USING THE *WHO AM I?* TO SCREEN FOR READING RECOVERY

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I dedicate this work to

My Parents

for their continued support.

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Abstract

Marie Clay's Reading Recovery program is a powerful but costly early reading intervention program. Prior to beginning a child's Reading Recovery Program a Reading Recovery teacher must determine which students in a Grade One population should be chosen for the program. The current method of screening students for Reading Recovery, Marie Clay's *Observation Survey,* takes a considerable amount of time to administer. This quantitative study looks at the possibility of using Marion de Lemos' and Brian Doig's *Who Am I?* developmental assessment to screen children for Reading Recovery. The *Who Am I?* developmental assessment can be administered to the students being screened for Reading Recovery in a fraction of the time that is takes to administered the *Observation Survey*. This study was conducted to determine whether there was a statistically significant difference between the *Who Am I?* scores of the Reading Recovery students and the non-Reading Recovery students. A statistical difference was found on some components of the *Who Am I?*. However, due to the limited number of participants (15) used in this study, there was not enough data to make a conclusive decision regarding the use of the *Who Am I?* to determine which students should be chosen for Reading Recovery. Instead, the statistically significant difference found between the *Who Am I?* scores of the Reading Recovery and non-Reading Recovery students has resulted in a recommendation to pursue this study on a much larger scale.

Chapter 1: Introduction

Rationale

Marie Clay's (1993) Reading Recovery program is an effective but costly early reading intervention programme. Much of the cost is due to the one-on-one nature of the assessment and instruction process. When a Reading Recovery teacher needs to determine the most suitable Grade One candidate for a space in the Reading Recovery program, that Reading Recovery teacher needs to administer a thorough battery of assessments, designed by Marie Clay (1993), formally known as an *Observation Survey*. The *Observation Survey* gives the Reading Recovery teacher extensive information about each student's literacy skills. The Reading Recovery teacher uses this information to select the candidates who are most in need of Reading Recovery. The information that the Reading Recovery teacher derives from conducting the *Observation Survey* then becomes the basis of each student's Reading Recovery program. The information derived is essential to the student's success.

However, because the information attained from an *Observation Survey* is deemed invalid after three weeks, the time and effort spent gathering literacy information on the other children who were not selected to be Reading Recovery participants is often wasted. In my experience, most classroom teachers do not use that information they collected, and neither do the Reading Recovery teachers.

Each *Observation Survey* takes about an hour to administer. Therefore, if the Reading Recovery teacher tests three students for one Reading Recovery space, at least two hours of time has been taken away from direct Reading Recovery instruction. Each student in the program is supposed to receive half an hour a day of one-on-one Reading

Recovery instruction. Accordingly, the time used to assess the two students who the teacher does not select to be in Reading Recovery is the equivalent of four lessons (almost a week of instruction) for one student. In a program that often discontinues students between "12 to 15 weeks," even one week of lost instruction is a significant amount of time (Clay, 1993, p. 8). If the four lessons are missed by eight students (the number of Reading Recovery students a teacher would take in a year – this is a modest estimate, as many teachers take at least 10), the total loss is 32 lessons, or more than five weeks of lost instruction time. In the school where I work there are two Reading Recovery teachers so there would be an equivalent of 10 weeks lost instruction time. That is almost an entire program for one more Reading Recovery student.

If another test, such as the *Who Am I?* (which can be given to a whole class, by a regular classroom teacher, in half an hour), could be used to identify more certainly which students need to receive Reading Recovery, more students could benefit from the Reading Recovery program.

Background

As a fourth-year Reading Recovery teacher I am very aware of the cost incurred by the schools in which I and other Reading Recovery teachers work. I am also aware of the benefit to students who participate in the Reading Recovery program and I am frustrated by the length time it takes to gather information on children I will never teach. Unfortunately, the time-consuming *Observation Survey* is the only reliable, research-based method of determining which students should receive Reading Recovery instruction. I believe, without doubt, that the *Observation Survey* is crucial to the success of a student's Reading Recovery program.

My concern is that we are not using the most efficient means possible to select which students are going to be in Reading Recovery. For some time I have wondered if there was a more efficient assessment tool that Reading Recovery teachers could use to determine which students would be the best candidates for Reading Recovery.

Coincidentally, a little over a year ago I became interested in Marion de Lemos and Brian Doig's (1999a) *Who Am I?: Developmental Assessment*, a standardized developmental assessment with normative data for children aged 4:0 to 7:1 years. I learned of this relatively new assessment tool, published by the Australian Council for Educational Research, during a course taught by Margret Winzer in July, 2001. I thought it would be interesting to give the assessment to the Grade One students at my school. I hoped it would be a good way of gathering basic individualized information about the Grade One students that might help to inform the Grade One teacher's instruction.

As a result, I asked the school administration team and the Grade One teacher for permission to give the *Who Am I?* developmental assessment a trial run, to determine if it was a useful assessment that could be used yearly with Grade One students and, perhaps, the students in kindergarten. With permission, I administered the *Who Am I?* to every Grade One student in the school on October 17, 2001. The information obtained from this test formalized, quantified and reaffirmed what the teacher already knew about her students. At the time, I concluded that the use of the *Who Am I?* to inform teaching was not overly practical. However, it did provide excellent baseline data to measure students' growth over the school year.

During the year I began to wonder if there might not be another use for the *Who Am I?* I wondered if there might be a relationship between the students' *Who Am I?*

scores and whether or not they were selected to be in Reading Recovery. I decided that I would like to conduct a quantitative study in which I could analyze the Grade One students' scores on the *Who Am I?* to determine if these results were indicative of which students would receive Reading Recovery instruction during the first intake of the 2001/2002 school year. In addition, I planned to compare the *Observation Survey* results with the students' results on the *Who Am I?*.

I hoped to find a relationship between the Grade One students' *Who Am I?* scores and whether or not the school's Reading Recovery team chose them to participate in the school's Reading Recovery program. If a sufficiently strong relationship were found, I intended to promote a more comprehensive investigation into the use of the *Who Am I?* to select which students need Reading Recovery.

Chapter 2: Literature Review

In this literature review I explore some basic learning theories, theories on how children learn to read, and an overview of the Reading Program and the *Who Am I?*. As well, I report a summary of a study conducted in Canada using the *Who Am I?*.

Learning Theories

The four main learning theories reviewed in this section are behaviorism and social learning theory, Piaget's cognitive-developmental theory, Bruner's constructivist learning theory and Vygotsky's sociocultural theory).

Behaviorism

The psychologist John Watson began his work in behaviorism at the beginning of the twentieth century (Watson, 1928). After an era dominated by Freud and psychoanalysis, Watson claimed that behaviorism was the "new psychological claimant of public interest" (1928, p. 5). Basically, "behaviorism is a study of what people do" (Watson, 1928, p. 8). Watson wanted to depart from the earlier trends in the field of psychology that dealt with the intangible and subjective study of the conscious and sub-conscious inner workings of the mind. He wanted to bring a more scientific lens to the field of psychology by dealing with the "facts" derived from observing the behaviors exhibited by humans.

Hull (1943), an early behavior scientist, quantified stimulus, reactions, learning, motivation and reinforcements into mathematical equations. His work on learning and reinforcement had particular relevance for educators. In simplified terms he deemed learning to start with need which is provoked by a stimulus in the environment. The organism then learns the necessary behavior as an adaptive reflex based on instincts

provided by survival and evolution. Appropriate behavior is learned as a positive environmental reinforcement which the organism views as its best chance survival. Hull (1943) felt that unless that there was direct empirical evidence to support a behaviorist's "theoretical" and "symbolic constructs" they held no validity (pp. 382- 397).

Behaviorism deals with the study of subject *stimuli* and *responses*. It is a theory that deals with "directly observable events-stimuli and responses – rather than the unseen workings of the mind" (Berk, 2002, p. 18). Behaviorist Skinner (1987) uses the terms "classical" conditioning and "operant" conditioning to describe two different types of behavior (pp. 69 – 73). Respondant or classical conditioning is illustrated by Pavlov's famous experiment in which he conditioned dogs to salivate upon hearing a bell. In educational terms it involves having a child associate one environmental factor with another. For example, reading a child a book before every writing session would have the child associate reading with writing, so the child being read to would be preparing to write. In contrast the term *operant conditioning*, developed by Skinner, involves the use of reinforcement to increase a child's positive behavior and punishments to decrease a specific behavior. Skinner (1978) believed that this system of reward and punishment had huge educational implications. In his mind reward and punishment dealt with the most fundamental classroom; a student "come[s]to school, behave[s] well in class, pay[s] attention, appl[ies] himself to his assignments, answers questions" because the "consequences" of not doing these things are undesirable and punitive (p. 135).

Behavioral psychologists developed *social learning theory* based on the "principles of conditioning and reinforcement" (Berk, 2002, p.19). This theory views external and environmental factors as paramount in a child's development.

In 1977, Albert Bandura (1977)), a behaviorist, added the concept of "modeling" to the social learning theory. Bandura (1977) acknowledged that "reinforcement provides an effective means of regulating behaviors that have already been learned" (p. 22). However he also noted that reinforcement was an "inefficient" means of establishing new behaviors that had not yet been learned (p. 22). He recognized that without the ability to learn "observationally through modeling [and] observing others [to] form an idea of how new behaviors are performed" learning would be "exceedingly laborious" and "hazardous" (Bandura, 1977, p. 22).

Bandura expanded his theory to include *cognition*. His work shows that "children's ability to listen, remember, and abstract general rules from complex sets of observed behavior affects their imitation and learning" (Berk, 2002, p. 19). Furthermore, students cannot learn through observation without the ability to "attend to and perceive accurately" the modeled behavior, retain and retrieve the information and reproduce the modeled behavior through "motor reproduction" (Bandura, 1977, pp. 33).

Piaget's Cognitive Development Theory

Piaget had very different beliefs about how a child developed than those of the behaviorists. He "did not believe that knowledge was imposed on a passive, reinforced child" (Berk, 2002, p. 20). In Piaget's theory of cognitive development, "children actively construct knowledge as they manipulate and explore their world, and their cognitive development takes place in stages" (Berk, 2002, p. 20). At the core of his theory was Piaget's belief that there are certain concepts and items that children cannot learn unless they are developmentally ready.

Piaget (1969) claims that the "mental development of the child appears as a succession of three great periods" and that they each "extend the preceding period and reconstruct it on a new level" (p. 71). As well, Piaget (1969) concludes that "learning is subordinated to development and not vice versa" (p. 76). This means that certain aspects of cognitive development must occur before certain concepts can be learned and mastered.

According to Piaget, the order in which children progress through these stages is constant, although, the age at which a child progresses from one stage to the next may vary from child to child. The middle of the three stages is often expanded into two separate staged. The four stages in Piaget's theory are as follows:

Birth-2 years	Sensorimotor Stage. Infants "think" by acting on the world with their eyes, ears, hands, and mouth. As a result, they invent ways of solving sensorimotor problems, such as pulling a lever to hear the sound of a music box, finding hidden toys, and putting objects in and taking them out of containers.
2-7 years	Preoperational Stage. Preschool children use symbols to represent their earlier sensorimotor discoveries. Development of language and make-believe play takes place. However, thinking lacks the logic of the two remaining stages.
7-11years	Concrete Operational. Children's reasoning becomes logical. School-age children understand that a certain

	amount of lemonade or play dough remains the same even after its appearance changes. They also organize objects into hierarchies of classes and sub-classes. However, thinking falls short of adult intelligence. It is not yet abstract.
11 years and older	Formal Operational. The capacity for abstraction permits adolescents to reason with symbols that do not refer to objects in the real world, as in advanced mathematics. The can also think of all possible outcomes in a scientific problem, not just the most obvious ones. (Berk, 2002, p. 22)

Bruner's Constructivist Learning Theory

Constructivist's view previously learned concepts, understandings and knowledge as a framework into which all new learning is integrated. Jerome Bruner is a cognitive psychologist widely associated with constructivist learning theory. Bruner views learning as an "active process" where the "learner selects and transforms information, constructs hypotheses, and makes decisions, relying on a cognitive structure to do so" (http://tip.psychology.or/bruner.html).

Bruner (1960) states that learning involves "three almost simultaneous processes" (p. 48). The first of these is the "acquisition of new information;" the second is referred to as "transformation – the process of manipulating knowledge to make it fit new tasks;" and the third process Bruner (1960) defines as "evaluation," where the learner assesses whether the new information is being used appropriately (p. 48).

Vygotsky (1962) first identified the concept of scaffolding. However, Bruner (1966) is the first to thoroughly explore and develop the concept of scaffolding and implement it into educational theory. Constructivists view scaffolding as an integral part of effective instruction. Scaffolding is further defined by Graves (as cited in Cambourne and Turbill, 1987) as:

> the temporary structures the mother uses to adapt the child's language, gestures and activity. Scaffolding follows the contours of the child's growth. As a child grows, the scaffold changes, but the principles of change, of temporary structures do not. (p. 8)

Bruner (1966) further expands his views on instruction by listing four major implications or aspects of instruction that teachers must adhere to in their instruction:

1. Predisposition towards learning.
2. The ways in which a body of knowledge can be structured so that it can be most readily grasped by the learner [scaffolding].
3. The most effective sequences in which to present material.
4. The nature and pacing of rewards and punishments.

Bruner is also responsible for the popular instructional strategy known as "concept attainment" (http://ivc.uidaho.edu/mod/models/bruner/). Concept attainment is designed to help students see the "big picture." In using this strategy, teachers show students a series of "exemplars" that they must decide either do or do not fit the concept being taught. (http://ivc.uidaho.edu/mod/models/bruner/).

Sociocultural Theory

Lev Vygotsky's sociocultural theory looks at how key aspects of culture are passed from one generation to the next. Vygotsky believed that "social interaction" with members of society who already behaved according to the cultural norm helped children to learn how they were to behave with regard to "values, beliefs, customs, and skills of a social group" (Berk, 2002, p. 25). When children had "internalized" the desired social/cultural behavior that had been modeled and displayed through interaction by "adults and more expert peers," they then used this knowledge to "guide their own actions and acquire new skills" (Berk, 2002, p. 27)

Vygotsky and Piaget had some similar beliefs. Both pyschologists felt that children actively constructed their knowledge. However, Vygotsky did not agree that all children move through the same stages as Piaget did. Instead, he felt that children developed cognitively through a "socially mediated process" (Berk, 2002, p. 27) which began with the child's attainment of language. Vygotsky (1987) wrote:

> With the stability and consistency of its meanings, the speech of those who surround the child predetermines the paths that the development of the child's generalizations will take. It links up with the child's own activity, directing it along a certain, strictly defined, channels. However, as he moves along this predetermined path, the child thinks in correspondence with the characteristics of a particular stage in the development of intellect. By addressing the child in speech, adults determine the path along which the development of generalizations will move and where that development will lead. That is, they determine the resulting generalizations. However, the adult cannot transfer his own mode of

> thinking to the child. Children acquire word meanings from adults, but they are obliged to represent these meanings as concrete objects and complexes. (p. 143)

As a result, Vygotsky believed that once children gained the skills of language they would develop differently in behavior and thought based upon the culture in which they lived.

Furthermore, Vygotsky (1987) wrote that " the zone of proximal development has more significance for the dynamics of intellectual development and for the success of instruction than does the actual level of development (p. 209). This meant that it was more important that instruction take place just beyond the child's current level of understanding than to make sure that the learning was appropriate to the child's stage of development.

Reading Theories

In 1524 Martin Luther first proposed that the common person should be educated with the purpose of being able to read the Bible for themselves (West, 1964, p. 3). Since that time, scholars have debated the best manner in which to teach children to read. In Western, English-speaking societies, the two main approaches to teaching reading are a *whole language* approach and a *linguistic* or *phonetic* approach. In Canadian schools, almost all reading programs today fall into either category, or some combination of the two. The goal of each reading methodology is the same and that is to teach children to get meaning from the printed word.

Linguistic Approach

Educators often characterize the linguistic approach to reading simply as "the use of phonics" (Anderson, 1971). Phonics involves teaching children the phonemes, or

building blocks, of the English language. This process is a part-to-whole method of teaching reading. First children are "taught the speech sounds represented by letters and groups of letters" (Hildreth, 1971, p. 149). The students are then taught to use the letters and chunks or letters representing speech sounds to visually break down words into their sound segments. The students then use the letter sounds or chunks of sounds to decode unknown words in reading by blending the sounds together.

