credible argument that reading sub-processes and reading instructional level growth pressed reading motivation upwards. Notice how Mrs. McBride makes the connection between Cierra's reading development and her improved motivation. Just two days after a demonstration of Cierra's jump to expected grade-levels on two phonological decoding measures (see Figure 4), I alluded to this growth to Mrs. McBride, and she responded:

> I knew she had. I can tell. She's so motivated now. She wasn't motivated at all before with her reading. Now she's very motivated with reading….The other day Cierra read six AR [Accelerated Reader] books. She's so motivated now (Interview, March 26).

Not only does the above example confirm Mrs. McBride's understanding that Cierra's reading improved, it also indicates her view of how intertwined reading achievement and motivation were for Cierra. First, Cierra's reading self-efficacy changed as her reading instructional reading level and reading sub-processes grew. In response to my questions about her reading ability, she originally said tentatively, "A little bit" (Interview, March 10). Later, when I asked her how easy, hard, or just right reading was for her, she quickly asserted, "Easy!" on two different occasions. (Interviews, March 24 and May 3).

Second, Cierra's reading self-efficacy boost was manifested by her greater reading involvement and reading practice, as Mrs. McBride alluded to above. Cierra's Accelerated Reader (AR) report powerfully reflects this pattern. In Mrs. McBride's classroom prior to

April, children's access to reading material was limited to the weekly, take-home mini-book, the sets of AR books, their weekly library book, or the basal. When Cierra had low reading abilities and low reading motivation, she rarely took AR tests, and she did not display any other sustained reading interests during the school day. As AR was an optional activity in Mrs. McBride's class, her infrequent election to take tests on AR books (see Figure 10) was one indicator of her low motivation for reading. (Recall that the top third of the class, in contrast, chose to read much more often; this group of students had read an average of 115 AR books by April 24.) On March 21, however, she chose to read four books and take AR tests on them, getting 100 percent on each test. As her self-efficacy changed in response to her enhanced phonological decoding and reading level, she continued to opt to read several books and take AR tests, as many as four or six books some days. This reading involvement and practice continued apace for several weeks, and between March 21 and April 24, she had read 56 books that were at an average reading grade level of 1.1 with a comprehension score of 92 percent on average. An examination of Figure 10 demonstrates the sharp contrast between the period preceding her growth in reading sub-processes and instructional level with the period following.

In early April, I experienced first-hand an example of the changes in Cierra's motivation to read when I pulled her to the side to assess her reading and interview her. As I calculated how many reading errors she had made on a QRI-II passage to determine what step to take next with the assessment, I offered her the book *Hop on Pop*. She eagerly took it from me, and when I finished my calculations and asked her if she cared to do something else or finish the book, she promptly responded she wanted to keep reading. I began to listen more carefully to her reading then and she read it accurately, smoothly, and rapidly with only

a few word-related cues from me. After she finished, she asked Mrs. McBride is she could read it to her. As a literacy consultant and a reading tutor, I frequently offer children the opportunity to read while they wait briefly for me to finish an assessment. Cierra's pronounced and sustained enthusiasm for reading on her own took me aback, however, as it is a rare choice for a student targeted for special reading intervention. Her behavior and performance were the convincing dressing of a self-efficacious reader and clearly demonstrated for me her awakened reading involvement.

Motivation Cascaded Back Over the Reading Variables. This pattern of reading development igniting reading motivation was not uni-directional, though. Positive feedback from Accelerated Reader tests (which represent reading practice), among other forms of positive feedback, boosted Cierra's self-efficacy and her reading involvement. This stimulation to the reading system of increased and more challenging reading practice further enhanced reading sub-processes and reading instructional level.

After the burst of reading practice, Cierra's reading sub-processes remained in their elevated position or continued to improve (see Figures 4, 5, and 6). Her instructional reading level continued to show growth as well. On April 11, she successfully understood a first grade passage that she read with 90% accuracy, up from the pre-primer a month prior. Consider how her AR report (see Figure 10) also shows the positive feedback loop among reading sub-processes, reading instructional level, reading motivation, and reading practice (see Figure 3). Independently, Cierra began to read more, and then she chose to read more difficult texts. Recall her AR reading level went from an average of .78 to 1.1. The growth in reading level and reading practice indicated by the AR report represents a nexus of reciprocally intertwined relationships among her reading abilities, reading self-efficacy,

reading involvement, and reading practice. Cierra's reading abilities improved; she had greater feelings of self-efficacy towards reading; she attempted more and more AR tests (one flavor of reading involvement); she received positive feedback from the successful scores she earned (increased self-efficacy); and she practiced reading much more than in the past. Additional, successful reading practice reciprocally reinforced her growing reading sub-processes and overall level.

Reflecting back on how Cierra's reading sub-processes, reading level, and motivations had moved together over the spring, Mrs. McBride said,

> But once I began to encourage her; began to send books home with her, through the TRI—working with her and the things that related to whatever skill we were working on, so now she was excited about reading. I could not keep her away from books. I would actually [Mrs. McBride smiling/laughing] find her reading books during other lessons, and we had to really work on that because she, if nothing else, there was a love for reading that had developed in her and it was awesome. And she was really above the level that she was supposed to be when she left my class. She was one of my top students (Interview, July 6).

Classroom Behavior Should Be "Seen Together" Along with Reading Abilities and Involvement. The mutually reinforcing sub-system of reading abilities and reading motivation spilled over to Cierra's classroom behavior, particularly her distractibility, independence, and task orientation. I observed obvious changes in her classroom behavior driven by changes in her reading sub-processes, reading level, and reading motivation. I offer the tentative result that her improved classroom behavior "fed back" to reading sub-processes, reading level, and reading motivation as well. In contrast, the aspects of classroom behavior having more to do with inter-personal relationships—*hostility* and *considerateness*—did not show overt bi-directional connections with the other variables in the child system.

The Reading/Motivation Sub-System Affected Classroom Behavior. When Cierra's reading abilities and reading motivation were limited, her classroom behavior was marked by very high levels of distractibility, moderate levels of independence and low levels of task orientation, as indicated by Mrs. McBride's RELI questionnaire and my classroom observations. Mrs. McBride explained Cierra this way: "[she] was the most challenging student that I think that I could say that I had in all of my years of teaching" (Interview, July 6). In my initial classroom observation, I coded 11 moments where Cierra outwardly switched from on-task behavior to off-task behavior. These moments often coincided with my coding of "hyperactivity" 17 times. She might copy a few words off the board and immediately bounce to rearranging her belt. As quickly as these off-task actions happened, she would return to the task in front of her, especially when Mrs. McBride would remind the class to either attend to their task or to stop misbehaving. In contrast, after her reading abilities and reading motivation accelerated, she demonstrated an observable improvement in her level of distractibility during classroom reading instruction. During later observations I witnessed fewer distractible moments, and if she got off-task, she was more likely to re-engage on her own recognizance.

For example, in an early March whole-class read-along from the basal, Cierra would attempt to attend to the book or to answer Mrs. McBride's questions. Yet, she was just as often distracted and off-task. In the following snippets from a whole-class guided oral reading time, the class is seated on the floor and in some adjacent chairs next to Mrs. McBride at the front of the room:

Mrs. McBride to the whole class: Read along with me. (Two girls read along.)

Mrs. McBride: Let's do that again cause I didn't hear everybody. Girls, you're not reading along. Point with your finger. (Cierra immediately points to words in the book, but she does not stay on the right page.)

[Reading of some of the text]

Mrs. McBride: What does "what's" mean? (She reminds the class about contractions. They've been studying them lately.) Let's look on page 11.

Text: "Pardon," said the giraffe. (Cierra is able to read along with this. She quietly mouths the words. This sentence has been repeated several times, so it may be in her phonological memory as a support.)

Mrs. McBride: I wonder why the words are so far up on the page?
(A few children offer possibilities.)

Mrs. McBride: Turn to page 12. (Cierra is still engaged with the book. She is sharing with the same girl. I cannot tell if she is reading the words.)

Mrs. McBride: "'What is like a bear?' as he hopped on the lion." We've got a pattern here. What do I keep seeing again? (Three children—the better readers—respond with "hopping.")

Cierra: He's gonna get to the… (She points to a picture in the book. She crinkles the page accidentally; turns back the page.)

Mrs. McBride: Let me tell you a little about the hippopotamus. (Cierra appears to be listening.)

Mrs. McBride: You know what "hippopotamus" means? Boys and girls, I didn't know this. I just learned this. "Hippopotamus" means "a river horse." (Cierra starts to pretend cough.)

Mrs. McBride: You know how long they hold their breath? Six minutes!....Let's turn to page 16.

Text: "What's it like up there?" as he hopped to the elephant.

Mrs. McBride: Let's pause and recall the story. (Cierra trades partners with her book, flipping through the book with her friend. She shows interest in a particular page, yet she does not appear to be listening to Mrs. McBride.)

[Skipping ahead]

Mrs. McBride: Here the story took a turn. Do you think the giraffe can answer the question? (She urges the class to follow along several times as she leads them to read

> together. Cierra responds and follows along with her finger. She reads a little along with the top third of the class who is able to follow and then slows down at "tickling.")
>
> Mrs. McBride: Listen, this may be a word you don't know. /Tick/ /l/ /ing/. (Cierra stands, yawns, and holds book up in the air.) (Observation, March 10).

Lacking the ability to read along with the teacher and not seeming up to the task of persisting with the difficult reading level, Cierra swims in and out of attention to the text and the teacher's questions.

After Cierra demonstrated reading instructional and sub-processes growth, along with greater reading motivation and practice, she is more in-tune with the instruction for more sustained periods. For instance, notice her focus in the following transcript of the modified "making words" whole-class activity described earlier:

> Mrs. McBride: We're gonna go over our word family now. (She holds up cards with a letter or a consonant blend to have students add to the "ing" chunk already written on individual cards on each row of the pocket chart.)
>
> Mrs. McBride: Tanisha, who can tell me what this is (holding up the card with the "ing" chunk written on it)? "I" "n" "g."
>
> Tanisha: /Ing/.
>
> Mrs. McBride: /Ing/. OK, class, let's read it.
>
> Mrs. McBride and Class: /Ing/.
>
> [Skipping ahead]
>
> Mrs. McBride: I'm calling on people to do just what I did who are sitting quietly and paying attention. (Cierra gets still. She usually responds immediately to the teacher's oral instructions.)
>
> Mrs. McBride: (Holds up an "r.") Mia, you can come up if you can tell me what sound this is.
>
> Mia: /R/.
>
> Mrs. McBride: And what word is it if we put it with our "ing" word family?

Mia: Ring. (Mia gets to put the "r" next to the "ing" card on the chart.)

[Skipping ahead.]

Mrs. McBride: (Holds up "fl" on a card.) Cierra? (I wonder if she calls on Cierra because she worked on a "fl" word during the TRI this morning. Mrs. McBride smiles broadly and seems to me that she's suggesting with her look towards Cierra that she knows this is a special card for her.) I know you know this one. (Cierra smiles proudly.)

Mrs. McBride: Can you tell me what sound this is? It's really two sounds. (Cierra has her head in her hands, looking at the board.)

Cierra: /Fl/.

Mrs. McBride: And the word is?

Cierra: Fling (after a slight pause). (The class is mostly quiet still. Cierra puts the "fl" card on the chart. She returns to her desk and immediately gets pencil to write.)

[More words with individual students' help. Cierra continues to watch the teacher and write the words]

Mrs. McBride: (holding "str" up) "S," "t," "r." What sound does "s" "t" "r" make?

Class: /Str/ /str/. (Mrs. McBride invites a boy to fill the chart.)

Cierra: I can write that one.

[Mrs. McBride holds up "th" and asks another boy who's barely reading to attempt it. He does not respond.]

Cierra: I will. I'll take his spot!

Mrs. McBride: Who has not had a turn?

[Skipping ahead]

Mrs. McBride: (holds up "br") Joshua, can you do "b" "r"?

Cierra: Bring! (She takes off her shoes and writes "bring." She talks under breath. "I can…" She stands up and sings a "bring" song.)

[Skipping ahead]

Cierra: (Looking at the "wr" card) Wing!

Mrs. McBride: It can't be wing because there's a "r" in it. (Once the correct response is provided, Cierra dances, taps, and writes.)

Mrs. McBride: (holding up "cl") Let's see who gets a turn. (Cierra raises her hand, but another advanced reader, a boy, is selected to read it.)

Cierra: Cling! (Cierra writes word.) (Observation, April 7).

This classroom exchange reflects both Cierra's fading distractibility and her increasing task orientation. With her improved reading abilities and motivations, attending more consistently to class tasks appeared easier for Cierra and it happened with more regularity. During the episode above, she appeared to surprise herself by her own ability to read the "ing" words (a phonological decoding ability). As seen above, she remarked, "I can write that one." During the same lesson she also later said to no one in particular, "All the words you're pulling, I know how to write" (Observation, April 7). Her positive experience reading "fling" for the teacher in front of the whole class (in part because of her improved phonological decoding) boosted her self-efficacy ("All the words you're pulling, I know how to write"). Enjoying renewed self-efficacy, Cierra stayed involved, undistracted, and oriented to the task word after word: a changed classroom behavior.