Linguists also use children's implicit syntactic knowledge to help them monitor their reading. For example, after a child has read a passage out loud a teacher using the linguistic approach might ask "Does it sound right?" instead of "Does it make sense?" The linguistic approach draws on children's syntactical knowledge in combination with their ability to visually identify and use sound segments in words to decode them.

Whole Language Approach

In contrast to the linguistic approach to teaching reading, *whole language* is a whole-to-part approach to reading instruction. It is based on the manner in which children learn spoken language (Cambourne & Turbill, 1987). Proponents of the whole language approach theorize that children learn to speak through immersion in the language that they are learning. Children learn by listening to and interacting with adults who are using language that is often far above the children's own skill and ability level. Most importantly, the language is not broken down into smaller segments for the child to learn.

Therefore, the whole language approach to reading involves teaching children by immersing the students in complete and authentic texts that are above their ability level. Cambourne and Turbill (1987) studies have shown that each *whole language* or *process oriented* classroom will vary greatly; however, when these classrooms were analyzed for

commonalities, nine conditions were present in the each classroom. The nine conditions Cambourne and Turbill (1987) found in whole language classroom are:

1. Immersion in written medium.
2. Demonstration of how print medium is used.
3. Expectations 'given off' by teacher to class.
4. Responsibility for own learning.
5. Approximation: franchise to 'have a go'.
6. Practice: employing the developing skill.
7. Engagement with the demonstrations made available.
8. Response: mutual exchanges between experts and novices. (p. 7)

Cambourne and Turbill (1987) conclude that when these nine conditions are present in a classroom the students "develop an uniform set of responses to the demands made by their learning situation" (p. 8). These students begin developing strategies to use on written text. The strategies are a type of *scaffold* the children develop for themselves and when they "feel both confident and competent to deal with particular part of the literacy puzzle they've been trying to solve, they will remove the scaffold" (Cambourne & Turbill, 1987, p. 8).

The whole language approach involves immersing children in written text and experts (teacher's) model and demonstrate reading and writing for the students. Students being taught to read using this method participate in "reading print displays, choral reading, discussion of print and graphophonic conventions in context" (Cambourne & Turbill, 1987). Teachers using the whole language approach do address phonetic segments of words but only within the context of text. The primary emphasis in a whole

language program is to use contextual clues and meaning to decode text. Teachers give their students many opportunities to watch expert demonstrations of reading and writing.

Combination Approach

Marie Clay believes that reading instruction involves teaching children both linguistic and whole language strategies. She insists that the first strategy that students use to decode unfamiliar text is meaning or context clues. This is because her own research and observations show that "words seem to be easier for the very young reader when they are embedded in sequenced information" that the child understands (Clay, 1991, p. 175). However, Clay (1997) does acknowledge that students need other strategies to decode text when the meaning of a text cannot help the child decode a word. She encourages students to cross-reference the meaning of the text with syntactical clues ("does that sound right?") and visual information ("does that look right?").

Clay (1993) also advocates the instructor modeling reading for students and scaffolding instruction in such a way that students are continually moved just past their current skill level into the place where she believes real learning occurs. This place is what Vygotsky (1962) refers to as the "zone of proximal development."

Intervention

Reading Recovery is a program designed by Marie Clay in New Zealand and based on twenty years of her research (Askew, Fountas, Lyons, Pinnell, & Schmitt, 1998, p. 5). As described by Askew et al. (1998):

> Reading Recovery is an early intervention program designed to assist the lowest achieving children in first grade who are having difficulty learning to read and write. Children meet individually with a specially trained teacher for the children

> to develop effective reading and writing strategies. During this relatively short term intervention, these children make faster than average progress so that they can catch up with their peers and continue to work on their own within an average group setting in the regular classroom. (p. 2)

Basically, Reading Recovery teachers work with the "hardest to teach children" (Clay, 1993, p. iv) on the cutting edge of a child's learning or, as Vygotsky (1962), states within their zone of proximal development. Clay (1993a, 1993b) emphasizes over and over again that the Reading Recovery teacher must at all times know what the children do and do not control, and which understandings the students are currently developing and integrating into their knowledge about reading and writing. Consequently, it is crucial that the teacher have detailed, in-depth information about each child's literacy skills at the beginning of the program.

Assessment

The Observational Study

The *Observation Survey* provides detailed, in-depth information about a child's literacy skills. Clay's (1993a) *Observation Survey* consists of six tasks. Askew et al. (1998) outlines the

six tasks as:

1. *Letter Identification.* Children are asked to identify 54 characters, the upper and lowercase standard letters as well as the print form of /a/ and /g/.
2. *Word Test.* Children read a list of frequently occurring words. Three alternative lists are available for testing and retesting.

3. *Concepts About Print.* The examiner reads a short book and invites children to perform a variety of tasks to find out what they have learned about the way spoken language is put into print. Two versions are available, *Sand* and *Stones*. The test reflects important concepts to be acquired by children in the beginning stages of learning to read. As children move from non-reading to reading, changes occur in the scores on this measure.
4. *Writing Vocabulary.* Children are asked to write all of the words they can within a maximum 10 minute limit. Within guidelines for testing, examiners are permitted to prompt as needed.
5. *Hearing and Recording Sounds in Words [Writing Dictation].* The examiner reads a short sentence or two and asks the child to write the words. Children's scores represent every sound recorded accurately in this assessment of phonemic awareness and/or orthographic awareness.
6. *Text Reading.* Children are asked to read a series of increasingly more difficult texts that they have not seen before. The tester provides a minimal, scripted introduction and records reading behaviours, using a running record. (p. 10)

The information learned about the student's literacy skills through administering the *Observation Survey* is crucial to the success of the program. A learning readiness test cannot be used because it may not give the teacher "guidance" as to what the child needs to learn "about reading" (Clay 1993 p. 17). The *Observation Survey* needs to be given to every child who enters the program to provide the teacher with clear, specific information

about what the child does and does not know. This gives invaluable information about where to begin instruction with the child. However, no research has been found that indicates the *Observation Survey* is the only means of choosing appropriate candidates.

The Who Am I? Assessment

The *Who Am I?* is described on the Australian Council for Educational Research website (2000) as "a developmental assessment package for assessing the cognitive processes that underlie the learning of early literacy and numeracy skills." It can be given to groups of 5-10 children, or individually, and can be administered in 20 minutes (de Lemos & Doig, 1999b). It is composed of three categories, all of which have been scaled by analysing the data of 4000 *Who Am I?* participants (de Lemos & Doig, 1999b). These are "copying (of geometric figures [circle, cross, square, triangle, diamond])," "symbols (the child's awareness of these [name, letters, words, sentence, numbers])," and "drawing (a picture of self)" (de Lemos & Doig, 1999c, p. v). There is also a fourth scale that combines the scores of the first three components (de Lemos & Doig, 1999c, p. 12).

Because it is a new assessment tool, there is limited information on the use of the *Who Am I?*. One study was conducted by the Canadian North York Community Project (2001) and followed up by a Community 2000 Projects (2001) study in which several other Canadian communities participated. The purpose of the two studies was to compare the results of the Canadian students with the Australian norms and to compare the results of the North York study with the results of the other Canadian communities. However, there were questions regarding the reliability of the test results as they were scored differently in each study. The Community 2000 Projects study had one interesting finding. There was very little difference in the mean score on the copying tasks for all

three groups (Australian, North York, and other Canadian communities). Thus, little information could be derived about the children's reading readiness based on the mean copying score. However, an analysis of the individual sections of the copying component gave a much better indication of a child's "readiness to learn," with the "ability to copy the diamond" the strongest indicator of developmental level (p. 4).

In summary, this literature review emphasizes basic learning theories, theories on how children learn to read, the Reading Recovery Program, the *Who Am I?* assessment and recent studies using the *Who Am I?* assessment. Behaviorist learning theory includes the concepts of *stimuli* and *response*, *modeling* and *cognition*. Piaget's cognitive development theory proposes that concepts are learned when children are developmentally ready. Bruner's constructivist learning theory highlights the importance of *scaffolding*. Vygotsky's sociocultural theory places emphasis on the role of *social interaction* and the *zone of proximal development*. Reading theories include *whole language, linguistic (phonetic)* and combination approaches. An overview of the Reading Recovery Program identified it as a combination approach to teaching reading. Each of the assessment components for both Reading Recovery (Letter Identification, Word Test, Concepts About Print, Writing Vocabulary, Writing Dictation, *Text Reading*) and the *Who am I?* assessment (copying, symbols, drawing) were also reviewed. This literature review concluded in the summary of a *Who Am I?* study that was conducted by the Canadian North York Community Project and followed up by Community 2000 Projects.

Chapter 3: Methodology

Research Question

The research question for this study was: Does the *Who Am I?* developmental assessment predict which Grade One students need Reading Recovery?

The goal of this study was to determine whether or not there was enough of a difference in the *Who Am I?* scores of the Reading Recovery students and the *Who Am I?* scores of the non-Reading Recovery students to warrant the expansion of this study to include more students. Increasing the number of students in the study would aid in deciding whether it would be educationally sound to use the *Who Am I?* to identify which students needed Reading Recovery. This type of research is "evaluation research" because its purpose is to make a decision (Borg & Gall, 1983, p. 732).

The study was quantitative. Adler and Clark (1999, p. 394) state that the "relationships among the variables" is the focus of quantitative research. Thus, the focus of this research was to look at the relationship between the two variables and determine whether the *independent* variable (a student's score on the *Who Am I?*) can predict the *dependant* variable (whether that student needs Reading Recovery as determined by their *Observation Survey* score).

This research was an experimental analysis of student product with quantifiable variables (a student's results on the *Who Am I?* and whether that student needed Reading Recovery) for "concrete" measurement of the variables in the form of numerical scores and stanines (Neuman, 1997, p. 125). Children needing Reading Recovery are identified in this study as the children who were chosen for Reading Recovery in the first intake in the Fall of 2001. The *unit of analysis* was an entire class of 15 Grade One students that

attend the school where I teach. It is what Creswell (2002) identifies as *quasi – experimental* research methodology. This is because the subjects used in the study were not randomly selected as would be the case in an experimental design. Instead, they were chosen through *non-probability sampling* because they were "available, [and] convenient" (Creswell, 2002, p. 164).

The data collection included the students' scores on the *Who Am I?* and the *Observation Survey.* I used SPSS (Statistical Package for the Social Sciences) software to create a computer database into which all of the data were entered. As well, I used SPSS software to conduct a statistical analysis of the data collected and used Microsoft Excel to visually enhance my findings by representing individual and group profiles graphically.

The *Observation Survey* was not a variable in this study but it was a key component because it is the baseline used for comparison with the *Who Am I?* results to answer the research question. The *Observation Survey* is the method recognized and used by Reading Recovery teachers worldwide to predict which students need Reading Recovery. Therefore, an integral aspect of this study was the comparison of the students' results on the *Who Am I?* against their results on the *Observation Survey.*

Hypotheses

After the selection of the research question, definition of the variables and the development of an outline for the study, predictions in the form of a *null hypothesis* and two *directional alternative* hypotheses were developed (Creswell, 2002).

Null Hypothesis

The *null hypothesis* predicted that "there would be no relationship among the variables" and that the *Who Am I?* had no value in predicting which students needed Reading Recovery (Creswell, 2002, p. 143).

Directional Hypotheses

The two directional alternative hypotheses predicted a relationship between the variables in varying degrees.

Hypothesis 1. The first directional alternative hypothesis stated that the *Who Am I?* was adequate but not as reliable as the *Observation Survey* for predicting which students needed Reading Recovery.

Hypothesis 2. The second directional alternative hypothesis stated that the *Who Am I?* was just as reliable as the *Observation Survey* for predicting which students needed Reading Recovery.

Subjects

The "target population" (Creswell, 2002) was identified in the research question as Grade One students. A "representative group of subjects" (Adler & Clark, 1999, p. 395) is used in quantitative research. In this study, the data on approximately 15 Grade One students was analysed with the purpose of applying the findings to all Grade One students screened for Reading Recovery. Thus, the *unit of analysis* (Creswell, 2002) is a single class of Grade One students. These Grade One students are the *sample* or "subgroup of the target population" studied to make "generalizations about the target population" (Creswell, 2002, p. 163).

The class of Grade One students whose assessment scores are used in this study attend the elementary school where I teach. This school has many of the characteristics associated with an inner-city school. Many of the children come from single-parent families and low socio-economic backgrounds. There is a diverse range of cultural backgrounds and, for many students, English is a second language that they do not learn until they begin school. In addition, much of the school population is transient. The original unit of analysis was an entire Grade One class consisting of 17 students; unfortunately, before I obtained permission from the students' parents, two of the students moved away. As a result, the *Who Am I?* scores of only 15 subjects are used. One of these 15 students did not attend the school during the initial administration of the *Observation Survey*. Therefore, the *Observation Survey* scores of only 14 subjects are used.

Instruments

The *Who Am I?* developmental assessment and the *Observation Survey* are the *instruments* or "measures of individual performance" used in this study (Creswell, 2002. p. 174). Both tests are norm-referenced assessments. This means that the stanine scores from each test are based on the normative data from thousands of students who have been administered each assessment.

Who Am I? Developmental Assessment

The *Who Am I?: Administration Instructions for Individuals and Groups* outlines explicit instructions for the administration of the assessment. When administering the *Who Am I?* to the students in this study, I followed the procedures outlined for groups of 5 – 10 students. The students were administered this assessment in two groups of nine. I administered the *Who Am I?* assessment to both groups of students between 9:48 A.M.

and 10:36 A.M. I chose to use the students' *Who Am I?* scores in this study for several reasons. The first was because it is an early childhood developmental assessment that is norm referenced on the scores of 4000 children aged 4-7 (De Lemos & Doig, 1999c). It is also quick and easy to administer. In addition, rubrics given for each component of the assessment provide guidance in the scoring of the assessment and help to ensure the reliability of the assessment. In fact, both reliability and validity of the test is also addressed and confirmed by De Lemos and Doig (1999c) in the *Who Am I?: Developmental Assessment Manual.* Lastly, because I had administered the assessment to the Grade One students at my school shortly after the *Observation Survey* assessments had been conducted, its use was convenient.

Observation Survey

The instructions for each component of the *Observation Survey* are clearly outlined in Marie Clay's (1993a) book: *An Observation Survey of Early Literacy Development.* The school's other Reading Recovery Teacher or I administered the *Observation Survey* to the students in this study. We both followed the *Observation Survey*'s instructions carefully. Each student was given the survey individually over two weeks in September 2001. The administration of the *Observation Survey* occurred at various times between 9:00 A.M. and 3:30 P.M. Monday to Friday.

Procedure

There were three main components to the procedure in this study. The first step in the procedure was gaining permission from three different sources: the University's Human Subjects Research Committee, parents or guardians, and the school district that has jurisdiction over the elementary school in which I work and which the subjects attend.

The second step was the collection of data and the third step was the analysis, interpretation and reporting of the data.

Permission

Before I could have access to the data, an application outlining the purpose of the study, how the subjects were to be used, how parental or guardian permission was to be obtained and how parents or guardians were informed of their rights had to be submitted to The University of Lethbridge's Human Subjects Research Committee. Part of this application included a sample *informed consent form* which was to be given to the parents or guardians of the subjects (Creswell, 2002).

The second group from whom I needed permission were the parents or guardians of the subjects. I obtained permission from the parents and guardians of the subjects by having them sign an *informed consent form*. The informed consent form explained to the parents or guardians the *purpose* of the study, the *procedures* used in the study, their right to ask questions and obtain results from the study at any time. It also informed them that their child's anonymity would be protected, that their child's participation in the project was voluntary, that they had the right to withdraw their child's data at any time without bias towards themselves or their child. Finally, they were told how to contact my supervisors and myself if the need should arise, and that their signature indicated that they were consenting to the use of their child's data in this study (Creswell, 2002).

The third organization from which I needed permission was the school district in which I worked. I submitted an application to the district that included a description of the research project, a description of how the project would be of value to schools and school district (students, teachers, administrators), a description of the subjects and a timeline.

The application submitted to the school district also included copies of the instruments used and a copy of the *informed consent form.*

Data Collection

For the purpose of this study, I collected and compiled the students' Fall 2001 *Observation Survey* and *Who Am I?* scores.

This research design is a *within group-repeated measures design* (Creswell, 2002) because both measurements (*Who Am I?* and the *Observation Survey*) were administered to all of the subjects (Creswell, 2002). The second assessment was repeated on the same group of subjects. The data from both assessments were compiled and organized by whole group, by students selected for the first intake of Reading Recovery in the Fall of 2001 and by non-Reading Recovery students.

I compiled, coded and entered the assessment scores, stanines and relevant data (outlined below) of every student in the study into a computer database using SPSS (Statistical Package for the Social Sciences) software (Creswell, 2002). To protect the anonymity of the subjects, I gave subjects an identification number that I used instead of their names. After I had coded the data, I checked the "accuracy of [the] coding" otherwise known as "cleaning" the data (Creswell, 2002, p. 297).

I coded the overall score (out of a possible 44), overall score stanine (a stanine of 0-9 is assigned each overall score depending on the child's age) and the scores (a score of 0-4 is assigned for each component) from each scaled component of the *Who Am I?* assessment (*name, circle, cross, square, triangle, diamond, numbers, letters, words, sentence, picture*) as variables in the data set. I coded the overall score and stanine score (a stanine from 0-9 is assigned for each component score regardless of the child's age)

from each scaled component of the *Observation Survey* (*Letter Identification, Word Test, Concepts About Print, Writing Vocabulary, and Writing Dictation*) as variables in the data set. Then, I coded both the instructional reading level and accuracy percentage of each student and included both as variables in the data set. While all of the above-mentioned scores are ratio level data, SPSS does not distinguish between interval and ratio level data (Christensen & Johnson, 2000). As a result, I entered all of the data as interval level data. Other variables that I coded and used in the data set included the child's birth date (ordinal data) and whether they were included in the first intake of Reading Recovery in Fall 2001 (nominal data).

After all of the variables had been defined and each child had been given an identification number (an ordinal variable), I then entered each child's data. SPSS displayed the data in the form of a grid in which each variable was a different cell. When running statistical description and analysis operations I used the grid to select the information for which I needed to have a description, and which information I wished to be statistically analyzed.

In the last step of the data collection, I checked the coded data for errors. I *cleaned* the data using two different cleaning strategies, possible code cleaning and re-entering some of the data (Creswell, 2002). Because the data set was small it was relatively easy to clean the data. The first method of cleaning involved checking the data for "impossible codes," (Creswell, 2002, p. 297) such as a score of 8 on the *Who Am I?* assessment components, which can be no higher than 4. For the next method of data cleaning, I re-entered the data for three students and checked for errors in the first data entry. I did not find errors in any of the data, using either method of data-cleaning.

Data Analysis

Two elements are included in the data analysis section of this study. The first is "exploring and describing the data" and the second is "conducting statistical tests with the data" (Creswell, 2002, p. 226).

Data exploration and description. The first computation that I conducted was a descriptive statistical table that displayed the number of students (N) in the entire unit of analysis and the minimum, maximum and mean ages of the students. I also created the same type of descriptive table for the non-Reading Recovery group of students and the Reading Recovery group of students. The next computation that I conducted was a frequencies table that showed the total number of students in the data set, the number of the students who were not in the Fall 2001 intake for Reading Recovery, and the number of students who were in the Fall 2001 intake for Reading Recovery.

Then I began computing descriptive tables using the *Who Am I?* scores of three different groups. The three groups were:

1) The entire group of Grade Ones or the unit of analysis,

2) The non-Reading Recovery students, and,

3) The Reading Recovery students.

The first table I developed was an entire group descriptive statistics table that gave the minimum, maximum, and mean scores and the standard deviation of each component of the *Who Am I?* including, the total score and total score stanines. I then calculated the same descriptive tables for the non-Reading Recovery students and for the Reading Recovery students.

Next, I developed the same type of descriptive tables on the *Observation Survey* scores and stanines as I did on the *Who Am I?*. A descriptive table for each of the three groups was produced. Recorded on each of the descriptive tables were the group's minimum, maximum, and mean scores and stanines, and the standard deviation of each component of the *Observation Survey*.

I have displayed the information found in the *Data Exploration and Description* section of the data analysis in the *Findings* section of this report. The tables produced by SPSS were recreated using Microsoft Excel and pasted into this document.

Statistical testing. I conducted a *bivariate* statistical analysis (Neuman, 1997) to look for a relationship between the two variables (*Who Am I?* scores and whether a student needs Reading Recovery). This analysis was designed to determine if there was a statistically significant difference in the mean *Who Am I?* component scores, total scores and total score stanines of the non-Reading Recovery students, and total scores and total score stanines of the Reading Recovery students.

To determine whether there were any statistically significant differences between the mean *Who Am I?* scores of the two groups, I conducted a *t-test for differences in means* (Davis, 2002). This test is a parametric test because it is "based on the premise the population from which samples are obtained follows a normal distribution and the parameters of interest to the researcher are the population mean and standard deviation" (Creswell, 2002, p. 647). To best avoid a type I or type II error, the alpha or significance level of this test was set at 0.05 meaning that there is a "95 percent chance that a true relationship exists" if the *t*- test shows a statistically significant difference between the means of the two groups (Creswell, 2002, p. 323). This is a two-tailed test of significance

because the alpha or significance level is at both ends of the normal distribution curve (Creswell, 2002).

An alpha level of 0.05 means that "an extremely low probability value" will occur if the *null hypothesis* is true (Creswell, 2002, p. 242). However, SPSS displays the significance level on the *t*-test matrix it computes and I did not need to use a *t*-distribution probability table to analyze the results. The rules I followed when interpreting the *t*-test for difference of means came from Creswell's (2002) educational research text:

> Rule 1. If the probability value is less than or equal to the significance level, then reject the null hypothesis, and conclude that the research finding is statistically significant. For example:
>
> - if probability value is less than or equal to 0.05
> - then reject the [null] hypothesis
> - and conclude that the finding is statistically significant (e.g., the two groups have statistically different means).
>
> Rule 2. If the probability value is greater than the significance level, then fail to reject the null hypothesis, and conclude that the research finding is not statistically significant. For example:
>
> - if probability value is greater than 0.05
> - then fail to reject the null hypothesis, and
> - conclude that the finding is not statistically significant (e.g., the two groups are similar, they do not have statistically different means). (pp. 247-248)

In order to recheck my findings I interpreted the *t*-test using a second method, the *t*-distribution probability table (http://www.medicine.mcgill.ca/physio/vlabonline/Appendix/ ttable.htm). The values that I needed to use to access the *t*-value on the *t*-distribution probability table are the alpha level and the degrees of freedom. I set the alpha level at 0.05 and degrees of freedom at 13. The degrees of freedom are computed by subtracting 2 from the total number of subjects used (N). To decide if the null hypothesis should be rejected I looked up the *t* value for 13 and an alpha level of 0.05 on the *t*-distribution probability table. The *t* value listed for an alpha level of 0.05 and 13 degrees of freedom is 2.16. Therefore, if the probability value on the *t*-test was greater than 2.16 (*t* value listed on the *t*-distribution probability table for an alpha level of 0.05 and 13 degrees of freedom) then I should reject the null hypothesis (Davis, 1999). Conversely, if the probability value was less than 2.16 then I should accept the null hypothesis. The rule used for this interpretation method is:

> The *t* calculated [*t* value from the test] is compared to the *t* from the [*t* – distribution probability] table. If $t_{calc} > t_{table}$, we conclude that there is a significant difference between the means for the two data sets. If not, we conclude there is no significant difference between the means for the two data sets. (http://www.medicine.mcgill.ca/physio/vlabonline/Appendix/ttable.htm).

I statistically tested and interpreted the *Observation Survey* scores and stanines of the Reading Recovery students and non-Reading Recovery students using the same procedure as for the *Who Am I?* I conducted a *t*-test for difference in means and interpreted it in exactly the same manner as outlined above for the *Who Am I?*.

I have displayed the *t*-test for both the *Who Am I?* and the *Observation Survey* in Chapter 4 of this study. I have also displayed an individual subject breakdown of the assessment scores that had a statistically significant different mean between the non-Reading Recovery students and the Reading Recovery students.

Chapter 4: Findings

Data Exploration and Description

I obtained both relevant and irrelevant information through data exploration and description. I have included in my findings information relevant to this study and subsequent discussion.

Table 1

Group Frequencies

Groups	Frequency	Percent
Unit of Analysis	15	100
Non-Reading Recovery Students	10	66.7
Reading Recovery Students	5	33.3

Table 1 outlines the number of students in the unit of analysis, the number students who were not selected to be Reading Recovery in the Fall of 2001 and the number of students who were selected to be in Reading Recovery in the Fall of 2001.

Table 2

Age of Student Groupings in Years

Groups	N(n)	Minimum	Maximum	Mean
All Students	15	5.75	7.17	6.28
Non-Reading Recovery Students	10	5.75	7.08	6.21
Reading Recovery Students	5	5.92	7.17	6.41

Table 2 outlines the minimum, maximum and mean ages of the whole group, the students who were not selected to be in Reading Recovery in the Fall of 2001, and the students who were selected to be in Reading Recovery in the Fall of 2001.

Table 3

Unit of Analysis (15N) – Who Am I Scores and Stanine

Assessment Components	Minimum	Maximum	Mean
Name /4	3	4	3.93
Circle /4	3	4	3.67
Cross /4	2	4	3.53
Square /4	2	4	3.27
Triangle /4	3	4	3.60
Diamond /4	1	4	2.87
I can write numbers /4	2	4	3.47
I can write letters /4	2	4	3.33
I can write words /4	1	4	3.27
I can write a sentence /4	1	4	2.67
This is a picture of me /4	2	4	3.27
Total /44	22	44	37.53
Stanine /9	2	8	5.07

Table 3 outlines the minimum, maximum and mean *Who Am I?* scores and stanine for the entire unit of analysis.

The students' mean score was lowest on the *Diamond* task and the *I Can Write a Sentence* task as they had the most difficulty with these tasks. They scored highest on the *Name* task.

Table 4

Non-Reading Recovery Students (10n) – Who Am I? Scores and Stanine

Assessment Components	Minimum	Maximum	Mean
Name /4	4	4	4.0
Circle /4	3	4	3.5
Cross /4	2	4	3.5
Square /4	3	4	3.3
Triangle /4	3	4	3.7
Diamond /4	2	4	3.0
I can write numbers /4	2	4	3.5
I can write letters /4	2	4	3.4
I can write words /4	3	4	3.8
I can write a sentence /4	2	4	3.1
This is a picture of me /4	2	4	3.4
Total /44	28	44	39.2
Stanine /9	3	8	5.7

Table 4 outlines the minimum, maximum and mean *Who Am I?* scores and stanine for the students not selected in the Fall of 2001 to be in Reading Recovery.

The non-Reading Recovery students' mean score was lowest on the *Diamond* task and the *I Can Write a Sentence* task as they had the most difficulty with these tasks. They scored highest on the *Name* task.

Table 5

Reading Recovery Students (5n) Who Am I? Scores and Stanine

Assessment Components	Minimum	Maximum	Mean
Name /4	3	4	3.8
Circle /4	4	4	4.0
Cross /4	3	4	3.6
Square /4	2	4	3.2
Triangle /4	3	4	3.4
Diamond /4	1	4	2.6
I can write numbers /4	2	4	3.4
I can write letters /4	2	4	3.2
I can write words /4	1	4	2.2
I can write a sentence /4	1	4	1.8
This is a picture of me /4	2	4	3.0
Total /44	24	44	34.2
Stanine /9	2	6	3.8

Table 5 outlines the minimum, maximum and mean *Who Am I?* scores and stanine for the students selected in the Fall of 2001 to be in Reading Recovery.

The students' mean score was lowest on the *I Can Write Words* task and the *I Can Write a Sentence* task as they had the most difficulty with these tasks. They scored highest on the *Name* task.

Table 6

Unit of Analysis (14N) – Observation Survey Scores and Stanines

Assessment Components	Minimum	Maximum	Mean
Letter Identification Score /54	4	53	37.43
Letter Identification Stanine /9	1	6	4.00
Concepts About Print Score /24	5	19	11.86
Concepts About Print Stanine /9	1	7	2.93
Word Test Score /15	0	9	1.50
Word Test Stanine /9	1	3	1.43
New Zealand Word Test /100	0	12	3.00
Writing Vocabulary Score *	0	24	6.71
Writing Vocabulary Stanine /9	1	2	1.07
Writing Dictation Score /37	0	29	11.93
Writing Dictation Stanine /9	1	5	2.71

*There is no maximum score as children write as many words as possible.

Table 6 outlines the minimum, maximum and mean *Observation Survey* scores and stanines for the entire unit of analysis.

The students' mean score was lowest on the *Word Test* task and the *Writing Vocabulary* task as they had the most difficulty with these tasks. They scored highest on the *Letter Identification* task. There was a vast difference in the range of scores on many of the *Observation Survey* tasks, particularly on *Letter Identification*, *Writing Vocabulary* and *Writing Dictation.*

Table 7

Non-Reading Recovery Students (9n) – Observation Survey Scores

Assessment Components	Minimum	Maximum	Mean
Letter Identification Score /54	33	53	49.89
Letter Identification Stanine /9	3	6	5.22
Concepts About Print Score /24	10	19	14.00
Concepts About Print Stanine /9	2	7	3.78
Word Test Score /15	0	9	2.22
Word Test Stanine /9	1	3	1.67
New Zealand Word Test /100	0	12	4.67
Writing Vocabulary Score*	2	24	9.44
Writing Vocabulary Stanine /9	1	2	1.11
Writing Dictation Score /37	4	29	17.00
Writing Dictation Stanine /9	2	5	3.44

*There is no maximum score as children write as many words as possible.

Table 7 outlines the minimum, maximum and mean *Observation Survey* scores and stanines for the students not selected in the Fall of 2001 to be in Reading Recovery.

The students' mean stanine score was lowest on the *Word Test* task and the *Writing Vocabulary* task as they had the most difficulty with these tasks. They scored highest on the *Letter Identification* task. There is a vast difference in the range of scores on many of the *Observation Survey* Tasks, particularly on *Writing Vocabulary* and *Writing Dictation.*

Table 8

Reading Recovery Students (5n) – Observation Survey Scores

Assessment Components	Minimum	Maximum	Mean	Standard Deviation
Letter Identification Score /54	4	31	15.0	6.41
Letter Identification Stanine /9	1	3	1.8	0.97
Concepts About Print Score /24	5	13	8.0	3.08
Concepts About Print Stanine /9	1	3	1.4	1.56
Word Test Score /15	0	1	0.2	2.82
Word Test Stanine /9	1	1	1.0	0.71
New Zealand Word Test /100	0	0	0.0	4.77
Writing Vocabulary Score*	0	5	1.8	6.52
Writing Vocabulary Stanine /9	1	1	1.0	0.33
Writing Dictation Score /37	0	11	2.8	6.87
Writing Dictation Stanine /9	1	3	1.4	0.88

*There is no maximum score as children write as words as possible.

Table 5 outlines the minimum, maximum and mean *Observation Survey* scores and stanines for the students selected in the Fall of 2001 to be in Reading Recovery.

The students' mean stanine score was lowest on the *Word Test* task and the *Writing Vocabulary* task as they had the most difficulty with these tasks. All of the students scored zero on the *New Zealand Word Test*. They scored highest on the *Letter Identification* task. The range of scores on *Letter Identification* is vast.

Statistical Testing:

Table 9

Who Am I? t-Test for a Difference of Means (Equal Variances Assumed)

Assessment Components	*t*	df	Significance (2-tailed)	Mean Difference
Name	1.472	13	.165	0.20
Circle	-2.082	13	.058	-0.50
Cross	-.276	13	.787	-0.10
Square	.297	13	.771	1.00E-01
Triangle	1.087	13	.297	0.30
Diamond	.752	13	.481	0.40
I Can Write Numbers	.237	13	.816	0.10
I Can Write Letters	.491	13	.632	0.20
I Can Write Words	3.634	13	.003	1.60
I Can Write a Sentence	2.748	13	.017	1.30
This is a Picture of Me	1.041	13	.317	0.40
Total Score	2.361	13	.035	5.00
Stanine	1.910	13	.079	1.90

The alpha level is calculated at 0.05.