The changes in Mrs. McBride's RELI Child-Specific Questionnaire from January to May in task orientation and independence also indicate changes in these aspects of Cierra's classroom behavior. Her rating of Cierra's Independence went from 9 to 11 on a scale of 5 to 25, and her rating of Cierra's Task Orientation went from a 9 to a 14 on a scale of 5 to 25. Mrs. McBride's rating of Cierra's Distractibility did not change, however, and it stayed very high as compared to eight of her peers. Mrs. McBride indicated in other ways, though, that classroom behavior changed in tandem with reading abilities and motivations. She said, "[I]t

was just…her behavior changed. There were still days where we struggled, but it was such an improvement, and she actually became one of my better students" (Interview, July 6). Cierra's internal drive to read many more books and take AR tests on them was another indicator of her developing independence in the classroom as she developed in reading level, sub-processes, reading motivation, and other classroom behaviors.

Classroom Behavior Appeared to Reinforce the Reading/Motivation Sub-System. Attending to the classroom activity, not getting distracted, and showing greater independence, were not just the end-result of a positive pattern for Cierra. I suggest, tentatively, that this very performance during class activities helped develop her reading sub-processes, reading instructional level, and reading motivation further. For instance, in the above classroom scenario of the "ing" words, Cierra read many more words than she had done before during similar classroom exchanges. Similarly, during a whole-class read-along from a sight-word, take-home booklet about Red Riding Hood on May 3, Cierra followed along or read along with much more of the text than she did in a similar whole-class read-along in early March. When Mrs. McBride added the activity of circling the words with the /oo/ sound to this class read-along of Little Red Riding Hood, Cierra answered several questions correctly by reading words in the booklet, and she consistently stayed with this task. What I find compelling is that Cierra's task-oriented behavior during whole-class instruction and her independent reading and test taking (AR), caused considerably more reading practice than she had shown earlier when her behavior was off-task and unengaged with reading independently. As she read more during both whole-class and independent times, she improved her reading level (e.g., first grade instructional level on April 11; see also Figures 8, 9, and 10) and her reading sub-processes (see Figures 4, 5, and 6).

An analysis of her sight-word reading growth also suggests that Cierra's learning of these mostly irregular words came from reading during classroom instruction times. Through March 28, when she acquired 10 more sight words on the assessment from the last administration ("their," "with," "write," "other," "his," "people," "first," "water," "find," and "made"), Cierra had not encountered any of these words during the TRI (individual instruction). Likewise, on May 3, Cierra read five other words that she had not correctly identified before ("want," "which," "use," "than," and "that"), and she had only seen the word "which" once in the midst of individual instruction (see Figure 6 for sight-word reading assessment data). From evidence such as this, I cautiously conclude that classroom behavior exerted a mild influence on reading sub-processes and reading instructional level.

In addition, I saw some indication of how Cierra's changing classroom behavior reinforced her reading self-efficacy. In her less distractible, task-oriented state, Cierra much more often followed the class's reading or word work. When Mrs. McBride called on her, she answered correctly more often and she was pleased with herself (reading self-efficacy). When I asked Mrs. McBride, "So did you see classroom performance improve, too, not just maybe reading but overall attention to what was going on in class?" She said, "Absolutely. She would strive to please me; if I asked her to do something, she wanted to do that, and she wanted it to be right" (Interview, July 6). For Cierra, successful performance brought pleasure, yet she rarely had successful performance in whole class situations before her sudden enhancement of reading, motivation, and behavior. In my first, two-hour classroom observation I only noticed three interactions between Mrs. McBride and Cierra. Two of these were reprimands and one was an instructional exchange where Cierra did not know the answer. Later observations showed numerous instructional exchanges; Cierra usually knew

the right answer because the whole class activities were now at her instructional match and she was more often paying attention, following the teacher.

Summary of Transactions Within the Child System. In sum, if we somewhat artificially separate the child system of reading instructional level and sub-processes, reading motivation, and classroom behavior from the larger system of individual and classroom reading instruction, we see clear mutually reinforcing interactions across these child variables. I conceive of Cierra's reading system developing through the positively entwined relationships primarily among reading instructional level, reading sub-processes, and reading motivations, and, to a lesser extent, classroom behavior.

Transactions Across the Child System and the Instructional System.

I observed that the transactional relationships within the child system (reading instructional level, reading sub-processes, reading motivation, and classroom behavior) also transacted with the individual reading instruction that was matched to Cierra's instructional needs. To a less observable extent, classroom instruction interrelated with individual instruction and the child system as well. In particular, one aspect of individual and classroom reading instruction, positive instructional and emotional exchanges between Cierra and Mrs. McBride, exerted a strong reciprocal influence on reading sub-processes and instructional level, reading motivation, classroom behavior, and individual and classroom instruction.

Individual Instruction Reciprocally Interrelated to Child System. Individual instruction with instructional match served as one catalyst for development in the child system. In turn, Mrs. McBride modulated her individual instruction in response to Cierra's adapting reading level and processes, reading motivation, and classroom behavior.

Instructional Match. In the midst of individual instruction, Mrs. McBride scaffolded Cierra's reading activities very carefully, providing instructional match for Cierra in vocabulary knowledge, comprehension, and word identification. Mrs. McBride ensured instructional match by varying the instructional activity or material and by providing moment-to-moment instructional support. In keeping with Cierra's weak phonological awareness, she spent 5 to 15 minutes each TRI session in the TRI Word Work activities "Change One Sound" and "Read, Write, and Say," which are designed to target phonological awareness and decoding. During Cierra's oral reading, as part of the TRI components, Re-Reading for Fluency and Guided Oral Reading, Mrs. McBride continually offered instructional support for Cierra's word-reading difficulties, carefully "responding to the response" (Lindamood & Lindamood, 1998). She balanced this word-getting focus with a steady stream of timely vocabulary instruction and comprehension monitoring.

Consider the following classic example of Mrs. McBride ensuring instructional match during a Word Work activity. Cierra attempted to read the word, "flip," yet she said, "fllllap." Notice how Mrs. McBride provided only the instructional support that Cierra needed to be able to decode the word for herself:

> Mrs. McBride (in a friendly, questioning tone): "You think that's flap? Now let's look at this. You've got every sound right almost, except for that one little vowel. You said flllaaap." (She runs the pencil along the bottom of the word as she says each sound.) "What is that?" (Mrs. McBride points to the "i" with the tip of her pencil.)
>
> Cierra says, "/ĭ/."
>
> Mrs. McBride (excitedly): "/ĭ/! So, it's going to be--."
>
> Cierra: "/flliiip/."
>
> Mrs. McBride: "Very good, Cierra. That is going to be flip."

By directing Cierra to attend to each sound in the word via the visual and auditory cues, Mrs. McBride scaffolded Cierra's phonological decoding, offering phonemic awareness and phonics knowledge support to enable Cierra to successfully attack the word herself. Across 12 individual instructional sessions, I observed Mrs. McBride unrelentingly offer similar scaffolding (responding to the response) to most of the words covered in each part of Word Work (an average of 13.25 words per session) or to those mis-identified during Guided Oral Reading (an average of 6.5 words per session).

What Mrs. McBride focused on during the three-times-a-week TRI sessions, was primarily what Cierra learned. I value this relatively tight connection as a strong marker of how individual instruction directly impacted reading sub-processes and reading instructional level. During the TRI sessions, Mrs. McBride targeted phonemic awareness, phonics knowledge, and phonological decoding and these sub-processes quickly changed after four sessions and then again after three more sessions (see Figures 4 and 5).

First, Cierra struggled initially with phonological decoding, especially because she had poor phonemic blending abilities. Recall her inability to hear the word, "lost," even after correctly identifying each phoneme, which is not surprising given her extremely low score on the DIBELS Nonsense Word Fluency measure (a phonological decoding task). After repeated instruction in how to blend sounds in words, however, Cierra showed less difficulty with the blending task. During the TRI sessions, Mrs. McBride would repeatedly coach her to gradually blend sounds in the word, covering up the latter part of the word to allow Cierra to focus just on the beginning sounds. Here is a typical example of this coaching during Guided Oral Reading:

Cierra: It it will rain in the spring. Look who can jump and…quick?

Mrs. McBride: Quick—almost. You got some of the sounds right. What's that say? (Mrs. McBride covers over word with small white card except for first "k.")

Cierra: /k/ /i/ (Mrs. McBride removes the card gradually just before Cierra says each sound.) /s/.

Mrs. McBride: /k/! The last sound is /k/!

Cierra: /k/

Mrs. McBride: OK, let's put it together.

Cierra: /kiiik/.

Mrs. McBride: There ya go (TRI Observation, March 14).

With such repeated scaffolding in how to blend, Cierra quickly improved, as evidenced by her success phonologically decoding (Nonsense Word Fluency; see Figure 4) and her speed with words during Word Work (see Figure 7). Another testimony is the praise of Mrs. McBride after hearing Cierra correctly identify the phonologically challenging word, "stomp," out of context. She told Cierra, "I can tell that you have come a long way" (TRI Observation, March 30).

Second, the specific phonics knowledge that Cierra acquired is another validation that individual instruction drove reading abilities to develop. Mrs. McBride routinely asked Cierra to move sounds in words by changing short vowel sounds, a specific spelling (i.e., "ch" or "wh"), or the various spellings of a specific sound (i.e., /er/ as "er," "ir," and "ar"). In addition, during the TRI activity Read, Write, and Say, Mrs. McBride gave Cierra several words with the "sh," "ch," or "th" spelling to read and write on three different days, such as "much," "shop," "with," and "chip." Cierra added a few phonics knowledge items to her repertoire between March 10th and May 3rd (/ŭ/, /ĕ/, "ch," "th," "er," "ir," "or," "ear," "ou," and "ow,"), and these phoneme-grapheme relationships were some of what was reviewed

frequently in the TRI setting. Recall that all of these reading sub-processes changes were not just an isolated development either. Rather, as reading sub-processes changed, so too did instructional reading level (e.g., see Figures 4 and 10).

Individual instruction, then, served as a catalyst for growth in reading sub-processes and reading level. As described as part of the child system above, these reading abilities were mediators for change for both reading motivation and classroom behavior. Thus, individual instruction affected reading motivation and classroom behavior as well, with Cierra's reading abilities serving as one mediator.

Individual Instruction Reacted to the Child System. As reading sub-processes and reading instructional level rose, Mrs. McBride increased the challenge of the Word Work activities and the reading material that she provided Cierra. The argument for instructional match above implies that Mrs. McBride modulated her instruction appropriately to adapt to Cierra's growth. For example, when Cierra was still weak in her phonological decoding and phonemic awareness, Mrs. McBride selected only five to six words for Change One Sound. In contrast, by late March when Cierra's phonological abilities had accelerated (see Figure 4), Mrs. McBride asked Cierra to change as many as 14 words, which she did successfully with Mrs. McBride's scaffolding (see Figure 7). Similarly, the texts in the early sessions were much easier than the ones from later sessions. Notice the difference in the decodability and length of the two texts chosen for Guided Oral Reading below:

> It is spring. Animals hop and run in the grass. Trees are full of buds. Nests are full of eggs. It will rain in the spring. Look who can jump and kick in the mud! The flower buds are wet. They will get big in the sun (TRI Observation, March 14).

> It's a cloudy day. A gray day. A gray and gloomy, cloudy day. A day to stay in and play and play. A day for reading books. A day for make believe. A day for drawing and painting. We have lots of fun on gray, gloomy, cloudy days.

> Look! The sun! The sun! The sun is out! Let's go out. Let's go out and play. It's a sunny day. It's a running, jumping day. It's a busy day. A day to throw and catch. A day to scream. A day to fly a kite. We have lots of fun on busy, sunny days (TRI Observation, April 13).

Mrs. McBride also altered her instructional and emotional support to respond in kind to Cierra's reading motivation. When Mrs. McBride felt Cierra was showing an early sign of discouragement, she would offer an additional level of support, perhaps just telling Cierra the word that was causing her to struggle, or quickly repeating her directions. Cierra almost always focused intently on each of the many tasks Mrs. McBride gave her during each TRI session, yet a few times her energy appeared to drop slightly along with her engagement in the activity. When this happened, Mrs. McBride was quick to respond and adjust. For instance, during a brief pause while Mrs. McBride switched materials from Guided Oral Reading to Change One Sound, Cierra put her head down on her arm on the table.

> Mrs. McBride: Cierra, today we're going to make a word today….Let's make a word, Cierra. Let's make a word. (spoken quickly as she runs her finger under the word.)
>
> Cierra: (pops her head up) Oh! I know! (TRI Observation, March 17).

Since they did not always co-occur, it appeared that Mrs. McBride bundled the calling of Cierra's name, repeating her directions, and visually pointing to the cards on the Word Work board in an effort to spur Cierra's motivation and attention for the next task.

Another subtle scene validated for me the metaphor of an intricate tango Mrs. McBride danced with Cierra, moving along with her motivation, behavior, and reading abilities. During a variation of Read, Write, and Say that she introduced for the first time, Mrs. McBride had to ask Cierra two times essentially the same question in quick succession because Cierra was unfocused, looking at another student near the chalk board. As Cierra sluggishly moved to react, Mrs. McBride asked, "Can you take the marker and mark the

picture [a picture of a sound] in this word?" (TRI Observation, April 4). Offered a colorful, dry erase marker, Cierra rebounded quickly and was again engaged in the task. On the other hand, when Cierra was high-energy and reading fluently with expression, Mrs. McBride affirmed her ability with the occasional "Oh, you read that with such expression!" and the common, "Good job," yet she mostly stayed out of the reading.