Table 9 is the *t*-Test computed by SPSS software. The *t*-test is designed to compute the probability of a statistically significant mean difference between the *Who Am I?* scores and stanines of students not selected to be in Reading Recovery and these of students selected to be in Reading Recovery.

Based on an analysis of the *Who Am I? t*-test, shown in Table 9, there is a statistically significant difference between the mean non-Reading Recovery scores and

the Reading Recovery scores on three *Who Am I?* components. The three components are: *I Can Write Words, I Can Write a Sentence* and the *Total Score*.

The following nine figures display the data for the three significantly different *Who Am I?* components. The numbering used to represent the individual students plotted on the graphs is consistent through out all of the figures.

Figure 1. Mean *I Can Write Words* scores of non-Reading Recovery (9n) and Reading Recovery (5n) students.

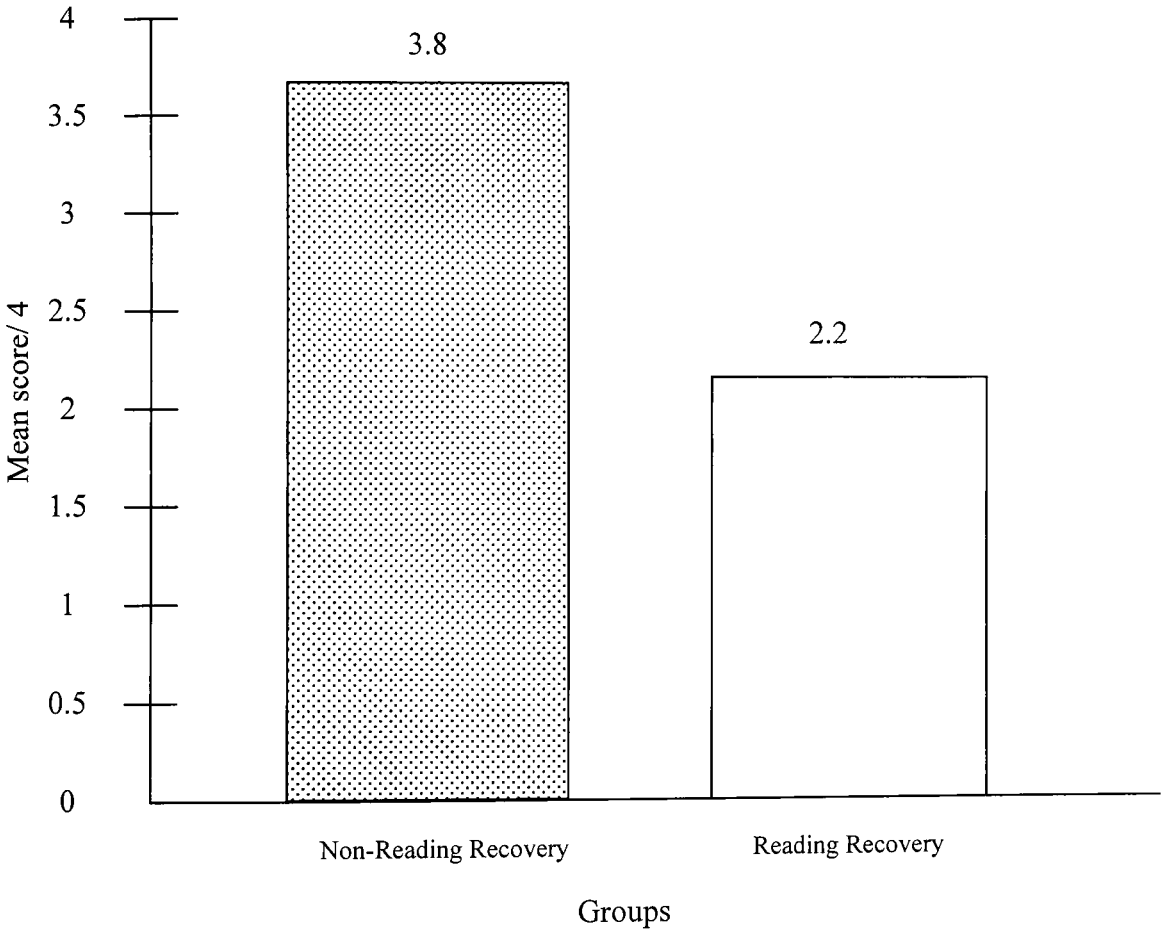

Figure 1 displays the mean *I Can Write Words* scores of non-Reading Recovery students and Reading Recovery students.

Figure 2. Individual *Who Am I? - I Can Write Words* scores of non-Reading Recovery Students.

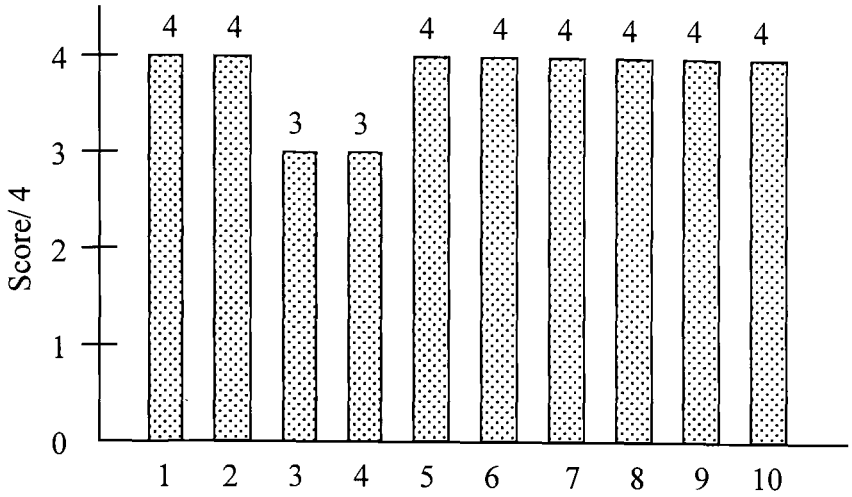

Figure 2 displays the individual *I Can Write Words* score of each non-Reading Recovery student.

Figure 3. Individual *Who Am I? - I Can Write Words* scores of each Reading Recovery student.

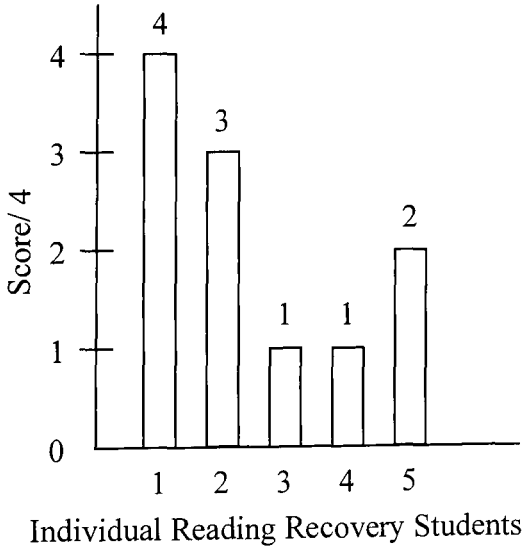

Figure 3 displays the individual *I Can Write Words* score of each Reading Recovery student.

Figure 4. Mean *Who Am I? - I Can Write a Sentence* scores of non-Reading Recovery (9n) and Reading Recovery (5n) students.

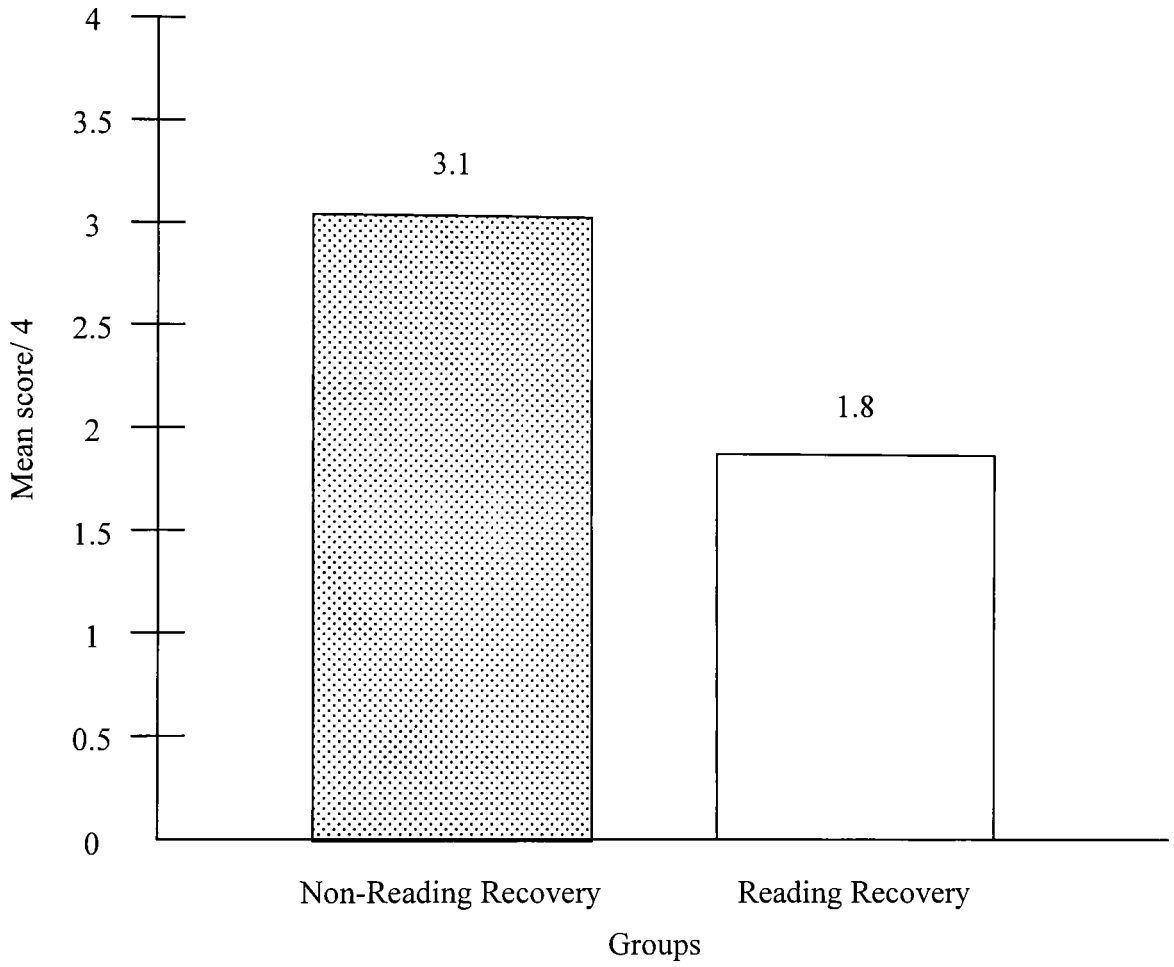

Figure 4 displays the mean score *I Can Write a Sentence* scores of non-Reading Recovery and Reading Recovery students.

Figure5. Individual *Who Am I? - I Can Write a Sentence* scores of non-Reading Recovery Students.

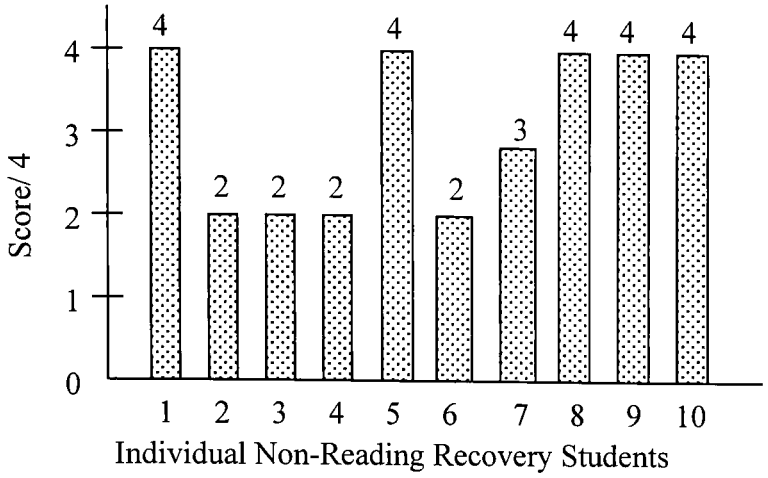

Figure 5 displays the individual *I Can Write a Sentence* score of each non-Reading Recovery student.

Figure 6. Individual *Who Am I? - I Can Write a Sentence* scores of Reading Recovery Students.

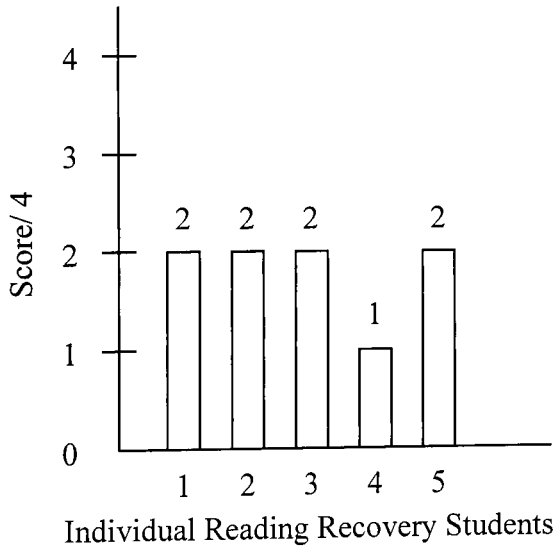

Figure 6 displays the individual *I Can Write a Sentence* score of each Reading Recovery student.

Figure 7. Mean *Who Am I? - Total Score* of non-Reading Recovery (9n) and Reading Recovery (5n) students.

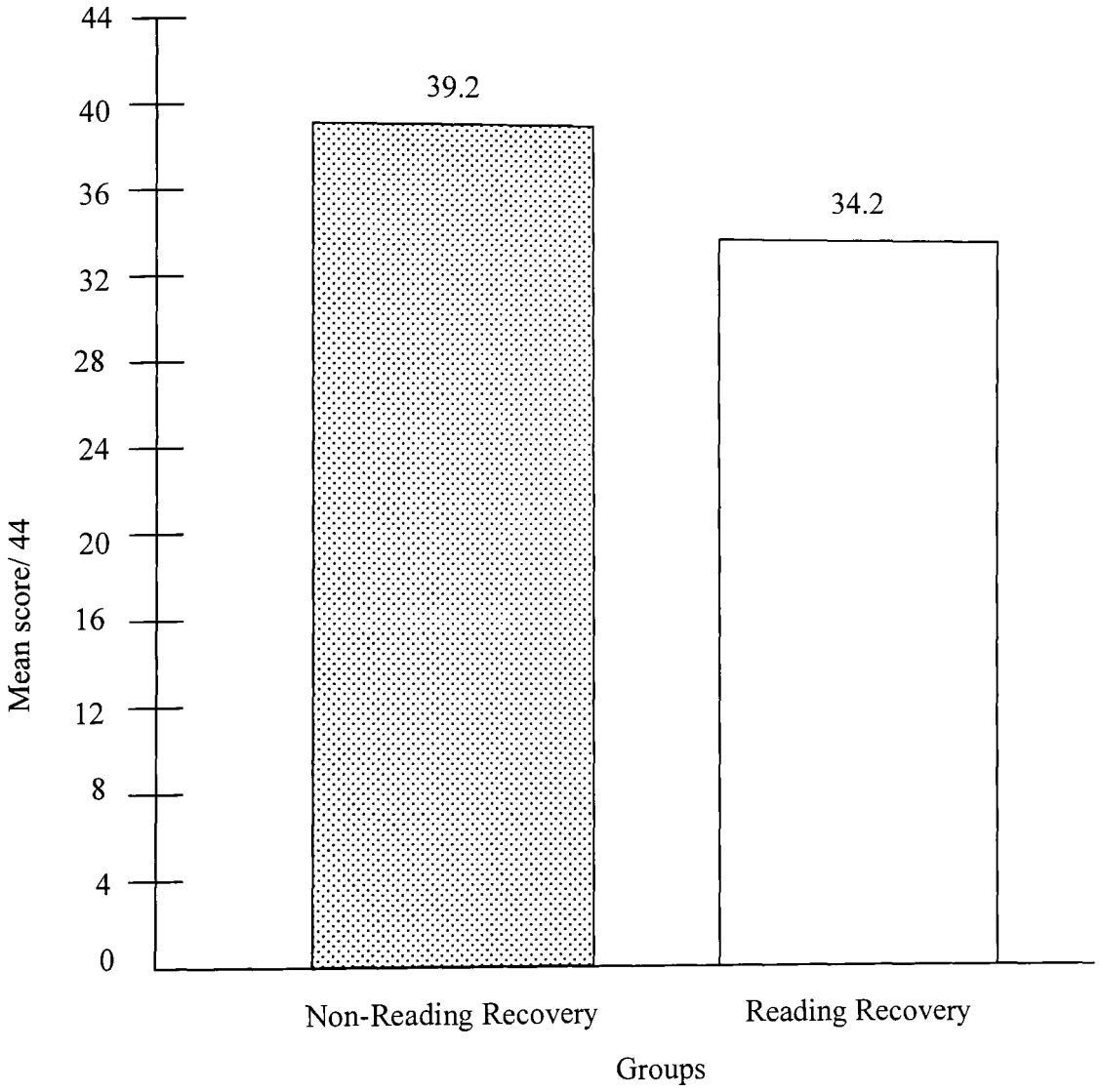

Figure 7 displays the mean *Who Am I? - Total Score* scores of non-Reading Recovery and Reading Recovery students.