Classroom behavior also impacted individual instruction, albeit via the mediators of reading practice and enhanced reading abilities. As I detailed in the answer to research question 1 a), Cierra's lower levels of distractibility and higher independence and task orientation spawned reading instructional growth, which then impacted individual instruction. Her choices (and ability) to persist in classroom reading instruction to read independently more helped boost her instructional reading level. As her reading level rose, so, too, did the level of challenge during individual instruction. Classroom behavior, then, is yet another variable that shares a transactional relationship with individual instruction.

An Enhanced Teacher-Student Relationship and Individual and Classroom Instruction Transacted with the Child System. One aspect of individual and classroom reading instruction, the teacher-student relationship, exerted a strong reciprocal influence on reading sub-processes and instructional level, reading motivation, classroom behavior, and individual and classroom instruction. Positive instructional and emotional exchanges in both individual and classroom instruction had been unusual between Mrs. McBride and Cierra. However, with the onset of individual instruction, Mrs. McBride spent much more time with Cierra in individual instruction than ever before, and she grew to understand her abilities and temperament. She grew to be "in tune" with Cierra, and this tighter instructional and emotional connection yielded more positive instructional and emotional exchanges during

classroom instruction, as well. Cierra, in turn, relished the additional attention in both individual and classroom instructional settings, spurring her reading development, motivation, and behavior.

Cierra craved attention and success, yet she had little of it before Mrs. McBride began to offer individual instruction to her about three times a week. As alluded to earlier, on the first day I observed Cierra during literacy instruction, Cierra had three personal exchanges with Mrs. McBride and two were to be reprimanded; "Cierra, I'm gonna ask you to turn your stick" and "Cierra, I want you in your seat" (Observation, March 14). The other exchange was during the making words lesson, and Cierra incorrectly read "small" as "smell." The lack of instructional exchanges were in the midst of an instructional setting where Mrs. McBride was continually calling on students to answer questions; however, most of the children who were called on were just the top third of the class. Once Cierra even exhibited anger with Mrs. McBride when she wasn't called on after her hand had been raised for a while.

Individual instruction for 20 minutes three times a week, however, radically shifted the amount and kind of instructional and emotional support Cierra received. Across all 12 TRI observations, I witnessed only positive instructional and emotional interactions. Cierra almost always was right on task very promptly and Mrs. McBride always exhibited a warm concern for her young pupil. For each TRI session, the pair sat very close to one another and they frequently looked intently into each other's eyes. Mrs. McBride would often lightly touch Cierra on the arm when she wanted to express her congratulations or a mutual understanding. Cierra appeared to relish this time with Mrs. McBride, smiling about her own reading successes or about a brief conversational exchange with her teacher. The TRI

sessions were unique, intimate moments in the midst of a generally hectic, noisy classroom day. Consider a typical example from a transcript of one TRI session. Just after Cierra finished reading a story to Mrs. McBride, Mrs. McBride said,

> "Good job. You know what? That was a cute little story, but you know what I liked? That you read with expression." (Cierra looking intently at Mrs. McBride. Mrs. McBride gets very close to Cierra. Both look at each other's eyes.) "When you saw, 'Eat up! Yum! Yum!' you changed your voice Mrs. McBride noticed—like when I read to the class. And I really liked that. That's the way you read, Cierra" (TRI observation, March 28).

Or, imagine this scene between teacher and pupil after Cierra finished reading a book:

> Mrs. McBride: He (the bear) sleeps in a den. He takes a nap. I'm glad you said "sleep" because nap and sleep basically mean the same thing. Would you like to stay home and sleep all winter? (She draws closer to Cierra and looks intently at her eyes. Cierra looks up and nods in agreement.)
>
> You would? (She smiles.) OK, let's look at this…and um it said that they take a winter nap, too. And in there it's not cold nor is it wet—it's—what's another word, we say it's like in there?
>
> Cierra: Warm.
>
> Mrs. McBride: Warm…and cozy. (She says "cozy" like its meaning.) Have you ever heard the word, "cozy?" (Cierra nods her head and looks straight forward, perhaps thinking of her response.)
>
> Cierra: That's when…I try to be cozy when I be cold early in the morning. (She smiles, perhaps from the fond memory.)
>
> Mrs. McBride: You try to be cozy when you're cold early in the morning? Oh, ok. And then the winter is going to pass, and what season are we looking for? (She turns the page to the last page of text. Cierra points to the last word, "spring," as she answers.)
>
> Cierra: Spring.
>
> Mrs. McBride: Spring. Very, very good.

Closeness, personal conversations, positive feedback, and elaboration of ideas were typical features of the one-on-one sessions, giving Cierra an unprecedented degree of instructional and emotional support from her teacher.

Initially fostered during individual instruction, their growing relationship in both instructional settings bi-directionally influenced Cierra's reading abilities, motivation, behavior and both individual and classroom instruction. Mrs. McBride often couched Cierra's reading, motivation, and behavior development in terms of relationships, too. For example, she said,

> After working with her probably three times a week, for a few minutes each day, she seemed to just come out. I….It built confidence. It also built a relationship with the two of us. She seemed to start coming to me, hugging me, sharing things with me, sharing those emotions, those feelings. And she just seemed to come alive; she just seemed to come out of that shell. And the resentment that she seemed to have towards me turned into more, like, a love, a nurturing. I could nurture her. I could hug her; I could approach her, whereas before she was so unapproachable. I was…I was afraid to touch her, or I was afraid to to get involved in her personal feelings. But she just opened toward that, and it was just…her behavior changed. There were still days where we struggled, but it was such an improvement, and she actually became one of my better students…
>
> She would strive to please me. If I asked her to do something, she wanted to do that, and she wanted it to be right. And she just, she just really wanted my approval, but that was out of that looking for that attention and that love. So, I saw just a well-rounded child. I saw the whole child developed (Interview, July 6).

I also saw evidence of the mechanisms by which the child system and individual instruction reciprocally interacted with classroom instruction. During classroom instruction after Mrs. McBride had grown more "in-tune" with Cierra's needs and after Cierra had changed as a reader and a student, Mrs. McBride had five times more instructional exchanges with Cierra, mostly positive instructional exchanges. For example, notice the importance of Cierra's one-on-one time with Mrs. McBride during the following classroom exchange:

> (Mrs. McBride has just distributed and introduced the take-home, sight-word booklet, "Red Riding Hood and the Good Wolf.")

> Mrs. McBride: Cierra, we've been talking about pictures *[meaning graphemes as "pictures" of sounds]* with you. Here's another picture—the /oo/ sound.
>
> (Cierra looks at Mrs. McBride as she talks and then the board where she points. She then looks at the book in her hands.)
> Mrs. McBride: Cierra. I'm gonna let Cierra do one thing. Will you read the title of the book?
>
> S: Little Red Riding Hood and the Good…Fox. (She looks at Mrs. McBride.)
>
> Mrs. McBride: ….You're looking at the picture, but it's "wolf." (Observation, May 3).

Despite the one error, this appeared to be a positive interaction for Cierra. She was pleased with the attention and her relative success. This archetypal characterization of Cierra and Mrs. McBride's later exchanges suggests, in part, the mutually cascading affects among the study's variables, via the teacher-student relationship. When I asked Mrs. McBride what she thought explained the changes she had witnessed in Cierra, she answered:

> The individual attention. She's gotten extra attention…and she enjoys the success so she's really changed—much more motivated now. And this is with only some extra attention. I mean, if I had gotten to her as much as I wanted, what with last week being such a crazy week. She's still making such rapid progress (Interview, March 26).

Mrs. McBride also considered the changes in their relationship to have affected multiple aspects of Cierra's experience: her self-efficacy, her reading involvement, and her reading abilities.

Summary of Findings of the Transactions Among the Variables in the Two Systems

In sum, looking back over both aspects of research question one, I conclude that Cierra's reading sub-processes, reading motivation, and, to a lesser extent, classroom behavior transacted with individual instruction and, to a lesser extent, with classroom instruction. The marked pattern was individual instruction transacting primarily with reading

abilities, motivation and the teacher-student relationship. These bi-directional influences also exhibited secondary reciprocal relationships with classroom behavior and classroom instruction.

Variations Over Time

Looking back at how the child and instructional systems interrelated to one another over the course of the study, I can describe the transactional variations as belonging to one of three types of systems: a dysfunctional system early on, then a self-correcting system, and finally a self-sustaining system.

A Dysfunctional System. Initially, the child and instructional systems were dysfunctionally relating to one another. Cierra was unable to crack the code (pre-primer instructional level and low phonological abilities) and she was a behavior problem. Mrs. McBride asserted that "[she] was the most challenging student that I think that I could say that I had in all of my years of teaching" (Interview, July 6). Cierra's abilities and dispositions transacted with a classroom environment that did not offer the needed positive instructional or emotional teacher-student exchanges to make up for her limitations, but rather consistently produced negative influences that prohibited the much-needed, positive reciprocal relationships. Literacy instruction was almost entirely delivered in a whole-group setting, one in which Cierra struggled to follow and rarely received positive feedback.

A Self-Correcting System. During most of March, however, I observed a self-correcting system between the child and instructional domains. With the input of individual instruction into the child and instructional systems, Cierra enjoyed a swift increase in her reading sub-processes, reading instructional level, reading motivation, and classroom behavior, and in her relationship with Mrs. McBride in both instructional settings from

March 10 to the end of March. Recall how the reading sub-processes and reading instructional level advanced in tandem over the first few weeks of individual instruction (see Figures, 4, 5, 6, 8, 9, and 10). In addition, the reaction and ongoing reinforcement of Cierra's motivation to these improvements in reading ability was marked by the sudden burst of independent reading and AR tests (see Figure 10). Mrs. McBride, too, quickly grew to know more about Cierra's instructional and emotional needs. As early as March 26, Mrs. McBride hinted at the unprecedented positive transactions among the individual instruction, the teacher student relationship, reading abilities and motivation: "She's gotten extra attention…and she enjoys the success so she's really changed—much more motivated now. And this is with only some extra attention….She's still making such rapid progress" (Interview, March 26). Mrs. McBride capped off this period when she encouraged Cierra with, "I can tell that you have come a long way," and "I can tell that you're doing much, much better" (TRI Observation, March 30). Thus, individual instruction at Cierra's instructional match, a reversal in the amount and degree of teacher-student interactions, and growth in her reading abilities stimulated the child and instructional system to realign itself. Rapid changes across multiple variables showed that the system was adjusting significantly in positive directions for most child and instructional variables.

A Self-Sustaining System. After this period of self-adjustment, the child and instructional systems were self-sustaining from about the beginning of April through the end of the study. Each variable generally continued to help keep other variables afloat. Each reading sub-process continued to improve, but not rapidly (see Figures 4, 5, and 6), and reading instructional level on AR tests rose gently from 1.0 for the last half of March to 1.2 in April. Cierra's changed reading motivation and classroom behavior along with the

continued presence of positive individual instruction continued to support her reading and her emotional and instructional relationship with Mrs. McBride. I observed the transactions to continue to operate in similar positive patterns as I had observed in March; however, the shock of the change was over during this steadier period. Briefly, I did not observe rapid adjustments during this period, but rather a continuation of both the child and instructional systems positively and reciprocally reinforcing themselves and each other.

Summarization

In sum, multiple child and instructional variables transacted with one another over the course of this study. Within the child system, reading instructional level, all reading sub-processes, reading motivation (particularly reading self-efficacy and reading involvement), and classroom behavior (particularly distractibility, independence, and task orientation) reciprocally interrelated. In particular, reading instructional level, reading sub-processes, and reading motivation dynamically interacted, via the mediator of reading practice.

The child system also bi-directionally related to the instructional system. Most strikingly, individual reading instruction that was matched to the student's instructional needs demonstrated clear transactions across the child system. Although not as obvious, I also observed ways in which classroom instruction transacted with individual instruction as well as with the child system. The teacher-student relationship drove many of the transactions between the child and instructional systems. The dramatic increase in positive instructional and emotional exchanges between the student and teacher exerted a strong reciprocal influence on reading sub-processes and instructional level, reading motivation, classroom behavior, and individual and classroom instruction.

I describe the variations among the transactions over time as belonging to one of three types of systems: a dysfunctional system early on, then a rapidly self-correcting system, and finally a self-sustaining system.

CHAPTER 5

CONCLUSIONS AND DISCUSSION

> "Because engagement in reading and achievement in reading are mutually causal, they both must be cultivated in school. A neglect of one is a neglect of both" (Guthrie, 2004, p. 6).

This study provides early evidence of the complex, reciprocal relationships that exist across multiple child and instructional domains related to reading. Within the child's system, I observed transactions among reading instructional level, all reading sub-processes, reading motivation (particularly reading self-efficacy and reading involvement), and classroom behavior (particularly distractibility, independence, and task orientation) for one first-grade African-American girl. Most striking, her reading instructional level, reading sub-processes, and reading motivation reciprocally interrelated to one another, as mediated by reading practice (see Figure 3). I also observed the ways in which her reading abilities and motivation affected her classroom behavior and witnessed suggestive evidence that this relationship was bi-directional. However, although her reading-related cognitions theoretically related to the other variables in her system, I was not able to observe evidence of transactions among her reading-related cognitions and other system-wide variables.

Individual reading instruction that was matched to the student's instructional needs displayed clear transactions across the child system. To a less observable degree, I also saw ways in which classroom instruction transacted with individual instruction as well as the child system. The most notable instructional influence, the teacher-student relationship, exerted a strong reciprocal influence on reading sub-processes and instructional level,

reading motivation, classroom behavior, and individual and classroom instruction, mainly via the dramatic increase in positive instructional and emotional exchanges between Cierra and Mrs. McBride.

The transactional variations over time were characterized primarily by rapid changes early on and later by a leveling-off of the fluctuations among the variables. The tango might best describe the early acceleration of the transactions, whereas a waltz could illustrate the steadier transactions of the later period.

Transactions Within the Child System

This study provides early evidence of the complex, reciprocal relationships that exist across multiple child domains related to reading. The strengths of the relationships observed may reflect the relative importance each has for reading achievement. Reading sub-processes, motivation, and practice may be thought of as having proximal connections to instructional reading level, whereas classroom behavior is more likely an important, but distal relationship. Considering the amount of research done on each variable, this weighting of the relationships generally maps onto the relative importance placed on the variables in the child system by reading researchers. In the following sections, I will discuss the theories and research that relate to the variables in the child system as first proximal and then distal transactions.

Proximal Transactions. For Cierra, not only did her reading sub-processes show clear transactions with reading level as predicted by several scientists (e.g., Blachman, 2000; Ehri, 1992 & 2005; NICHD, 2000; Pressley, 2002; Share, 1995; Snow et al., 1998; Stanovich, 2000), but these reading variables also transacted with reading motivation, mediated by reading practice, as hypothesized by Stanovich in his Matthew effects review

(1986). To my knowledge, this is the first study that attempts to display the connections among reading sub-processes, reading level, reading motivation, and reading practice. Theories guide us to predict these relationships, but researchers have generally only shown relationships between sub-processes and reading level (e.g., Juel, Griffith, & Gough, 1986) or between motivation, reading level and reading practice (e.g., Guthrie, Wigfield, Metsala, & Cox, 1999). In this case study, we see evidence of the multiple connections among variables that suggest that reading achievement is dependent on many factors.

Most significantly, Cierra's phonological awareness and decoding abilities were first a prime barrier and later a catalyst for her word identification growth. Cierra's initial ability just to read some sight-words and to partially decode based on first or last letters resembled Ehri's pre-alphabetic phase (1992) of sight-word reading. Despite the ease with which she formed orthographic representations, Cierra was not a successful reader in her first-grade class largely because she could not blend or segment sounds in words. She lacked sufficient phonemic awareness, facility with the alphabetic principle, and phonological decoding ability. A vast array of researchers similarly point to the significance of phonological awareness (Blachman, 2000; Juel et al., 1986; NICHD, 2000; Whitehurst & Lonigan, 1998), the alphabetic principle (M. J. Adams, 1990; Snow et al., 1998), and phonological decoding (Share, 1995; Share et al., 1984; Stanovich, 2000) in the early reading achievement of young learners.

The self-teaching hypothesis (Share, 1995) provides an excellent frame for interpreting the transactions observed, particularly among Cierra's reading sub-processes, reading instructional level, and reading practice. Share argues that successful phonological decoding experiences provide the learner with the opportunity to self-teach novel

orthographic representations, expanding her sight-word bank through reading practice that exposes her to more and more of the lexicon, or code. These successful phonological decoding experiences rely on sufficient phonemic awareness and print knowledge. Cierra's transition from a seemingly inert relationship between phonological decoding and reading level to that of upward reciprocity can be explained by her changing phonological awareness and decoding abilities. Initially, she relied heavily on sight words (orthographic representations), and she lacked the ability to phonologically decode beyond initial sound cues. Lacking phonological abilities and the necessary support to decode unfamiliar words, her phonological decoding and reading instructional level changed little from December 2005 to March 2006.

When she began receiving instructional support that aided her by improving her reading sub-processes and by providing many more successful phonological decoding experiences, Cierra began to self-teach more successfully. Independently, she increased her reading practice, giving herself many more exposures to orthographic strings. This reading practice was successful as evidenced by her high AR comprehension scores and her broadening sight-word bank and higher instructional reading level. Content no more to read only when immediately directed to do so by the teacher (an extrinsic motivator), Cierra moved along the continuum toward more self-directed reading behaviors (intrinsic motivators) (see Brophy, 1998).

Interestingly, although her poor phonological decoding appeared to be a daunting impediment to her success as a reader and in the classroom, only a little one-on-one instruction appeared to unleash her own abilities to self-teach (Share, 1995). After just three sessions and then after six sessions, we see jumps in her segmenting and blending abilities,

and her reading is then correspondingly better described by Ehri's full alphabetic phase (1992). In the case of this one child, I conclude that phonemic awareness was a major barrier, but relatively easily overcome. Cierra was provided sufficient phonological decoding ability as proposed by Share (1995) to direct more of her own word learning independently.

Was ability to phonologically decode, though, all that Cierra previously had needed to become a more successful reader? Indeed, no. Instead, Mrs. McBride's remarkable refrain of "how motivated she is now" plays in my head as emblematic of the dynamic nature of Cierra's motivation within the child (and instructional) system. As reading abilities began to accelerate, Cierra's motivation was stimulated, which then reciprocally re-stimulated her reading abilities. Cierra became an engaged reader (Guthrie, 2004; Guthrie & Anderson, 1999), and, subsequently, a higher-achieving reader. Guthrie describes experiences like Cierra's this way:

> [E]ngagement and achievement are reciprocal. Locked in a spiral, they grow together, which Stanovich has termed the "Matthew effect" (Cunningham & Stanovich, 1991). Young students who gain a modicum of skill in reading are enabled to read more stories and books, assuming that they are available. With increased amounts of reading, students' fluency and knowledge expand, increasing basic word recognition. Contributing to this spiral is a sense of identity and selfhood; improving readers see themselves as capable, which is gratifying (2004, p. 6).

It is notable that Guthrie selected the term "improving readers" as this resonates with Cierra's experience. As her reading engagement and achievement grew together, she was still a beginning reader, reading at the first grade instructional level. Nevertheless, her self-efficacy streamed out from her sense of accomplishing something significant everyday. Whether reading with Mrs. McBride during the TRI sessions or independently reading and taking tests

on books she selected, Cierra received positive feedback, spurring greater self-efficacy and involvement.

The prime mechanism that linked the feedback loop between reading motivation and reading abilities was Cierra's reading practice (see Figure 3). Mrs. McBride did not teach her all the words that she acquired across the course of the study. Rather, Cierra's wide reading, as demonstrated by her prodigious AR report, continued to ignite her self-efficacy, involvement, and reading abilities. Although the National Reading Panel states that it "did not find evidence supporting the effectiveness of encouraging independent silent reading as a means of improving reading achievement" (2000, p. 3-4), the importance of Cierra's reading practice serves as one case study confirming Share's theory that it is the bridge between phonological decoding and word identification (1995). Other researchers have found similar strong correlational relationships (Anderson et al., 1988; Guthrie et al., 1999; McBride-Chang et al., 1993; Morrow, Pressley, Smith, & Smith, 1997; Spear-Swerling, 2006) and even causal ones (Morrow et al., 1997).

Often when researchers highlight the conspicuous differences between the "rich" readers and the "poor" readers (Stanovich, 1986), they conceive of it in terms of out-of-school reading (Anderson et al., 1988; Stanovich, 2000). Yet, Cierra's reading engagement took alight with no indications of extensive reading outside of the school house. I point this out not to undermine the benefits of out-of-school reading, but rather to showcase one scenario where dramatic practice in reading happened during the school day. Additionally, this study's description of radical shifts across multiple child outcomes are especially relevant to researchers, practitioners, and policy-makers working to close the gap between

disparate economic groups and between mainstream and minority groups. A relatively modest

A Distal Transaction. As expected, although less well-studied, reading ability and motivation variables also appeared to transact with Cierra's classroom behavior. The impact of classroom behavior's influence was not as striking as that of the reading and motivation variables, however. The metaphorically-speaking causal distance between the reading/motivation sub-system and classroom behavior may relate to the multi-faceted nature of behavior: reading abilities and motivation relate to classroom behavior, but only as one part of a constellation of diverse factors such as socioeconomic status, family adversity, and language processing (Hinshaw, 1992).

Initially, Cierra's behavior was a liability to her reading abilities and motivation as predicted by theories and research on the relationship between behavior problems and reading difficulties (J. W. Adams, Snowling, Hennessy, & Kind, 1999; Guthrie & Wigfield, 2000; Hinshaw, 1992; Nelson et al., 2003). As her reading abilities and motivations changed for the better, so, too, did her distractibility, independence and task orientedness. Her changing classroom behavior, to some extent, appeared to influence her reading and motivation as well. The transactions seen over time between classroom behavior and other variables in the child system validate the notion that academic difficulties may compound behavior problems because students spend less time oriented to the task and more time dealing with disciplinary actions (Gest & Gest, 2005). The inverse is true as well. Like the students in the Gest and Gest research (2005), Cierra's enhanced reading abilities increased her focus to class work.

Transactions Across the Child and Instructional Systems

In addition to transactions among child variables, I also witnessed transactions between the instructional and child systems. As with the above categorization of the transactions in the child system, I believe the relative intensity of each transaction, along with research, suggests separating the relationships into proximal and distal ones.

Proximal Transactions. The finding that individual instruction that was matched to the student's needs interrelated reciprocally to so many variables in the child and instructional domains is a novel result. The positive reinforcing cycle within the child system was initially stimulated by the TRI sessions that provided needed instruction and support for the first-grade reader. The teacher's adaptations to Cierra's fluctuating instructional and emotional needs showed how her individual instruction also responded to the child system. Each simple relationship in the above descriptions could have been predicted by prior studies. For example, from the basis of considerable research, we would expect that teaching that targeted phonological decoding and oral reading would influence reading level (NICHD, 2000; Snow et al., 1998; Torgesen, 2004; Torgesen, Rashotte, & Alexander, 2004; Vellutino et al., 1996). Or, we might have expected the effective teacher to carefully adapt to a child's changing needs (Rogers, 2004/2005; Rogoff, 1990). The sheer complexity of the relationships and their reciprocal nature, however, concretely displays that success in reading is multi-faceted. Comprehensive literature reviews, such as *Preventing Reading Disabilities in Young Children* (Snow et al., 1998) have synthesized disparate research strands to show how complex reading development is, and this case study is one tangible validation "that reading ability is determined by multiple factors: many factors that correlate with reading fail to explain it; many experiences contribute to reading development without being prerequisite to it; and although there are many prerequisites, none by itself is

considered sufficient" (p. 3). Reading processes, motivation, behavior, instruction and the teacher-student relationship all played a role reflexively with one another.

Notably, the instructional and emotional interactions between the teacher and the student played a central part among the systems' transactions. Their effects were widespread, reaching from reading sub-processes to classroom instruction. As proposed by Pianta (2006), both *instructional* and *emotional support* were instrumental to Cierra's reading system. During classroom instruction initially, Cierra received limited instructional interactions at her instructional match from Mrs. McBride, and for the most part she earned reprimands as her individual emotional connection to the teacher. Mrs. McBride also viewed Cierra's abilities, and especially her behavior, negatively. In turn, Cierra's negative instructional and emotional experiences stunted her reading engagement and abilities. By beginning individual instruction, however, Mrs. McBride helped stimulate Cierra's reading/motivation/behavior system. Both the enhanced reading abilities and the enhanced relationship triggered and continued to reinforce the child system. About these dynamics Pianta writes,

> relationships between children and teachers promote literacy growth and development by serving two functional goals: (1) providing a base in motivation, interest, communication, and general knowledge and (2) instructing the child explicitly in the link between written and spoken language, particularly at the phonemic level. It is important, as research and theory move ahead, to recognize these two functions as separate, as well as interrelated (2006, p. 159).

The instructional system changed, too, as a result of the increase in instructional and emotional support. A striking feature of the instructional system is how the simple addition of 20-minute reading sessions, three times a week, stimulated such radical shifts in the teacher's perceptions of the child's behavior and achievement. Like the teachers in Rist (1970) and Vernon-Feagan's (1996) studies, Mrs. McBride's initial perception of Cierra had

significant effects on the teacher-student relationship and on the classroom instruction Cierra received. Yet, the dramatic increase in positive instructional and emotional exchanges between the two spurred the cascading effects that led to a reversal in Mrs. McBride's assessment of Cierra. As in the study by Jussim and Eccles (1992), the self-fulfilling prophecy of the teacher's expectations played a minor, but significant role in this student's outcomes.

A Distal Transaction. We can extend the significance of the teacher-student relationship into the more distal transactions of classroom instruction with individual instruction and the child system. The enhanced teacher-student relationship from one-on-one teaching spilled over into the classroom instruction Mrs. McBride provided Cierra. Through the TRI sessions, Mrs. McBride grew more in-tune with Cierra's instructional and emotional needs. Her awareness surfaced most obviously during individual instruction, yet she also demonstrated her in-tune-ness in the midst of classroom instruction, which extended the instructional and emotional support that Cierra received across the course of the day. The observed changing levels of teacher support directly impacted the child system, lifting Cierra from a struggling reader to "one of [the teacher's] better students" (Interview, July 9). The significance of the purposeful actions of the teacher is corroborated by recent studies that look beyond structural differences (i.e., class size or teacher qualifications) in classrooms to predict student outcomes. For example Hamre and Pianta (2005) found that positive instructional and emotional supports moderated students' achievement and teacher-student relationships. This study elaborates such findings by depicting the intricate feedback loops that exist between instruction, achievement, motivation, behavior, and relationships.