Figure 8. Individual *Who Am I? - Total Score* of non-Reading Recovery Students.

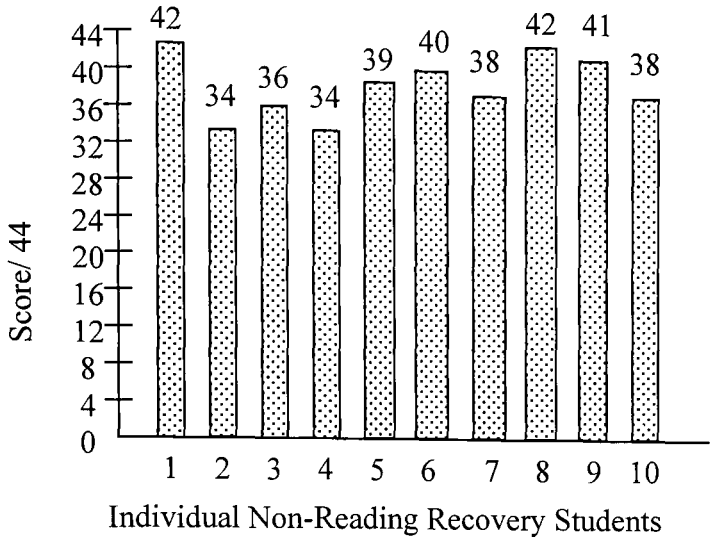

Figure 8 displays the individual *Who Am I? Total Score* of each non-Reading Recovery student.

Figure 9. Individual *Who Am I? - Total Score* scores of Reading Recovery Students.

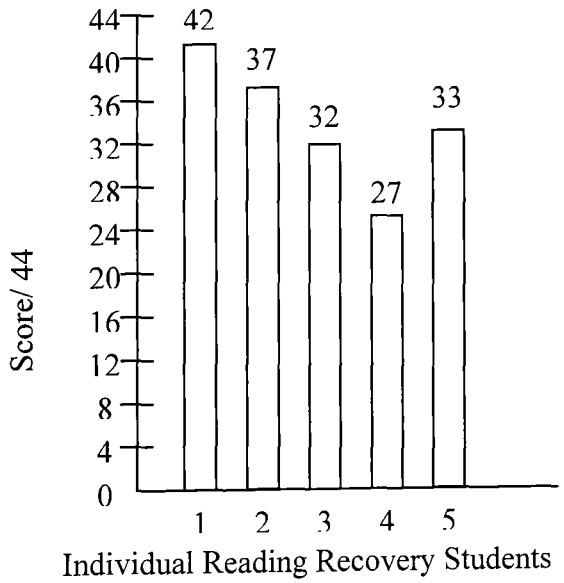

Figure 9 displays the individual *Who Am I? - Total Score* of each Reading Recovery student.

Table 10

Observation Survey t-Test for a Difference of Means (Equal Variances Assumed)

Assessment Components	*t*	df	Significance (2-tailed)	Mean Difference
Letter Identification Score /54	7.517	12	0.000	34.89
Letter Identification Stanine /9	6.605	12	0.000	3.42
Concepts About Print Score /24	3.460	13	0.005	6.00
Concepts About Print Stanine /9	3.096	13	0.009	2.38
Word Test Score /15	1.566	13	0.143	2.02
Word Test Stanine /9	2.070	13	0.061	0.67
New Zealand Word Test /100	2.148	13	0.053	4.67
Writing Vocabulary Score *	2.520	13	0.027	7.64
Writing Vocabulary Stanine /9	0.732	13	0.478	0.11
Writing Dictation Score /37	4.073	13	0.002	14.20
Writing Dictation Stanine /9	4.136	13	0.001	2.04

The Alpha level is calculated at 0.05.
*There is no maximum score as children write as many words as possible.

Table 10 is the *t*-Test computed by SPSS software. The *t*-test is designed to compute the probability of a statistically significant mean difference between the *Observation Survey* scores and stanines of students not selected to be in Reading Recovery and the students selected to be in Reading Recovery.

Based on an analysis of the *Observation Survey t*-Test, shown in Table 10, there is a statistically significant difference between the mean non-Reading Recovery scores and the Reading Recovery scores on four *Observation Survey* components. The four *Observation Survey* components that have statistically different mean scores are: the

Letter Identification assessment, the Concepts About Print assessment, the Writing Vocabulary assessment and the Writing Dictation assessment. For the Letter Identification, the Concepts About Print and the Writing Dictation components both the scores and stanines were significantly different. For the Writing Vocabulary only the score was significantly different.

The following 21 figures display the data for on the four significantly different *Observation Survey* components. Where applicable the mean score and stanine differences are represented. The numbering used to represent the individual students plotted on the graphs is consistent through out all of the figures.

Figure 10. Mean *Observation Survey – Letter Identification* scores of non-Reading Recovery (9n) group and Reading Recovery (5n) group.

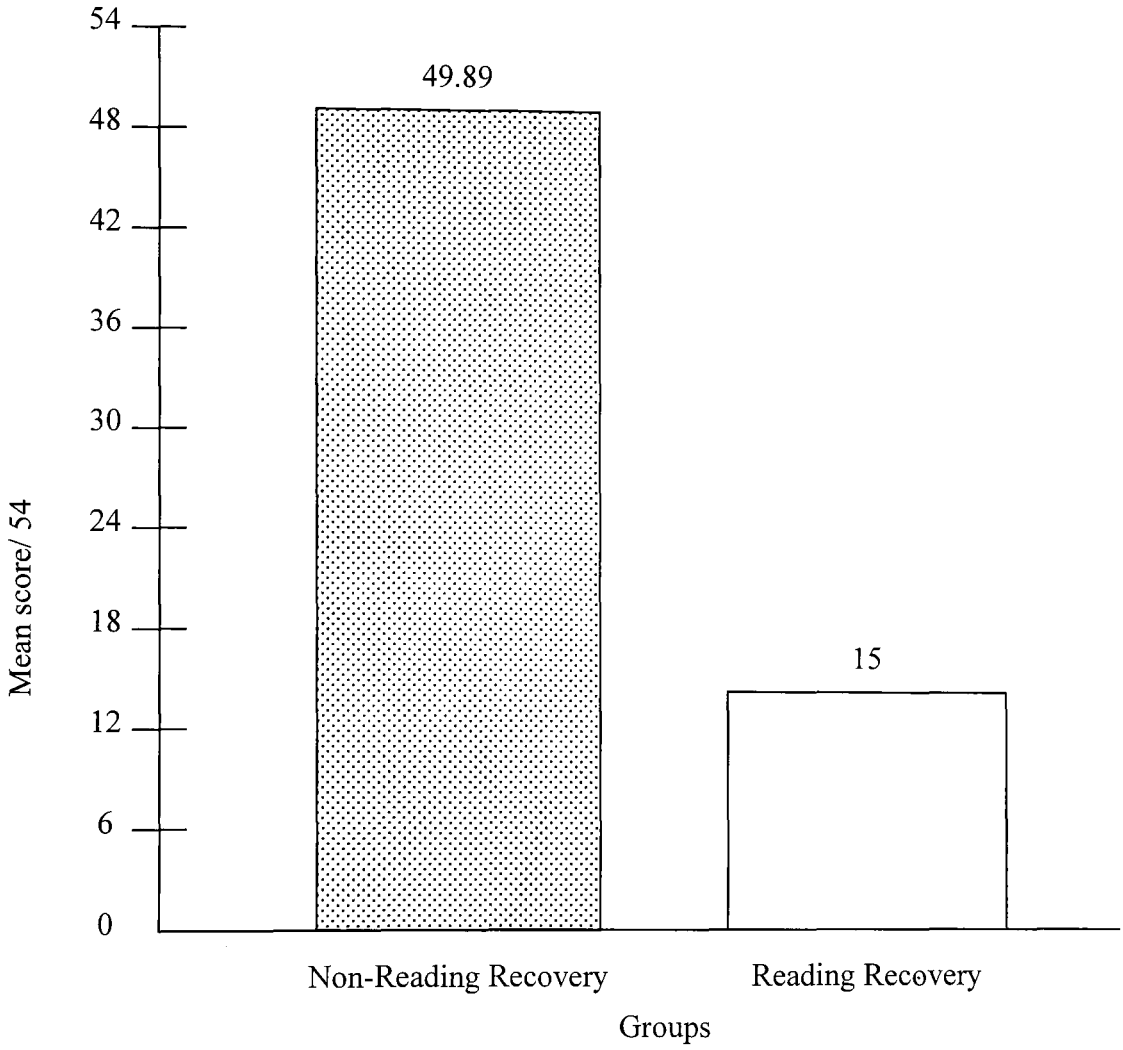

Figure 10 displays the mean *Observation Survey – Letter Identification* scores of the non-Reading students and the Reading Recovery students.

Figure 11. Individual *Observation Survey - Letter Identification* scores of non-Reading Recovery Students.

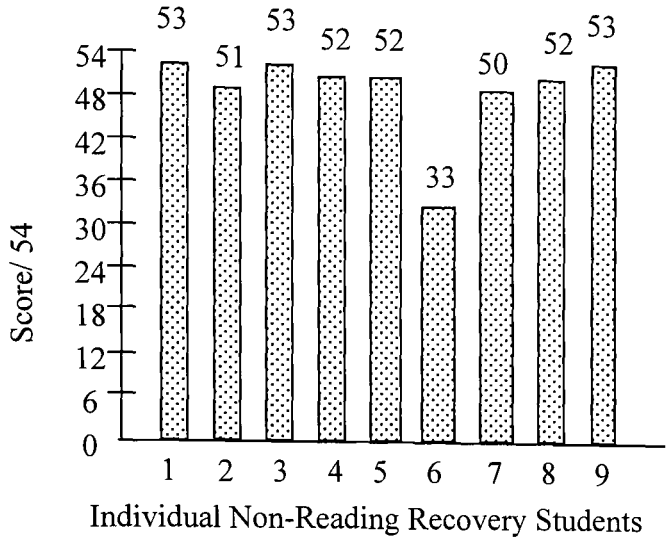

Figure 11 displays the individual *Observation Survey – Letter Identification* score of each non-Reading Recovery student.

Figure 12. Individual *Observation Survey – Letter Identification* scores of Reading Recovery Students.

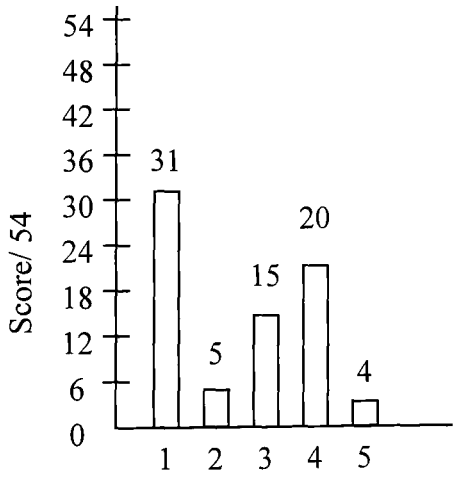

Figure 12 displays the individual *Observation Survey – Letter Identification* score of each Reading Recovery student.

Figure 13. Mean *Observation Survey – Letter Identification* stanines of non-Reading Recovery (9n) and Reading Recovery (5n) students.

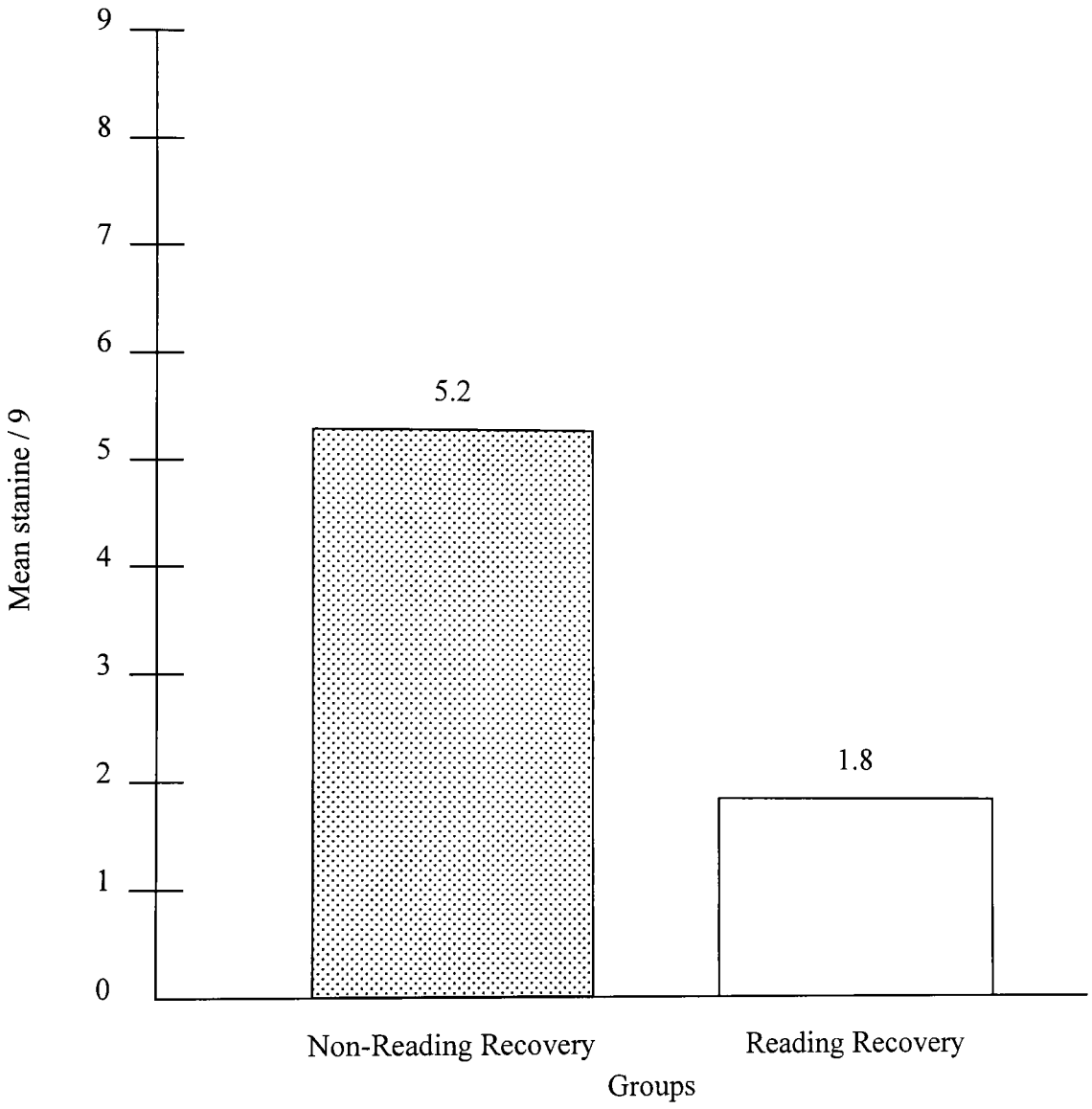

Figure 13 displays the mean *Observation Survey – Letter Identification* stanines of non-Reading Recovery and Reading Recovery students.