Variations in Transactions Over Time

Looking back at how the child and instructional systems interrelated to one another over the course of the study, I described the transactional variations as belonging to one of three types of systems: a dysfunctional system, then a self-correcting system, and finally a self-sustaining system. Initially, the child and instructional systems were dysfunctionally relating to one another. Cierra was unable to crack the code and she was a behavior problem. Her abilities and dispositions transacted with a classroom environment that did not offer the needed positive instructional or emotional teacher-student exchanges to make up for her limitations, but rather consistently produced negative influences that prohibited the much-needed, positive reciprocal relationships.

This dysfunctional period of Cierra's reading development can be seen as multiple constrained child and instructional factors (Cairns & Cairns, 1994); her low phonological decoding and language processing, moderately low reading motivation, and poor classroom behavior reciprocally limited one another as did the poor teacher-student relationship and weak, whole-class reading instruction. This study extends the work of Cairns and colleagues, which describes the correlated constraints of the individual and the environment on development of adolescents' social and behavioral outcomes, to that of earlier child development, specifically to early reading development. Not only did the child's academic achievement and classroom behavior transact with one another, as found by Cairns and colleagues (Gest, Mahoney, & Cairns, 1999; Mahoney, 2000; Mahoney, Cairns, & Farmer, 2003; Xie, Cairns, & Cairns, 2001), her motivation to read also played a dynamic part. Additionally, whereas adolescents' peer relationships serve as a protective or detrimental

predictive factor (Xie, Cairns, & Cairns, 2001), the teacher-student relationship was observed as the prime relational contributor to this one child's early reading development.

Despite the multiple correlated constraints from the first period, during most of March I observed a self-correcting system between the child and instructional domains. Individual instruction at Cierra's instructional match, a reversal in the amount and degree of teacher-student interactions, and growth in her reading abilities stimulated the child and instructional system to realign itself. Rapid changes across multiple variables showed that the system was adjusting significantly in positive directions for most child and instructional variables. The intrusion of individual instruction at instructional match at the beginning of this period of transactions is a possible turning point (Rutter, 1996) in Cierra's reading and behavior development.

After this period of self-adjustment, the child and instructional systems were self-sustaining. Each variable generally continued to help keep other variables afloat. I did not observe rapid adjustments during this period, but rather a continuation of both the child and instructional systems positively and reciprocally reinforcing themselves and each other.

These different types of total systems are a descriptive validation and extension of the theorized Matthew effects of reading failure (Stanovich, 1986). Stanovich laid out convincing research that a child's phonological decoding deficit and the resulting deficits of reading practice would create a cycle of reading failure that would expand to include other cognitive processing limitations. He also suggests that there is evidence for explanations beyond the child system, implicating the instructional system. He writes,

> Other Matthew effects may arise from evocative organism-environment correlations involving instruction. If Allington (1983) is correct that the reading instruction provided to less skilled readers is suboptimal in many ways, then a Matthew effect is being created whereby a child who is—for whatever reason—poorly equipped to

> acquire reading skill may evoke an instructional environment that will further inhibit learning to read" (p. 399).

Using the Matthew effects lens, within the early dysfunctional system, Cierra's low phonological awareness and phonological decoding occluded the code, so she took few opportunities for reading practice, thus continuing to limit her reading abilities. Her instructional environment also contributed negatively and reciprocally to her stunted reading achievement.

What Stanovich did not expand on, however, was the relevance of motivation, behavior, and the teacher-student relationship to the reciprocal influences. Yes, Cierra's reading practice stimulated her instructional reading level, but what were the mechanisms that undergirded these connections? For Cierra, her growing and sustaining bond with her teacher (Pianta, 2006) and her growing and sustaining self-efficacy (Guthrie & Wigfield, 2000) stimulated her engagement with reading (Guthrie & Anderson, 1999). Thus, Cierra's engagement with reading sustained her reading practice and reciprocally reinforcing classroom behavior was a favorable by-product. Engaged with reading and more engaged in classroom instruction, Cierra experienced cascading mutual benefits across both child and instructional domains during the self-correcting and self-sustaining systems.

A final note about the three different types of systems I observed—the relative ease with which Cierra transitioned from a struggling reader and student to a more successful reader and student is a powerful reminder of the importance of early intervention (Alexander, Entwisle, & Horsey, 1997; A. E. Cunningham & Stanovich, 1997; Dickinson & McCabe, 2001; Juel, 1988; Sameroff & Fiese, 2000; Snow et al., 1998; Torgesen, 1998) and of the "significant plasticity in developmental trajectories" (Xie et al., 2001, p. 504). Not all first-grade children will so readily adjust and reach grade-level reading achievement. Cierra's

reading profile of high sight word ability and low phonological decoding may be of a type most receptive to phonologically-focused reading interventions such as the TRI. For instance, Cierra had already developed a strong sight-word bank and was at the pre-alphabetic phase (Ehri, 1992) from the study's beginning. As hypothesized by Wolf and Bowers (1999), another child with a double-deficit of both phonological and naming speed weaknesses may have taken much longer to remediate. Nevertheless, given the complexity of the relationships among the child and instructional systems and the profound, widespread affects of reading engagement, we would be wise to "catch them before they fall" (Torgesen, 1998). And, the spreading effects observed in this study hint that interventions later in a student's development will likely face multiple obstacles: motivational, behavioral, and relational, in addition to the difficulties stemming from reading processes alone.

Implications for Practice

Children will learn what we teach them—if we teach it to them at their instructional match, or as Rogoff writes, if we guide students' participation in their own learning (1990). As teachers, this means we have the challenging task of being in-tune with each of our student's reading, motivation, behavior, and relationship needs. With regard to reading development, Mrs. McBride's ability to provide enough phonological awareness, decoding, and oral reading instruction to Cierra's specific needs was one pivotal aspect of the changes observed over time. As Cierra experienced it, Mrs. McBride had provided instruction in these reading processes in the classroom context, but the lessons were generally too challenging for her to benefit from or engage in; they were not at Cierra's instructional match. Whole-class instruction all day long is a design for failure for many first-grade learners. Time for small-group instruction, instead, characterizes the literacy instruction of

teachers who succeed in high-poverty schools (Taylor et al., 2000). Indeed, the shift from a dysfunctional system of learning to a self-correcting one began soon after Mrs. McBride initiated individual instruction with Cierra.

Reading instruction at instructional match was more than just academic information. An important element for teachers to remember was the ways in which the emotional support in both individual and classroom instruction continually fed Cierra's reading, motivation, and behavior. We could reduce these complex, interweaving transactions to a more memorable, albeit simplified formula:

what the child brings (abilities, motivation, & behavior)	+	what the teacher offers (instruction & support)	=	reading achievement.

In Cierra's case, reading achievement meant even more than just academic achievement; it meant generally more successful choices and relationships over the course of the school day. If a child arrives at the school room door with limited ability to phonologically decode, then our task as teachers is to supply a sufficient amount of instruction and support (Pianta, 2006) to bridge the difference, thus increasing the likelihood of reading achievement. If we follow this mental formula to structure our classrooms and our relationships, we might facilitate more children enjoying the privileges of The Literacy Club, where all children enjoy the privileges of reading success (Smith, 2004).

Implications for Research

First, I hope that this study provides one justification for reading researchers to broaden the scope of our work. As Sameroff and Fiese write, "models that focus on singular causal factors are inadequate for the study or manipulation of developmental outcomes" (2000, p. 156). Seeing just some of the intricate, mutual relationships among reading

variables, motivation, behavior, teacher-student relationship, and instruction gives us more complete indications both of reading development and ways to intervene. Perhaps the cognitive scientists will re-consider methods of integrating measures of motivation into their predictive models. Or, perhaps socio-cultural researchers may include markers of students' cognitive strengths. Another promising practice would be more multi-method approaches. For example, instead of speculating about the explanations for "treatment resisters" (Al Otaiba & Fuchs, 2002; Torgesen, 2000) at a study's end, researchers might experimentally study an intervention while simultaneously qualitatively following a sub-sample to ascertain explanatory mechanisms in the intervention's success or failure with particular populations. The addition of the case study allows for more in-depth understandings of a multiplicity of variables.

In future research, it may be difficult to clearly observe transactions at the individual level unless noticeable change, either positive or negative, is also occurring. It was the sudden addition of individual instruction at instructional match that allowed me to make connections across multiple variables because variables changed dramatically at the same time. Continued non-input of one variable towards another variable is likely to have a negative result, but it makes it difficult to pinpoint the transactional nature over a short period of time, especially at the individual level. So, while no-growth environments would theoretically exhibit similar transactional relationships, it might prove difficult to measure and describe.

Limitations

Even as I urge teachers and researchers to expand our frame for viewing students' reading needs, I do so with an admittedly narrowed scope. I zoomed into just the classroom,

and ignored Cierra's current home experiences, prior schooling, and even school and community level factors. I deliberately sacrificed Dewey and Bentley's (1949) admonition to "see together" to make a feasible research study. I advise us all to keep in mind, therefore, the compelling evidence of factors outside the classroom that relate to reading development as well (Snow et al., 1998).

Secondly, my choice of measures and their timing, especially for reading-related cognitions, may have disallowed my ability to observe more clearly the ways in which reading-related cognitions interconnect to the other variables in the child and instructional domains. Thus, my unclear findings linking reading-related cognitions and the rest of the system may be more of a reflection of how I went about observing cognition, rather than an indication that no such transactions were at work. Future research may more clearly elucidate how reading-related cognitions, and even other potentially key variables, transact with a child's developing reading system.

Appendix A:

Phonics Knowledge Tests

Phonics Knowledge Test—Assessment Recording Sheet 1

Simple Code (1:1 correspondence)

Directions: "Will you please tell me the *sound* that we say when we see this letter? For instance, this letter is /t/. ("Yes, that is the letter "c". Can you tell me the *sound* that we say for that letter?" Or, "Yes, that letter could be the sound "ay". Do you know another sound it could be?")

Consonants (Credit given for most frequent sound & second-most frequent sound for "c," "s," "g," & "y")

c	___	m	___
s	___	b	___
w	___	f	___
z	___	qu	___ *(/kw/ = actually 2 sounds)*
d	___	y	___
l	___	j	___
g	___	r	___
h	___	t	___
v	___	x	___ *(/ks/ = actually 2 sounds)*
n	___	p	___
k	___		

Total: _____ out of 21

Vowels (Credit given for short vowel sounds)

o	___
e	___
a	___
i	___
u	___

Total: ___ out of 5

Phonics Knowledge Probe Sheet 1

c	s	w	z
d	l	g	h
v	n	k	m
b	f	qu	y
j	r	t	x
p			
o	e	a	
i	u		

Phonics Knowledge Test—Assessment Recording Sheet 2

Complex Code (1:2 or more correspondence)

Directions: "Will you please tell me the *sound* that we say when we see this Picture book? For instance, this is a Picture book for is /ch/. ("Yes, that is the letter "s" and "h". Can you tell me the *sound* that we say for that Picture book when we see it in words?" Or, "Yes, that letter could be the sound "ay". Do you know another sound it could be?")

Consonant Digraphs

(Credit given for most common sound)

Common
- sh ___
- ck ___
- wh ___
- ch ___
- th ___
- ng ___

Total: _____ ***out of 8***

R-Controlled Vowels

(Credit given for any possible sound)

- er ___
- ar ___
- ir ___
- or ___
- ear ___

Total: _____ ***out of 5***

(Vowel) Digraphs

(Credit given for any possible sound)

Common
- ee ___
- oo ___
- ay ___
- ou ___
- oa ___
- ie ___
- ow ___
- ai ___

Less common
- oy ___
- ough __
- ew ___
- eigh __
- oi ___
- ue ___
- ey ___
- igh ___
- ui ___

Total: _____ ***out of 21***

Grand Total: _____ ***out of 60***

sh	ck	wh	ch
th	ng		
er	ar	ir	or
ear	ee	oo	ay
ou	oa	ie	ow
ai	oy	ough	ew
eigh	oi	ue	ey
igh	ui		

Appendix B:

Conversational Interviews with Student—Possible Questions for Selection

Reading Involvement

Do you like to read?
Did you read anything at home yesterday?
Do you have a book with you today? Tell me about it.
When do you read?
Do you like your teacher to read a book aloud?
Do you like your parent to read a book to you?
What is the last book your teacher read aloud to you? Tell me about it.
What is the last book your parent read aloud to you? Tell me about it.
Do you take books home from school? Do you read them? With whom? Tell me about that.
Do you like to read when you finish your work at school?
Do you like to read when you have free time at home?

Reading Self-Efficacy

How good at reading are you right now?
Do you like learning how to read? Why?
Do you like working with your teacher on learning to read? Why?
Do you think learning to read is easy, not too hard, or hard?

Reading Importance

Is it important to be a good reader? Why or why not?
If you get a present, do you like it to be a book?
Will you read much when you grow up?

Appendix C:

Conversational Interviews with Teacher—Possible Questions for Selection

Instructional Match Instructional Support Emotional Support Teacher-Student Relationship

Is there anything you'd like to tell me about the lesson?

Would you mind telling me what you were hoping to accomplish with the lesson today?

Why did you spend more time doing (particular activity)?

Why did you select this book?

What are you most concerned about for (student's name)?

Why did you read these pages to (student's name)?

What do you think is most beneficial for (student's name)? Why?

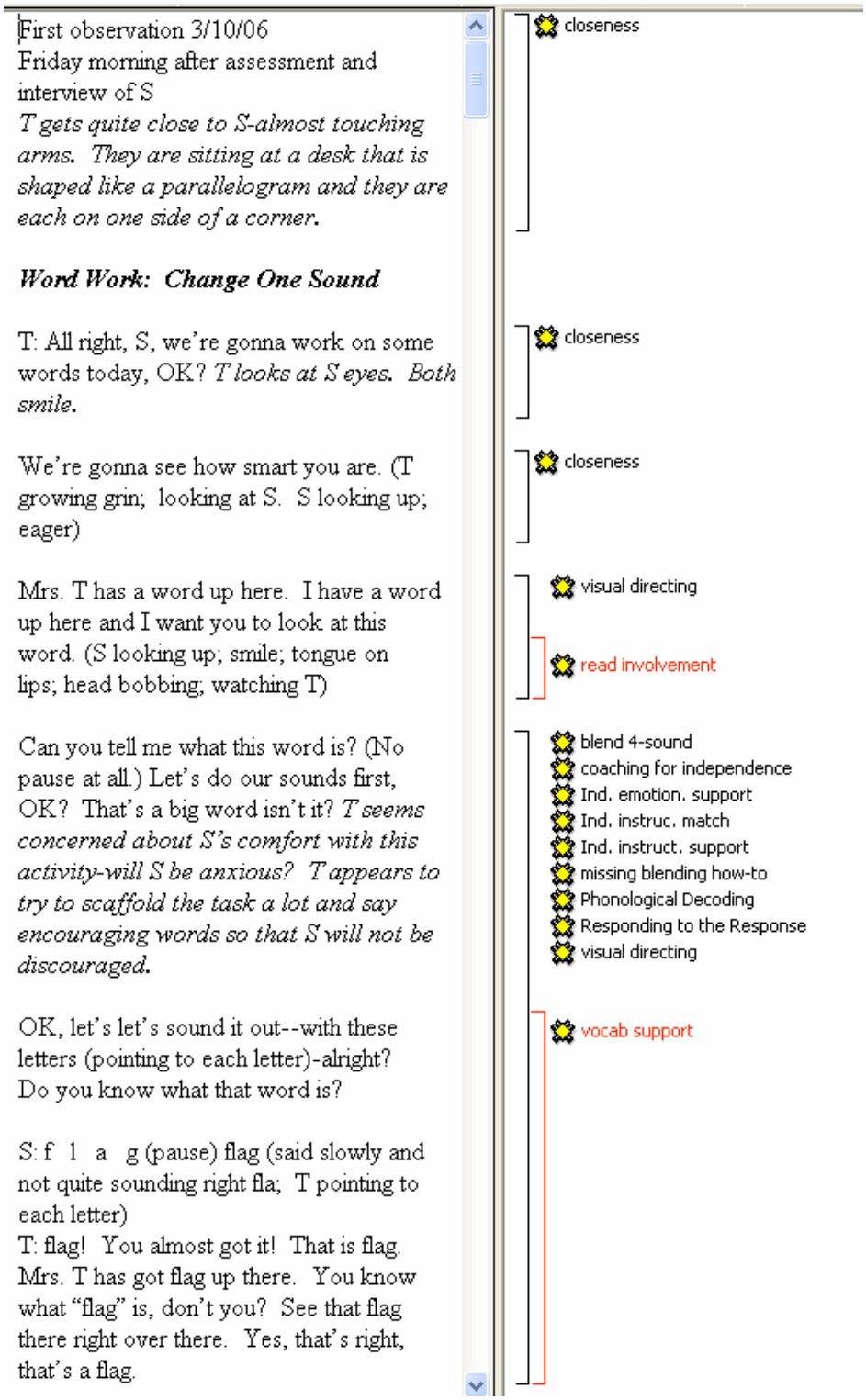
What do you think (student's name) needs the most?

Is there anything you wish you had done differently?

What will you probably focus on in the next lesson?

Appendix D:

Example Coding of First TRI Session



First observation 3/10/06
Friday morning after assessment and interview of S
T gets quite close to S-almost touching arms. They are sitting at a desk that is shaped like a parallelogram and they are each on one side of a corner.

Word Work: Change One Sound

T: All right, S, we're gonna work on some words today, OK? *T looks at S eyes. Both smile.*

We're gonna see how smart you are. (T growing grin; looking at S. S looking up; eager)

Mrs. T has a word up here. I have a word up here and I want you to look at this word. (S looking up; smile; tongue on lips; head bobbing; watching T)

Can you tell me what this word is? (No pause at all.) Let's do our sounds first, OK? That's a big word isn't it? *T seems concerned about S's comfort with this activity-will S be anxious? T appears to try to scaffold the task a lot and say encouraging words so that S will not be discouraged.*

OK, let's let's sound it out--with these letters (pointing to each letter)-alright? Do you know what that word is?

S: f l a g (pause) flag (said slowly and not quite sounding right fla; T pointing to each letter)
T: flag! You almost got it! That is flag. Mrs. T has got flag up there. You know what "flag" is, don't you? See that flag there right over there. Yes, that's right, that's a flag.

I want you to change this word for me, S, to flap (running hand underneath flag; S watching letter squares along with T's hand). Like a flap on the booksack. In fact, you're going to change one letter and change it to flap. Look up here. And here's your words--letters. Change that word to the flap sound. Flap…flap (pointing to sounds).

What sound is that now?

S: /f/ /l/ (T pointing to sounds individually)

T: Now look, ok, let's say it. /flap/

S: f f flap (S smiles at me and then at T)

T: Very good, S! (with emphasis) And now you're going to change flap-you're going to change it to another word. And we're going to change the one sound is all that's going to change. Clap clap. (spoken clearly and with precise pronunciation) What sound would you change? Very good (with emphasis) *S changed sound much faster than previous item.*

Now say that for me.

S: /cl/ /a/ /p/ /clap/ (as T runs her finger underneath the word in a sweeping motion)

T: Very good. All right, let's do another word. (T exchanges letter squares on board for another set of letter squares.) You may know this word. We see it a lot when we're riding down the road, S, in the car. And momma has to…to look at this…sign a lot.
S: stop (very little delay)

- blend 4-sound
- closeness
- Ind. emotion. support
- Ind. instruc. match
- Ind. instruct. support
- manipulat. 4-sound
- Phonological Decoding
- read involvement
- segmenting 4-sound
- T surprise
- visual directing
- vocab support

- fast processing
- Ind. emotion. support
- Ind. instruct. support
- manipulat. 4-sound
- Phonological Decoding

- segmenting 4-sound
- visual directing

- fast processing
- Ind. instruct. support
- Meaning prompt~

T: stop. Oh, you're such a smart girl. Stop. Alright, we've got the word…say each sound for me (pointing to each letter square).

S: /st/ (then teacher taps just /s/) /s/… /t/… /o/… /p/ (each sound said distinctly and with emphasis by S)
T: What word? (running her finger underneath the word in a sweeping motion)
S: /stoop/ (S elongates the /o/ sound a bit)

- Ind. emotion. support
- Ind. instruc. match
- Ind. instruct. support
- Responding to the Response
- segmenting 4-sound
- visual directing

Stop. Very good. Now we're going to change this word to slop. One sound. We're going change one sound. /sll/ /llu/ /lop/. When I think of this word I think of when we used to slop the hogs. We used to give them a bunch of mixed up food in a bucket and we called it, "slopping the hogs," S. That's great. Now tell me that sound.

- Ind. emotion. support
- Ind. instruc. match
- Ind. instruct. support
- manipulat. 4-sound
- short vowel
- vocab knowledge

S: /l/ /u/ /p/ [sic]

T: Tell me the word (said immediately after S's response).

S: slop

T: Very good. Let's change slop to plop. You know how sometimes we plop down in a chair when we go home and we're tired?....Say it for me.

- manipulat. 4-sound
- segmenting 4-sound
- short vowel
- T surprise
- vocab support

S: /pl/ /ll/ /u/ /p/ plop

T: Very good, S. (T mouths, "That's good!" to me and smiles)

Transition to Word Work: Read, Write, & Say

Pause for switching activities. T puts letter squares to the side. Writes with dry erase marker on other side the word, "glad."

T: We're going a read a word. And the word is. Let's look at it. Say that word. Do you know what that is?

S: Uhhh.

T: Let's sound it out.

S: /j/

T: /g/ That says /g/ (pointing to "g"; T watching S)

S: /g/ /l/ /a/ /d/ … glad

T: glad (with happy emphasis). Now I want you to write this word right here by Mrs. T. and as you write this word, I want you to say the sounds in the word.

T: Say it.

S: /g/… /l/…/a/…/d/ (as she writes each sound on the dry erase marker board).

T: Now say the whole word.

S: glad (S looks up at T)

T: OK you can erase it for me….Let Mrs. T have a turn…(looks at S; writes word on board)….What's that word?....Can you say each sound for me?

S: (S looking at letters) /s/ /t/ /o/ /p/ stop

- blend 4-sound
- consonant
- Ind. emotion. support
- Ind. instruc. match
- Ind. instruct. support
- Responding to the Response
- segmenting 4-sound
- visual directing
- Ind. instruc. match
- Ind. instruct. support
- mapping sounds to print
- segmenting 4-sound
- blend 4-sound
- mapping sounds to print

T: Stop. Now I want you to write the word stop and as you write the word stop I want you to say each sound. OK? Write down.

S: /s/ /t/ /?/ /p/. Stop.

T: OK, let's do that one more time.

S: /s/ /t/ /o/ /p/ (as T pointed to each letter with finger). Stop.

T: There you go, good. (smiling) Erase it for me. You're going to learn lots of words, S….(S erases marker board) OK. Now, look at that word. Can you say each sound?

S: /l/ ooosed!

T: OK, let's…let's do each one first.

S: /l/ /o/ /s/ /st/ (as T points to each sound with finger)….list

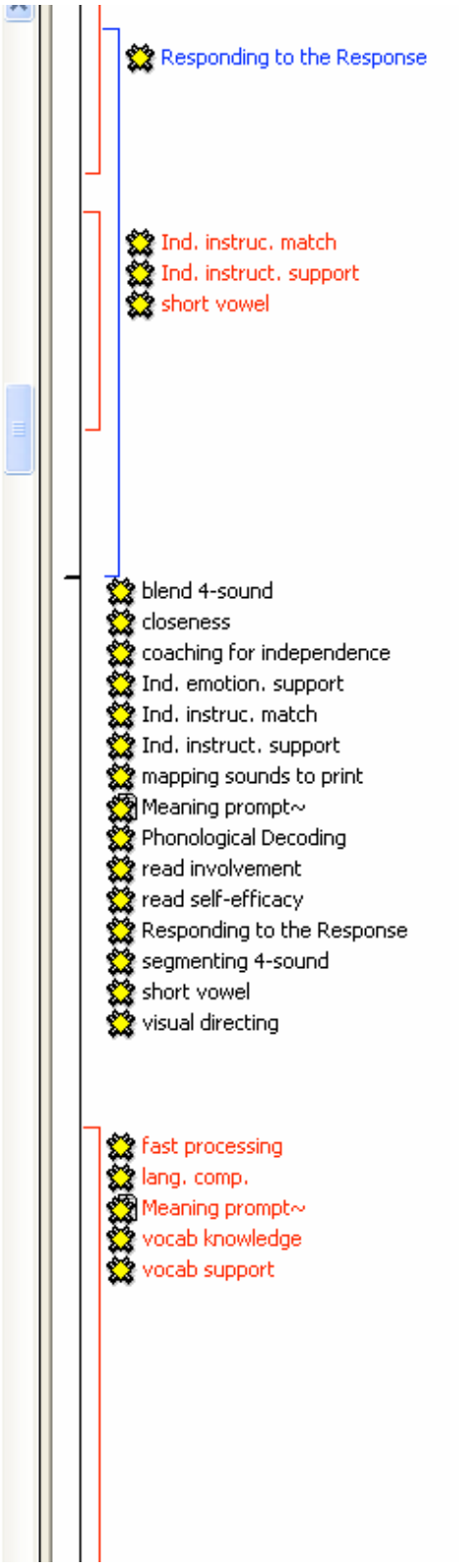
T: OK, that says /o/ /o/ /o/…(pointing to "o") /l/ /o/ /o/ /o/. Say /l/ /o/ /sssst/. Say…can you put it together? Now what is that word?

S: /l/ /i/ list (seems to be waiting; looks at me)

T: /l/ /o/ /s/ /t/ (spoken simultaneously with S above).

T: Ok, now let's listen. OK, /l/ /o/ /st/ (spoken with precision and very separate). Can you hear the word…that I'm saying?

S: /lll/ (uncertain)



T: You might do this if we were in the woods. You might get…

S: Lost! (with pleasure)

T: There we go! That was kinda hard wasn't it (smiling and looking at child knowingly)? Let's do that together.

T and S: /l/ /o/ /s/ /t/

T: OK, now, now, do the word. Write the word. *You* write the word for me and say each sound as you write it.

S: /l/ /o/ /o/ /s/ /s/ /t/ /t/ /t/ (as she writes each sound).

T: Now tell me that word.