Figure 14. Individual *Observation Survey – Letter Identification* stanines of non-Reading Recovery Students.

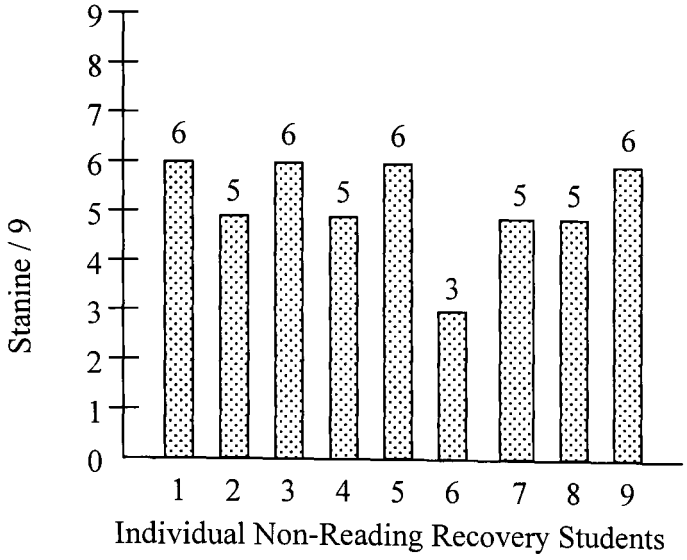

Figure 14 displays the individual *Observation Survey – Letter Identification* stanine of each non-Reading Recovery student.

Figure 15. Individual *Observation Survey – Letter Identification* stanines of Reading Recovery Students.

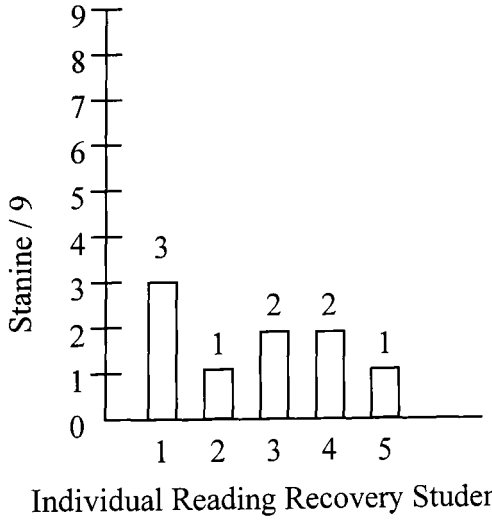

Figure 15 displays the individual *Observation Survey – Letter Identification* stanine of each Reading Recovery student.

Figure 16. Mean *Observation Survey – Concepts About Print* scores of non-Reading Recovery (9n) and Reading Recovery (5n) students.

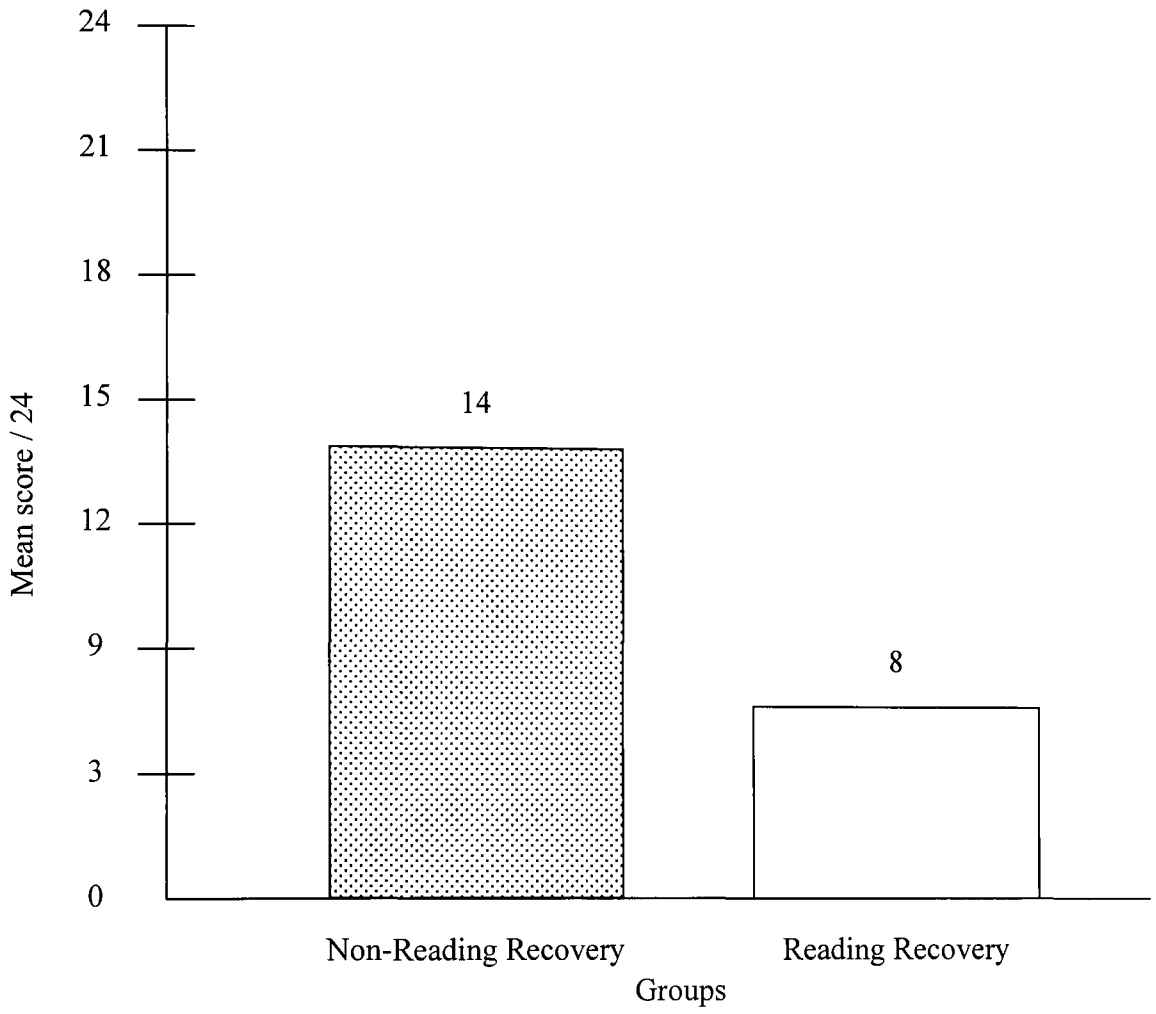

Figure 16 displays the mean *Observation Survey – Concepts About Print* scores of non-Reading Recovery students and Reading Recovery students.

Figure17. Individual *Observation Survey - Concepts About Print* scores of non-Reading Recovery Students.

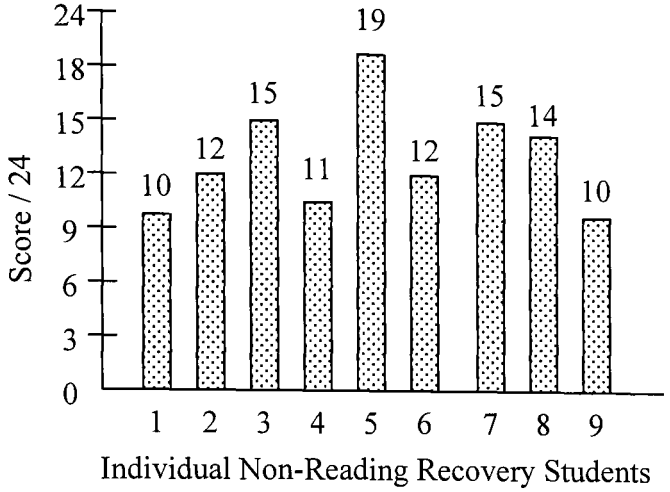

Figure 17 displays the individual *Observation Survey – Concepts About Print* score of each non-Reading Recovery student.

Figure 18. Individual *Observation Survey – Concepts About Print* scores of Reading Recovery Students.

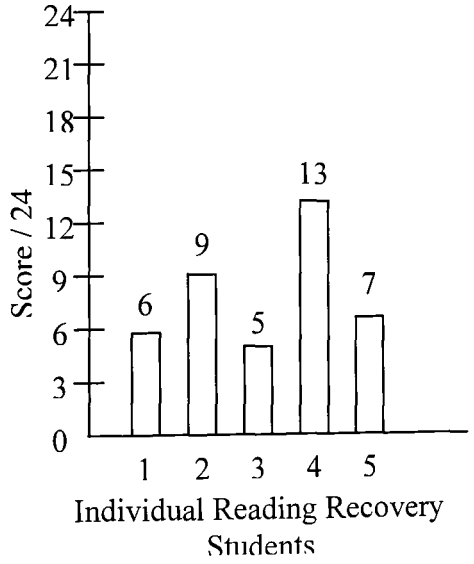

Figure 18 displays the individual *Observation Survey – Concepts About Print* score of each Reading Recovery student.

Figure 19. Mean *Observation Survey – Concepts About Print* stanines of non-Reading Recovery and Reading Recovery students.

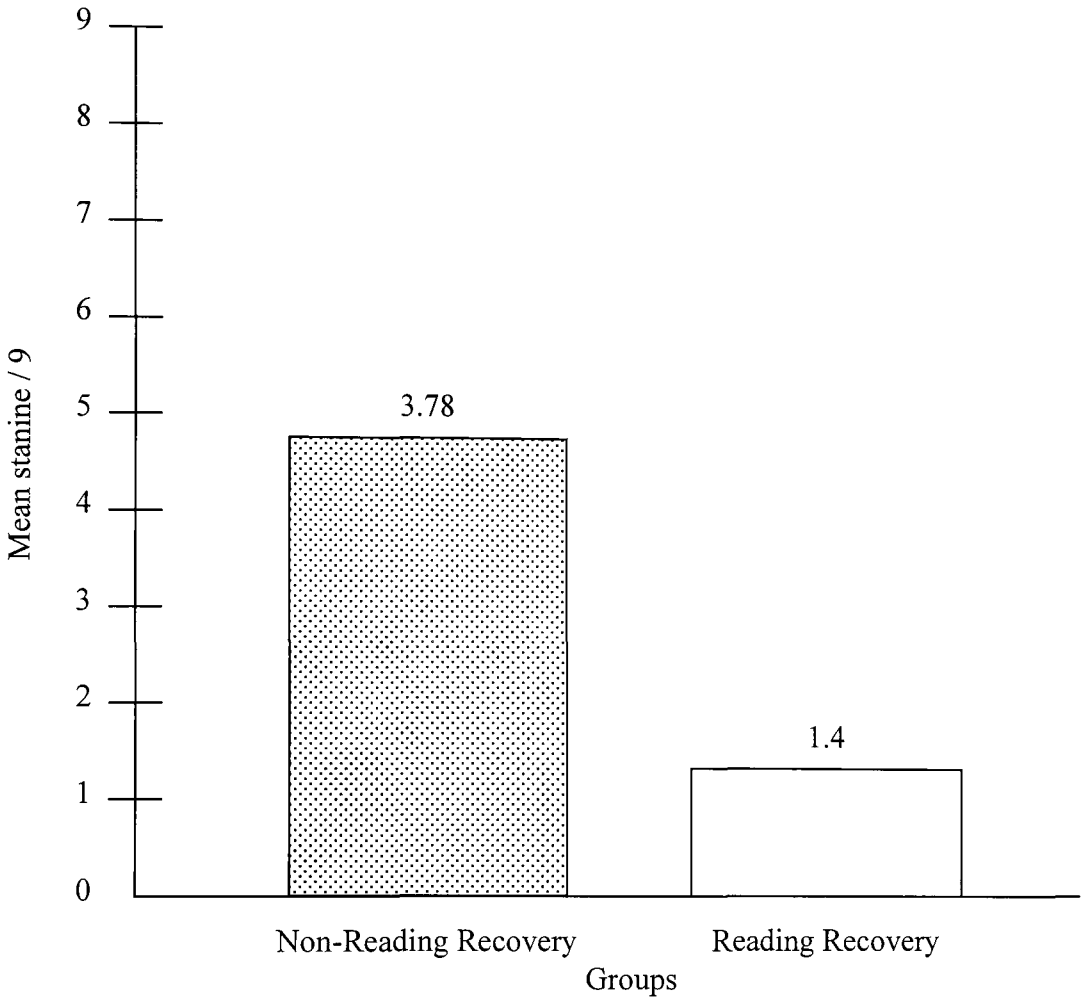

Figure 19 displays the mean *Observation Survey – Concepts About Print* stanines of the non-Reading students and the Reading Recovery students.

Figure 20. Individual *Observation Survey – Concepts About Print* stanines of non-Reading Recovery Students.

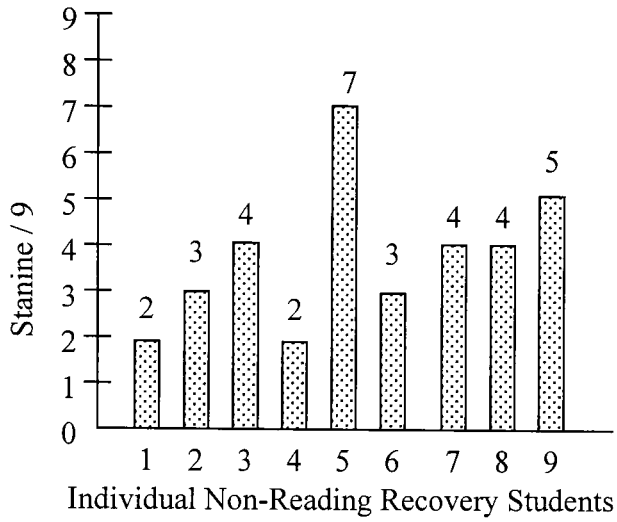

Figure 20 displays the individual *Observation Survey – Concepts About Print* stanine of each non-Reading Recovery student.

Figure 21. Individual *Observation Survey –Concepts About Print* stanines of Reading Recovery Students.

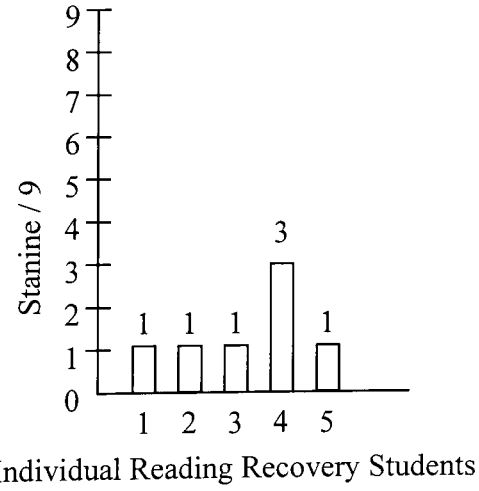

Figure 21 displays the individual *Observation Survey – Concepts About Print* stanine of each Reading Recovery student.

Figure 22. Mean *Observation Survey –Writing Vocabulary* scores of non-Reading Recovery (9n) and Reading Recovery (5n) students.

Note. There is no maximum score for this assessment as the children write as many words as possible.

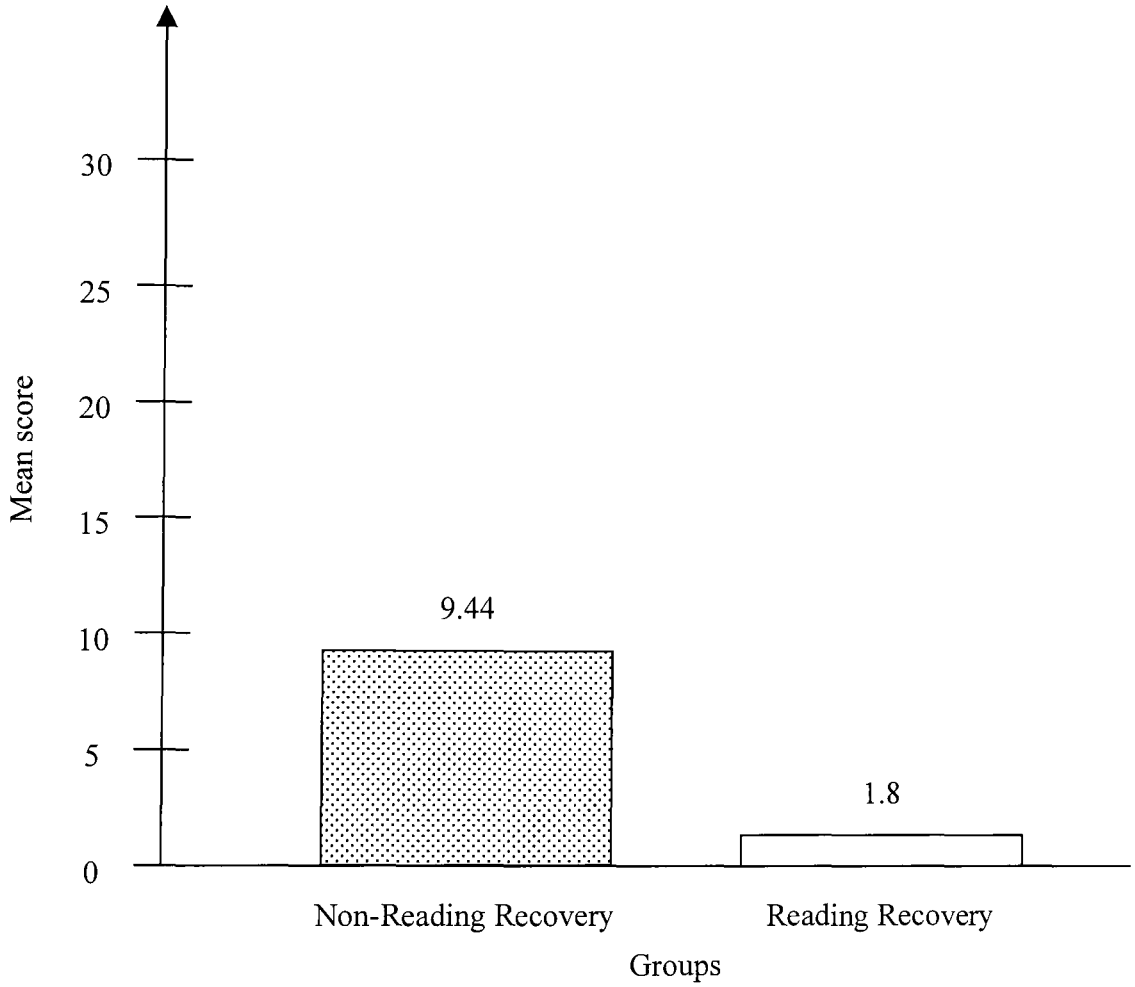

Figure 22 displays the mean *Observation Survey –Writing Vocabulary* scores of the non-Reading students and the Reading Recovery students.

Figure 23. Individual *Observation Survey – Writing Vocabulary* scores of non-Reading Recovery Students.

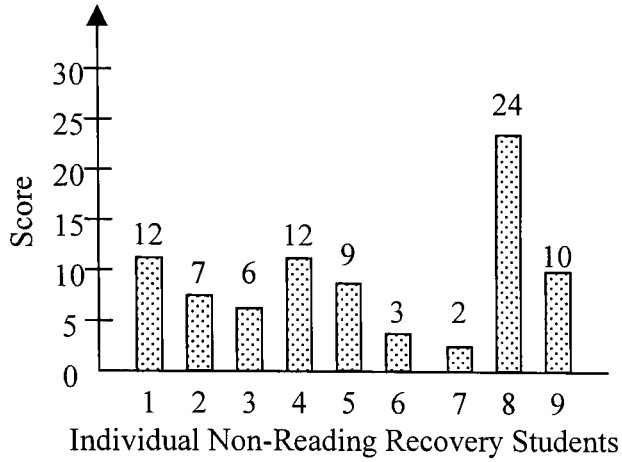

Figure 23 displays the individual *Observation Survey – Writing Vocabulary* score of each non-Reading Recovery student.

Figure 24. Individual *Observation Survey –Writing Vocabulary* scores of Reading Recovery Students.

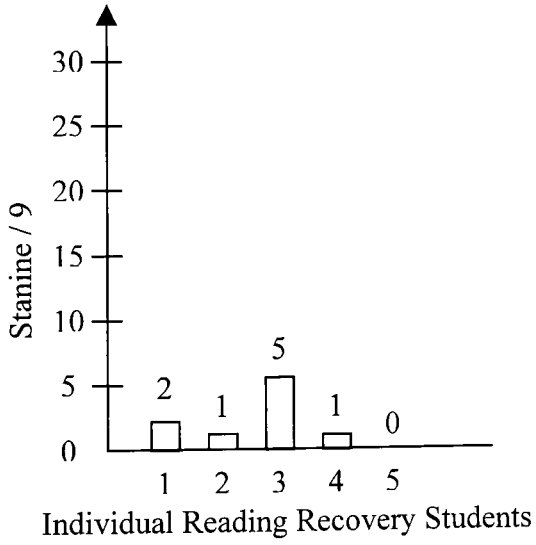

Figure 24 displays the individual *Observation Survey – Writing Vocabulary* score of each Reading Recovery student.

Figure 25. Mean *Observation Survey – Writing Dictation* scores of non-Reading Recovery (9n) and Reading Recovery (5n) students.

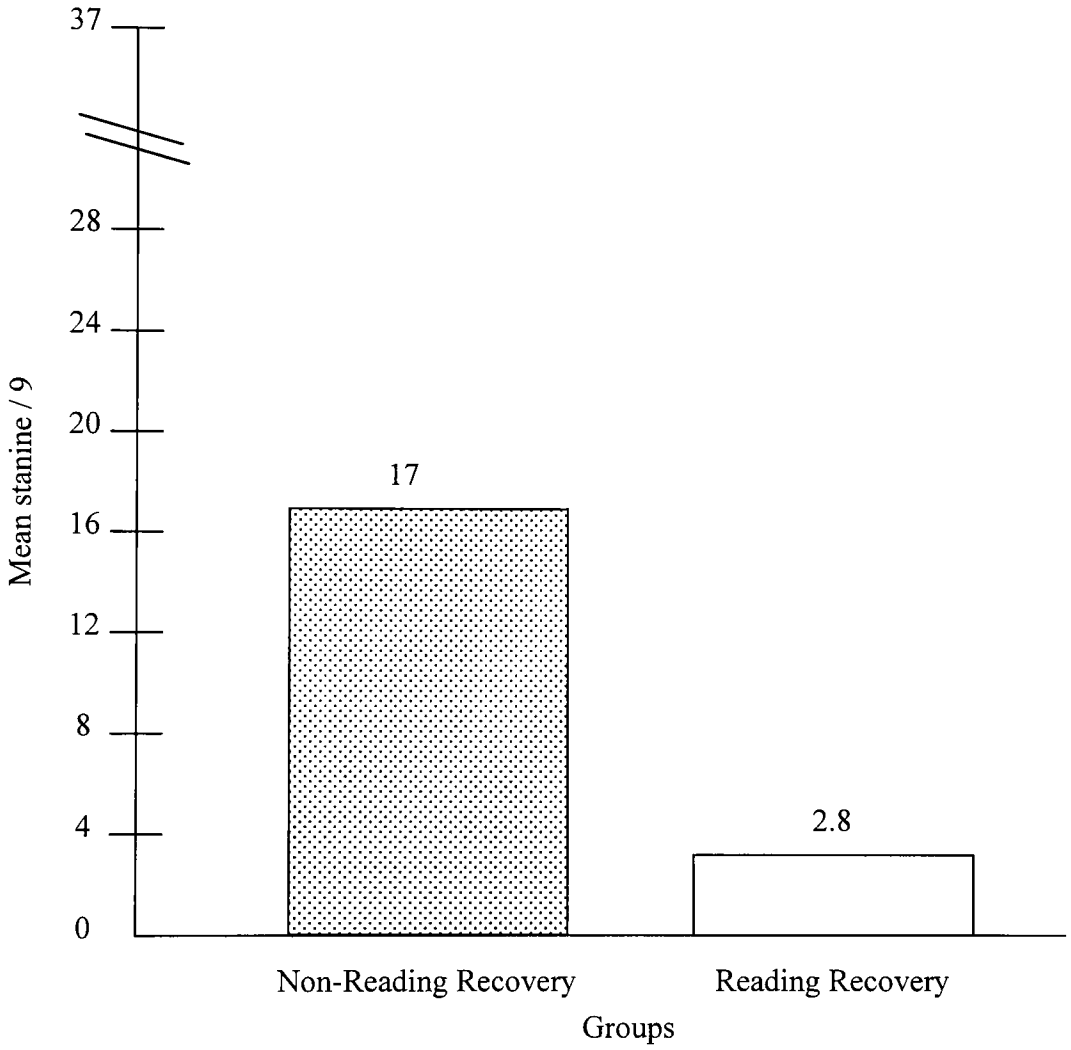

Figure 25 displays the mean *Observation Survey – Writing Dictation* scores of the non-Reading Recovery and the Reading Recovery students.

Figure 26. Individual *Observation Survey – Writing Dictation* scores of non-Reading Recovery Students.

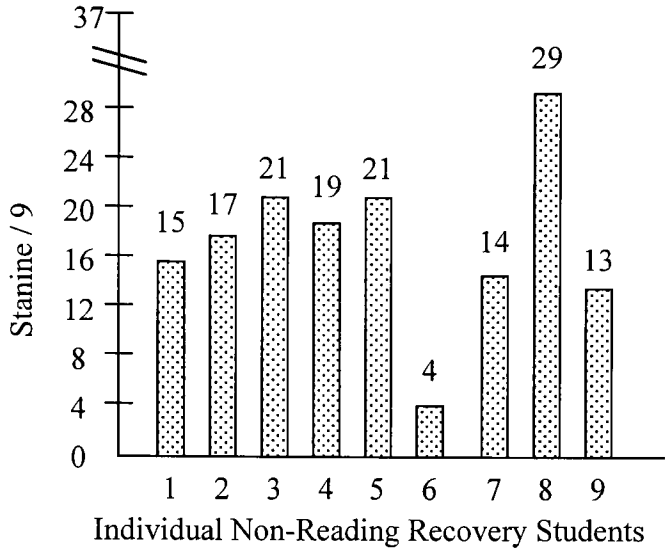

Figure 26 displays the individual *Observation Survey – Writing Dictation score* of each non-Reading Recovery student.

Figure 27. Individual *Observation Survey – Writing Dictation* scores of Reading Recovery Students.

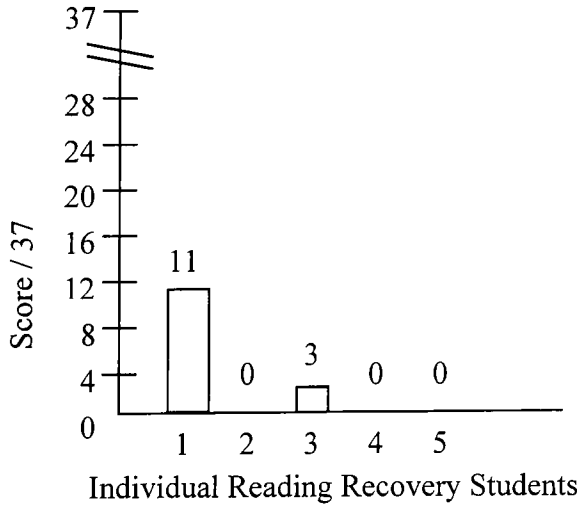

Figure 27 displays the individual *Observation Survey – Writing Dictation* score of each Reading Recovery student.

Figure 28. Mean *Observation Survey – Writing Dictation* stanines of non-Reading Recovery (9n) and Reading Recovery (5n) students.

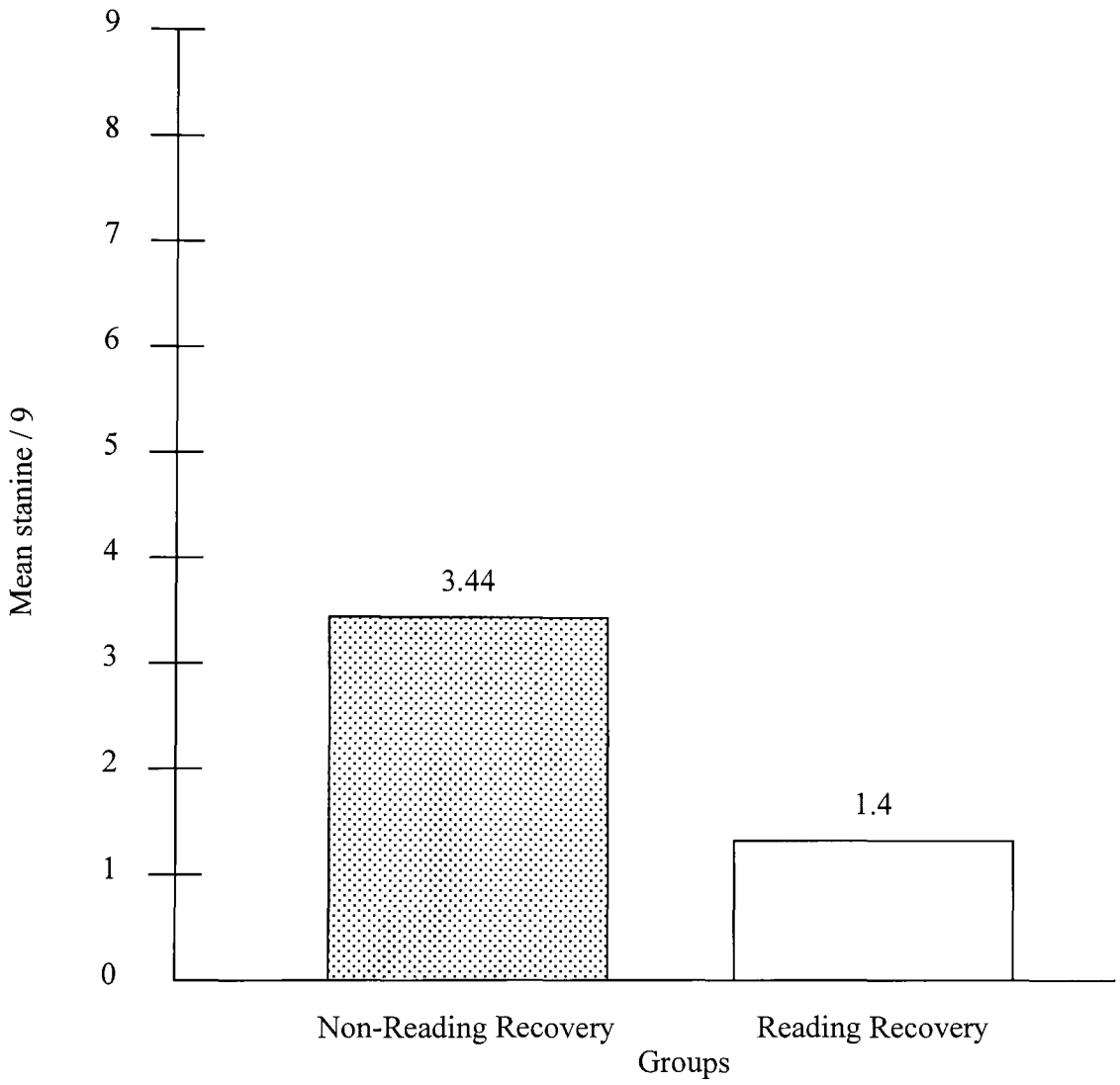

Figure 28 displays the mean *Observation Survey – Writing Dictation* stanines of the non-Reading students and the Reading Recovery students.