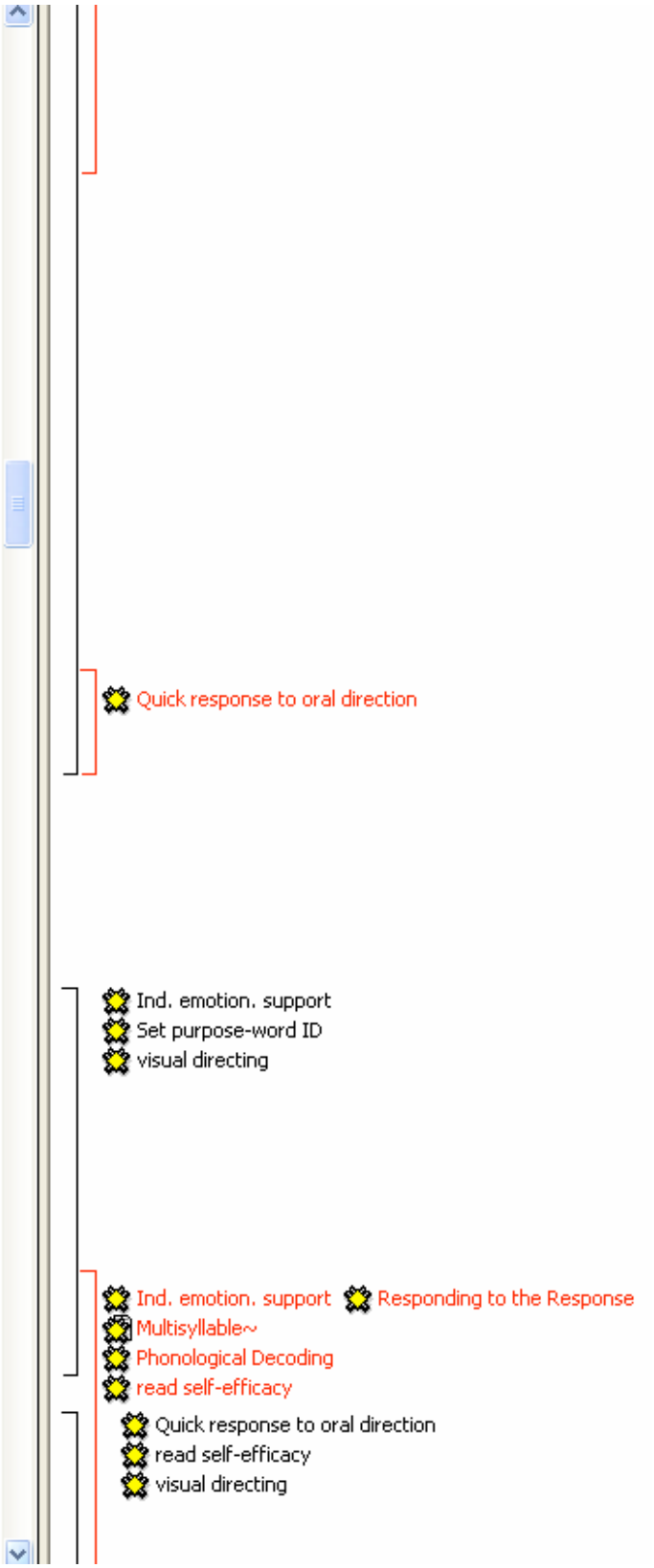
S: lost. (spoken quickly and eagerly)

Transition to Guided Oral Reading - Basal selection "Animals in the Cold"

T: Very good! (spoken with a smile and expression)…Very good….Very good, S. Let's see, what we're going to do now….we are going to do (while getting basal open to the correct page)…I want you to read something. I know that you can read really well, but I want to…see…to see how well you can sound out some of these words. Let's look at the story. Let's find the tile of this book. What is the name of this story?...Do you know this word?...Right here (pointing to title with finger).

S: (mouthing sounds) Amilus. (questioning expression and tone)

T: OK, what is that right there (pointing to



S: /an/

T: Can you say…you've got the right word. You've just got a little bit…uh…different the sound..right here at the end of it…./An/ /u/ /mulz/ (T speaking loudly here; S says same sounds almost at the same time, just barely following after the T). Can you say it?

S: Animals! (with pride and smiling)

T: Animals!

S: In the Cold.

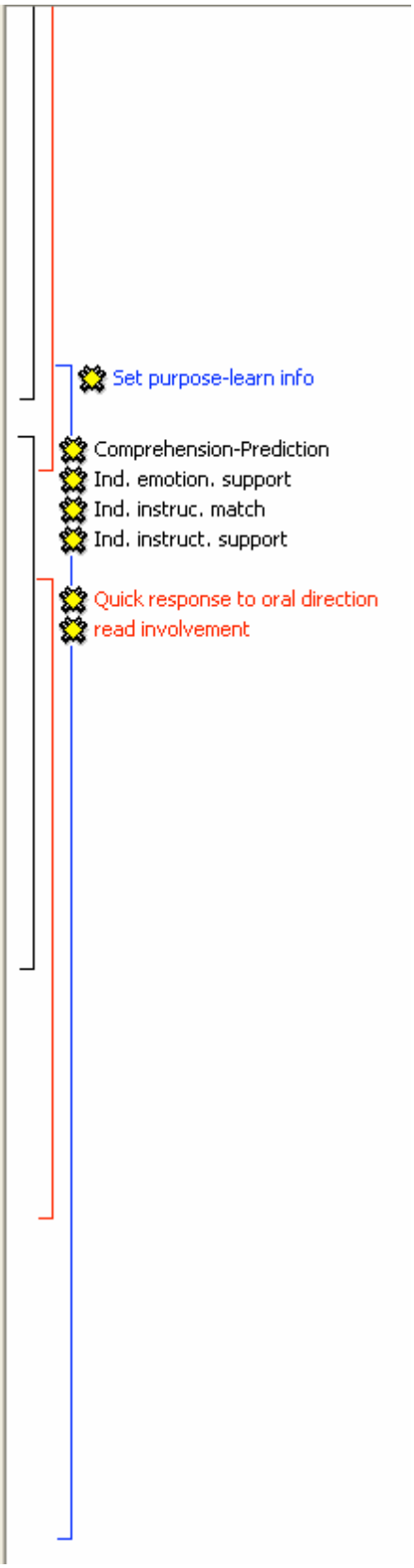
T: in the Cold! Very good. (S looking at pictures.) Let's see. Let's see what we can learn about animals in the cold. (T leading student to use strategy of making prediction.) I know lots of animals that have to stay out of the cold. Don't you? (S looking at several pics in text; appears to be listening; looks at T) Do you know lots of animals that have to stay out of the cold? Can you think of some? (getting high-pitched with voice)

S: foxes (looking at pictures in text; appears to be listening)

T: Ok, fox.

S: deer (looking at pictures in text).

T: Deer. Ok, we're going to see what those animals are…those look like polar bears to me. And you know Mrs. T is not really good with animals sometimes. I have to get some people to help me. I have to ask my husband, "What was that animal?" So, I'm gonna learn something today with you. Alright?



Text: It is cold here. It is not hot in the sun.

S: (Begins to read from text) It is cold…he

T: Say that word again.

S: here!

T: Ok.

S: It is not hot in the…sun.

S: (Going to other side of text) Lost!?

T: Ok, that look, you know what, S. that has all of the letters that we had in lost. But there are just switched around, so we need to sound that word out. /lll/ /o/ /l/ /o/ /o/

S: (following intently; moving mouth) /lloo/ Lots! of animals

T: There you go.

S: (without pausing during reading) animals live here. They do…do not see…

T: We can sound that word out. That's an easy one to sound out.

S: /b?/

T: /b!/ (said explosively)

S: /yuh/

T: /u/ Use that /u/ (pointing with finger to letter "u").

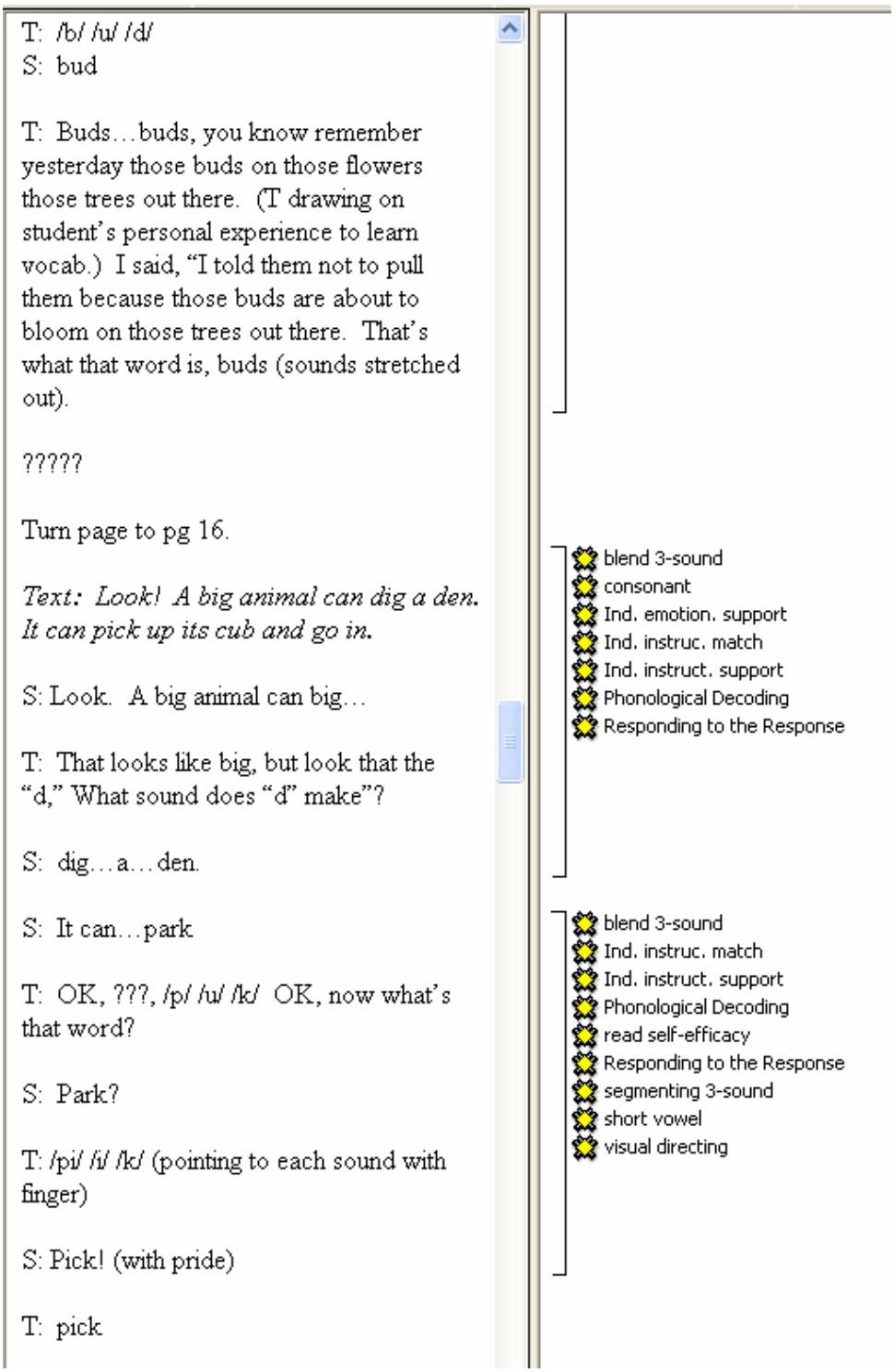
S: /u/ /d/ boast.

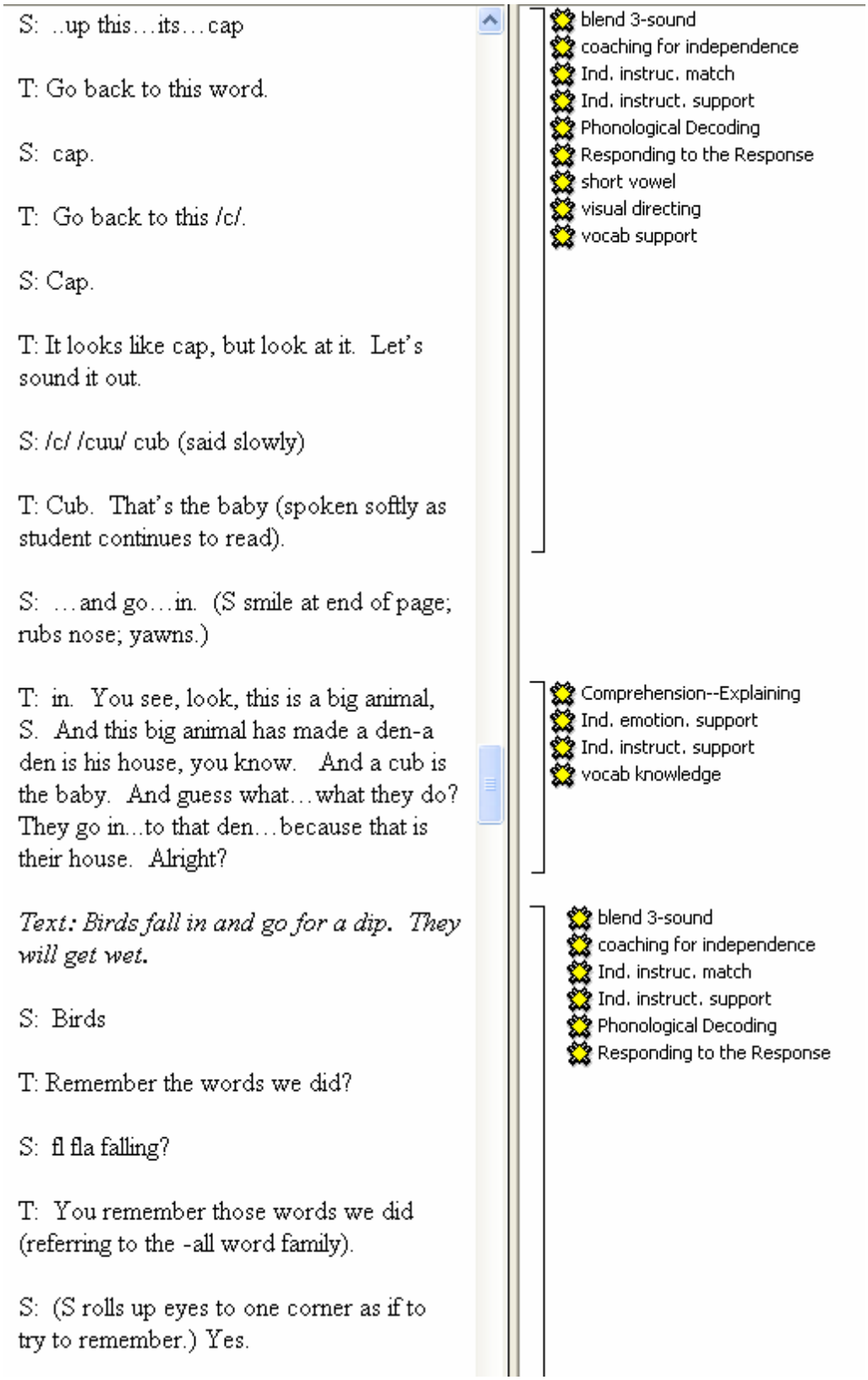
- Ind. instruc. match
- Ind. instruct. support
- Quick response to oral direction
- read involvement
- Responding to the Response