Figure 29. Individual *Observation Survey – Writing Dictation* stanines of non-Reading Recovery Students.

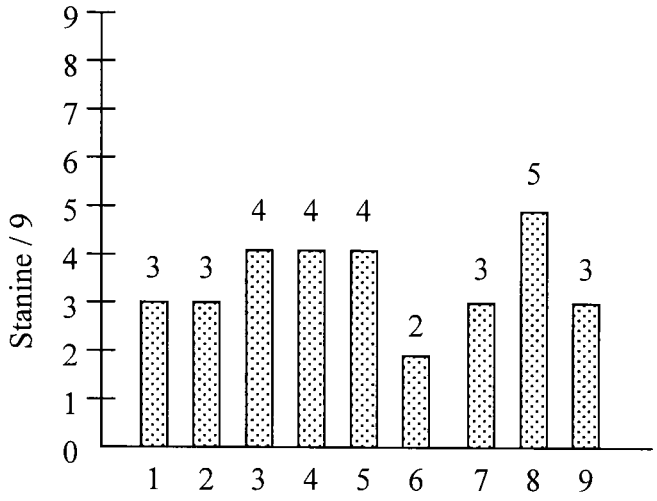

Figure 29 displays the individual *Observation Survey – Writing Dictation* stanine of each non-Reading Recovery student.

Figure 30. Individual *Observation Survey – Writing Dictation* stanines of Reading Recovery Students.

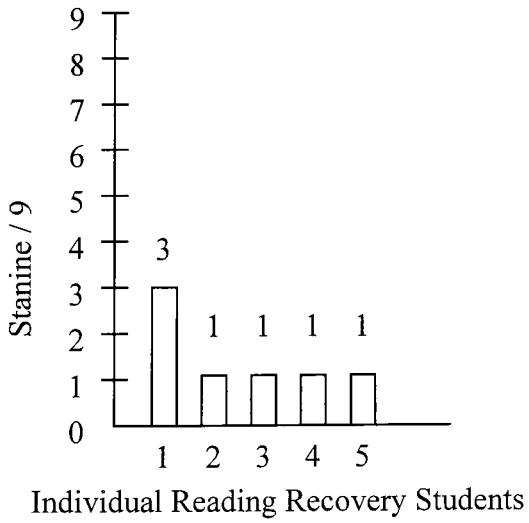

Figure 30 displays the individual *Observation Survey – Writing Dictation* stanine of each Reading Recovery student.

Summary of Data Analysis

In conclusion, to answer my research question: Does the *Who Am I?* developmental assessment predict which Grade One students need Reading Recovery ?, I have rejected both the null hypothesis and alternative hypothesis 2, and have accepted alternative hypothesis 1.

The null hypothesis stated: There is no value in using the *Who Am I?* to predict which Grade One students need Reading Recovery. It is rejected because the mean difference between the *Who Am I?* scores of the non-Reading Recovery students and Reading Recovery Students are statistically significant for three components of the *Who Am I?*. Thus, a relationship does appear to exist between the two variables.

Alternative hypothesis 2 stated: The *Who Am I?* is just as reliable as the *Observation Survey* for predicting which Grade One students will need Reading Recovery. It is also rejected because there were more statistically significant differences in the mean scores of the *Observation Survey* than the *Who Am I?*.

Alternative hypothesis 1 stated: The *Who Am I?* is adequate but not as reliable as the *Observation Survey* to predict which Grade One students will need Reading Recovery. This hypothesis is accepted because there is a relationship between the students' *Who Am I?* scores and whether or not they were chosen for Reading Recovery but the relationship between the students' *Observation Survey* scores and whether or not they were selected to be in Reading Recovery was stronger than for the *Who Am I?* scores. Therefore, the *Who Am I?* is not as reliable as the *Observation Survey* for predicting which students need Reading Recovery.

Chapter 5: Discussion

Through out the course of this study several interesting findings and observations have surfaced. Some of my observations have led me to make decisions about further pursuit of this topic, while others have generated more ideas and questions. I have split the discussion section of my report into the following three categories: Observations, Recommendations and Alternate Uses for the *Who Am I?*.

Observations

The first major finding of this study was that a relationship does exist between the Reading Recovery students and their *Who Am I?* scores. There was a difference between the scores of students from both groups (Reading Recovery and non-Reading Recovery) on several sections the *Who Am I?* assessment. Specifically, there was a statistically significant difference between the mean non-Reading Recovery scores and the mean Reading Recovery scores on the I Can Write Words, I Can Write a Sentence and Total Score components of the *Who Am I?*. However, the *Observation Survey* was shown to be a stronger predictor of whether or not a student needs Reading Recovery, as there were four components of that assessment instrument on which a statistically significant difference existed between the mean non-Reading Recovery scores and the mean Reading Recovery scores. These components were *Letter Identification, Concepts About Print, Writing Vocabulary* and *Writing Dictation*.

On all of the *Observation Survey* components, with the exception of the *Writing Vocabulary*, both the means of the scores and the stanines were statistically significantly different between the non-Reading Recovery group and the Reading Recovery group. A comparison could not be made with the *Who Am I?* as the *Who Am I?* only has a total

score stanine and the *Observation Survey* does not have any total score tallies or stanines. In addition, even though there was a statistically significant difference in the mean scores of the non-Reading Recovery group and the Reading Recovery group on the *Total Score* of the *Who Am I?*, there was no statistically significant difference between scores of the two groups on the *Total Score* Stanines.

The results of this study suggest that the Words component of the *Who Am I?* test is a useful indicator of most students' need for Reading Recovery, yet one of the students chosen for Reading Recovery achieved a perfect score of 4, and another student scored a 3, on the *I Can Write Words* component of the assessment. However, the student who scored 4 only received a score of 2 on the sentence writing task (none of the Reading Recovery children scored higher than 2 on this component). It is also important to note that the Reading Recovery student who scored a 4 on the *I Can Write Words* assessment is older than everyone else, and also coded as ESL. She had some excellent basic literacy skills but a lack of knowledge of the English language that has held back the development of her reading and writing skills. As a result, in the sentence writing component of the *Who Am I?,* this lack of basic knowledge became evident. Her reading level at the time the *Who Am I?* was administered to her (level 0) also indicated her difficulty with reading.

Reading and writing requires many language-based skills. Because some children such as ESL students may be able to score well on the non-language components of the *Who Am I?* and even the word writing (through rote memory), it is imperative that other factors be taken into account. Accordingly, I feel that a running record, which

scores the child's reading level, should always be used in conjunction with the *Who Am I?* when choosing which students should be selected for Reading Recovery.

As well, if a child does well on the writing component of the *Who Am I?* the sentence writing component should be given more weight when choosing who needs Reading Recovery. Frequently, a student's inability to write a sentence will indicate a lack of basic language skills needed for reading. The ability to write a few words does not always indicate a child has a sufficient level of skill necessary for early success in reading. For these reasons, I think it would be crucial to take into consideration the child's age and reading level (as determined by a running record) when deciding if that student needs Reading Recovery.

The findings of this study show that there was not a significant difference between the *Who Am I?* total stanine scores of students chosen for Reading Recovery and those who were not. However there was a significant difference between the *Who Am I?* total score scores of the students chosen for Reading Recovery and those who were not. This leads me to wonder whether lumping scores together into stanines is a good educational practice. Perhaps we need be looking at the precise scores for information rather than which stanine a score fits into.

As well, on the *Observation Survey*, four of the assessment scores were significantly different, while three of the those assessments had stanines that were significantly different. Does this mean that if the scores and the stanines for both assessments were significantly different that would be a stronger indicator of need? Or does it indicate that, in some situations, lumping students into stanines is detrimental and

that teachers must look more closely at individual scores rather than cluster them together with similar-type scores?

The two individual *Who Am I?* component scores on which there were significant differences between the Reading Recovery group and non-Reading Recovery group

were the word writing and sentence writing. Similarly, the two components on the *Observation Survey* on which there were significant differences in the scores of the two groups dealt with word and sentence writing. The *Writing Dictation* task on the *Observation Survey* is similar to the *I Can Write A Sentence* task, while the *Writing Vocabulary* on the *Observation Survey* task is almost identical to the *I Can Write Words* component of the *Who Am I?*.

Does this mean, perhaps, that the *Who Am I?* needs to be pared down to just the *Letter Identification, I Can Write Words, I Can Write a Sentence* and the *Total Score*, if it is to be used to select students for Reading Recovery?

Unlike the findings of the two studies documented in the literature review, the results of this study show the *Diamond* task did not provide a useful indication of a student's need for Reading Recovery. Is this because, on average, the children to whom I gave the *Who Am I?* to were older than those in the other study and, therefore, more developmentally able to reproduce the diamond regardless of their readiness to read? Perhaps if I had given this assessment to the same children at the beginning of Kindergarten their *Diamond* score would have been a better indicator of whether or not they would be candidates for Reading Recovery the following year.

Recommendations

After finding that there was a relationship between the *Who Am I?* scores and whether or not students received Reading Recovery, I have concluded this topic would be worth pursuing on a much larger scale. However, I believe a few changes in procedure would improve the study substantially. These changes are outlined below.

The first major difference between this study and the next study conducted on this topic should be the number of participants used. Ideally, the study would include all of a district's Grade One students assessed by the Reading Recovery teachers for the first intake of Reading Recovery during a school year.

It may be a concern that, in a larger study, several different teachers would be administering the *Who Am I?* and therefore, the reliability of the testing might be compromised. It should not happen because the *Who Am I?* is a standardized test with clear instructions on how to administer it. As a precaution, however, the person conducting the study should ensure that all the teachers who are required to administer the *Who Am I?* understand exactly how it needs to be administered by conducting an administration training session for them.

A similar concern might be held for the *Observation Survey* but only Reading Recovery teachers administer that assessment and all Reading Recovery teachers are trained to give the *Observation Survey* in a standardized format.

The next aspect of the study that I believe needs to be changed is the timing of the administration of the *Who Am I?*. In this study, it was given two to three weeks after the *Observation Survey*. That fact alone could account for a stronger relationship between the *Observation Survey* and who received Reading Recovery. All of the Reading

Recovery students had received at least two weeks of Reading Recovery instruction before they were given the *Who Am I?*. The intense nature of Reading Recovery instruction could have improved their literacy skills and, accordingly, their *Who Am I?* scores considerably in those two weeks. This may partially explain why their mean *Who Am I?* scores were much stronger, producing a narrower gap between the mean Reading Recovery student scores and the mean non-Reading Recovery student scores. I have concluded that the *Who Am I ?* needs to be given within a week of the *Observation Survey,* and before any Reading Recovery instruction has begun.

I also feel that the results of this study would be improved if the students were administered the *Who Am I?* at the same time of the day as they were administered the *Observation Survey*. This is because students' attention spans and capabilities can change considerably from the morning to the afternoon, both negatively and positively. Administering both assessments at the same time of the day would attend to another extraneous variable.

Two more practices which, I believe, would improve the study, involve the manner in which teachers score the *Who Am I?* and *Observation Survey*. The first suggestion would be to have two people score both assessments. The second would be to keep the identity of the student whose assessment is being scored unknown until after the assessments have been completed. The purpose of these two changes would be to decrease any subconscious bias that the teachers may hold about the students they are assessing, or about the assessment instrument they are using.

I think a follow-up study would be improved if it did more to address which specific components of the *Who Am I?* a Reading Recovery teacher could use to

determine a student's need for Reading Recovery and what level of score on those *Who Am I?* components indicates a student's need for Reading Recovery. For example, would a student need to have a score of two or less on the word and sentence writing components to be considered for Reading Recovery? Or perhaps, as is the current practice for selecting students for Reading Recovery, should the students with the lowest scores would the ones chosen for Reading Recovery?

I believe the procedure for determining which students need Reading Recovery should be to select the students with the lowest scores on the components identified as providing the strongest indication of a need for Reading Recovery. This is because some groups of children have higher literacy skills than other students; therefore, in some cohorts being screened for Reading Recovery, while there may not be enough students who score lower than a three, this may not mean they would not benefit from Reading Recovery instruction. Also, a student may have a very high score on one of the components chosen to indicate a need for Reading Recovery, yet have other really low scores that would suggest a need for Reading Recovery.

In another study, comparing the statistical significance of the mean scores between the non-Reading Recovery students and the Reading Recovery students, I would recommend the Total Score component from the *Who Am I?* assessment and the means of the stanine scores from the *Observation Survey* should be excluded from consideration. This is because they are unique to each of their respective assessments and should not be compared. Moreover, I feel they provide little concrete evidence upon which any subsequent decisions can be based.

Alternative Studies and Uses for the Who Am I?

As a result of this research, I am now more interested to know if the *Who Am I?* could be used to identify which students would need Reading Recovery when the students were still in Kindergarten. The *Who Am I?* could be given to all of the Kindergarten students who would be screened the following year for Reading Recovery, to determine if there is any pattern in the scores of the students selected to be in Reading Recovery.

If a relationship exists between a student's Kindergarten *Who Am I?* scores and whether or not they were chosen to be in Reading Recovery the following year, the study could be extended to determine which Kindergarten programs seem to reduce the number of students whose *Who Am I?* scores indicate that they need Reading Recovery. This could be determined by administering the *Who Am I?* to the Kindergarten students in the Fall and then again in the Spring. Such a diagnostic use of the assessment might help to determine which programs raised a cohort's *Who Am I?* scores the most.

Still another use for the *Who Am I?* might result if further studies were to show that it is reliable enough to indicate which students need Reading Recovery. The *Who Am I?* results might still make valuable contributions to a schools' Reading Recovery program. For example, they could be used to reduce the number of candidates to be tested for Reading Recovery. This year at my school, we had 38 Grade One students and six Reading Recovery spaces open, so we needed to test a minimum of 18 students. Even in the second week of school, the teachers were not feeling certain about which students needed to be tested and which students were their lowest performing students. In fact, the two Grade One teachers indicated 24 of their students needed to be assessed. I think it would have been most beneficial and cost effective to take the hour and twenty minutes to

administer the *Who Am I?* and use those scores to decide which 18 students should be tested further.

Chapter 6: Conclusion

The results of this study show that there is a relationship between student scores on three components of the *Who Am I?* and whether or not they need Reading Recovery. Based on the findings of this study a Reading Recovery teacher could use those three *Who Am I?* scores as an initial screen for determining students who require further assessment.

The study also showed that the relationship between student *Observation Survey* scores and whether or not they need Reading Recovery is stronger than the relationship between student *Who Am I?* scores and whether or not they need Reading Recovery. There were four components of the *Observation Survey* on which there statistically significant differences in the mean scores of non-Reading Recovery Students and Reading Recovery Students.

Because the unit of analysis was extremely small, this study was not large enough to inform a decision regarding the use of the *Who Am I?* to predict a need for Reading Recovery. I believe this study did demonstrate that this topic is worth pursuing in the form of a larger study with narrower parameters particularly around the running record administration and the window of time in which these two assessments are given. As a minimum condition for such a study, the teachers administering the two assessments should give them with in the same week. In addition, the running record should not be used as part of the study as it needs to be conducted regardless of which assessment is used to screen students for Reading Recovery.

The process involved in this research was thought-provoking, even though no definitive answers were provided. I feel this study helped me to hone my skills as a Reading Recovery teacher and rededicate myself to improvements in education. Now that

I have completed the study, I can see more clearly which aspects of the study need to be pursued further. For example, there was enough data to support further investigation into using *Who Am I?* assessment as an alternate, more efficient method of determining which students need Reading Recovery. As well, it is now easier to determine which areas of the study need to be adjusted. I enjoyed the process and the learning. Even a study conducted on this small scale gives me a certain sense of accomplishment. I feel confident that I can contribute more effectively to discussions about such things as early literacy assessment and quantitative research.

In my experience, many educators claim to "know" how something will turn out, or whether or not a certain practice is worthwhile, before it is even undertaken. I now feel that in the current educational climate of accountability, there is a need for evidence and research-based instruction. We must provide more than hunches to justify our teaching decisions and practices. This process of investigative inquiry provides teachers-as-researchers with the ability to address a question or problem, develop a method to collect research data in a scientifically sound manner, and refute or support what they believe with their own research.

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