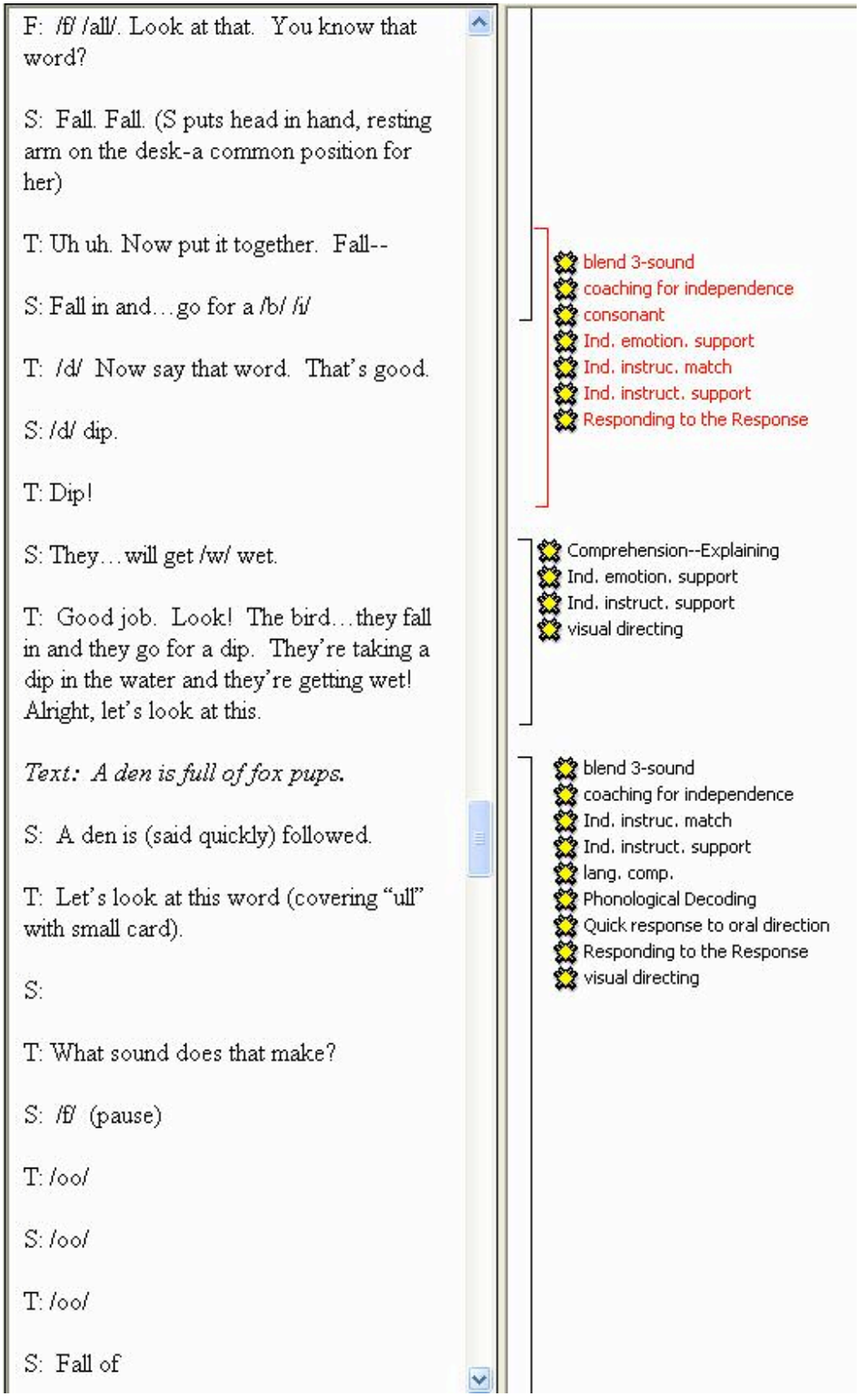
- blend 4-sound
- Ind. emotion. support
- Ind. instruc. match
- Ind. instruct. support
- Phonological Decoding
- read involvement
- Responding to the Response
- segmenting 4-sound

remembered word

- blend 4-sound
- Ind. instruc. match
- Ind. instruct. support
- Phonological Decoding
- read involvement
- Responding to the Response
- short vowel
- visual directing
- vocab support


T: /b/ /u/ /d/
S: bud
T: Buds…buds, you know remember yesterday those buds on those flowers those trees out there. (T drawing on student's personal experience to learn vocab.) I said, "I told them not to pull them because those buds are about to bloom on those trees out there. That's what that word is, buds (sounds stretched out).
?????
Turn page to pg 16.
Text: Look! A big animal can dig a den. It can pick up its cub and go in.
S: Look. A big animal can big…
T: That looks like big, but look that the "d," What sound does "d" make"?
S: dig…a…den.
S: It can…park
T: OK, ???, /p/ /u/ /k/ OK, now what's that word?
S: Park?
T: /pi/ /i/ /k/ (pointing to each sound with finger)
S: Pick! (with pride)
T: pick
blend 3-sound
consonant
Ind. emotion. support
Ind. instruc. match
Ind. instruct. support
Phonological Decoding
Responding to the Response
blend 3-sound
Ind. instruc. match
Ind. instruct. support
Phonological Decoding
read self-efficacy
Responding to the Response
segmenting 3-sound
short vowel
visual directing


S: ..up this…its…cap
T: Go back to this word.
S: cap.
T: Go back to this /c/.
S: Cap.
T: It looks like cap, but look at it. Let's sound it out.
S: /c/ /cuu/ cub (said slowly)
T: Cub. That's the baby (spoken softly as student continues to read).
S: …and go…in. (S smile at end of page; rubs nose; yawns.)
T: in. You see, look, this is a big animal, S. And this big animal has made a den-a den is his house, you know. And a cub is the baby. And guess what…what they do? They go in…to that den…because that is their house. Alright?
Text: Birds fall in and go for a dip. They will get wet.
S: Birds
T: Remember the words we did?
S: fl fla falling?
T: You remember those words we did (referring to the -all word family).
S: (S rolls up eyes to one corner as if to try to remember.) Yes.
blend 3-sound
coaching for independence
Ind. instruc. match
Ind. instruct. support
Phonological Decoding
Responding to the Response
short vowel
visual directing
vocab support
Comprehension--Explaining
Ind. emotion. support
Ind. instruct. support
vocab knowledge
blend 3-sound
coaching for independence
Ind. instruc. match
Ind. instruct. support
Phonological Decoding
Responding to the Response


F: /f/ /all/. Look at that. You know that word?
S: Fall. Fall. (S puts head in hand, resting arm on the desk-a common position for her)
T: Uh uh. Now put it together. Fall--
S: Fall in and…go for a /b/ /i/
T: /d/ Now say that word. That's good.
S: /d/ dip.
T: Dip!
S: They…will get /w/ wet.
T: Good job. Look! The bird…they fall in and they go for a dip. They're taking a dip in the water and they're getting wet! Alright, let's look at this.
Text: A den is full of fox pups.
S: A den is (said quickly) followed.
T: Let's look at this word (covering "ull" with small card).
S:
T: What sound does that make?
S: /f/ (pause)
T: /oo/
S: /oo/
T: /oo/
S: Fall of
blend 3-sound
coaching for independence
consonant
Ind. emotion. support
Ind. instruc. match
Ind. instruct. support
Responding to the Response
Comprehension--Explaining
Ind. emotion. support
Ind. instruct. support
visual directing
blend 3-sound
coaching for independence
Ind. instruc. match
Ind. instruct. support
lang. comp.
Phonological Decoding
Quick response to oral direction
Responding to the Response
visual directing

T: /foo/ /ll/

S: A den is full of fox peepy? (smiling and unsure)

T: OK, let's sound it out. /P/

S: /p/…

T: /u/ /u/

S: /u/ /p/

T: You think about a small dog. /p/ /up/

S: Pup.

T: Pup. You know this fox up here. They call those pups.

Text: They are not cold in the den.

S: They…are not cold…in the den.

T: Good job. They are not cold in the den. So, this den is full of pups and they're not cold in there. See, it's cold (pointing to picture of snow). And these animals have to make shelter for themselves-just like we have to have our house to keep us warm, OK? That was a good story about animals in the cold, wasn't it?

S: nods

T: (Looking at lesson plan for TRI. May be remembering what comprehension area to ask about; brief pause while she looks) Can you…tell me what this was about, S.

S: Animals in the cold.

- blend 3-sound
- Ind. instruc. match
- Ind. instruct. support
- Meaning prompt~
- Phonological Decoding
- Responding to the Response
- short vowel
- vocab knowledge
- vocab support

- Comprehension--Explaining
- Ind. emotion. support
- sight words
- visual directing

- coaching for independence
- Comprehension-Summarization
- Ind. emotion. support
- Ind. instruc. match
- Ind. instruct. support
- read involvement
- remembered word
- Responding to the Response
- T surprise
- vocab knowledge

T: OK, can you think of one animal that we read about?

S: A polar bear.

T: We read about a polar bear, ok. We did talk about a polar bear (T seems to be thinking that the book didn't actually mention a polar bear). Mrs. T. showed you a picture of a polar bear. Can you think of an animal that…that we read about, that was in the story with the words?

S: A fox.

T: A fox! (with expression and agreement) Do you know what…what's the baby…the fox's little baby called?

S: Pup!

T: Pup. (Smiles) Oh, that's such a good job, S. And, what did the bird in the story do? Can you remember? What did they take?

S: Dips!

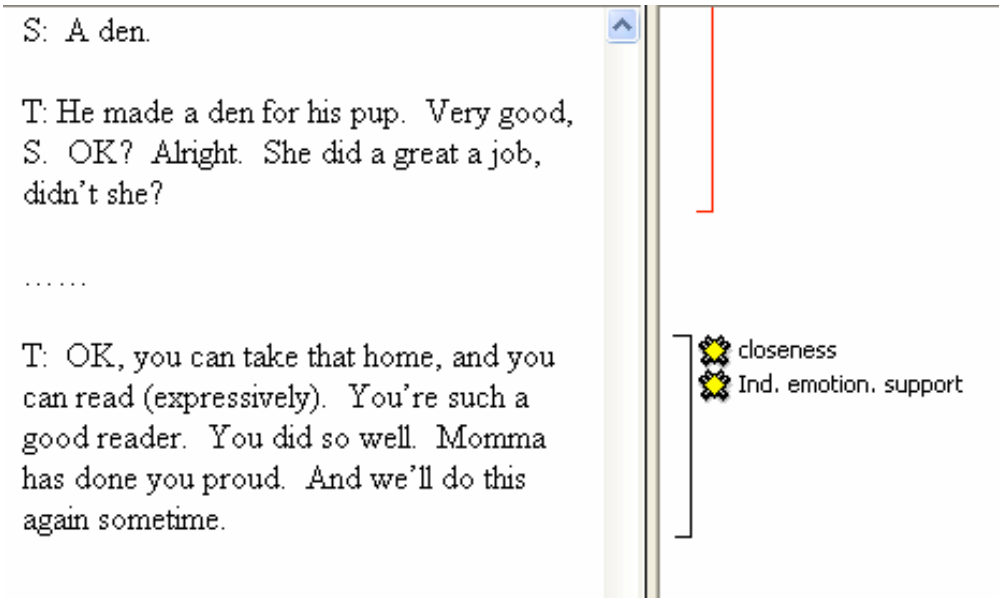
T: They took a dip! (smiling and nodding). They took a dip in the what?

S: water.

T: In the water. That is so good. And, um, um, the polar bears, we, we did read about the polar bears. What did the big polar do? The big animal do?

S: Um, he

T: Cub. There ya go. And he made a what? Do you know what that is called that he made?


S: A den.
T: He made a den for his pup. Very good, S. OK? Alright. She did a great a job, didn't she?
.....
T: OK, you can take that home, and you can read (expressively). You're such a good reader. You did so well. Momma has done you proud. And we'll do this again sometime.
closeness
Ind. emotion. support

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