

ABSTRACT

ATTWOOD, KAREN ZAWOYSKY. Using Banking Time to Improve Student-Teacher Relationships and Student Behaviors. (Under the direction of Ann C. Schulte, Ph.D.).

Both Attachment Theory and correlational studies suggest that high quality teacher relationships may play a role determining student social and academic outcomes, particularly for students who enter school with preexisting risk factors. Interventions involving play therapy methods have been shown to improve child-caregiver relationships and child outcomes. Though most of these techniques have been implemented with child-parent dyads, some have been adapted for use with students and teachers. The purpose of this study was to examine the effectiveness of one such technique, Banking Time, for improving student-teacher relationship quality, student behavior, and teacher time spent on instructional activities. Because student-teacher relationship quality was manipulated using Banking Time, the study was also intended to provide preliminary evidence regarding the causal association between relationship quality and student outcomes.

Banking Time was tested using a multiple-baseline design with three early elementary school student-teacher dyads. Mild improvements were reported for one of the student-teacher dyads, but overall, there was little to no evidence that Banking Time enhanced student-teacher relationships or improved child behavior. The lack of significant findings is discussed in terms of limitations present in the current study as well as possible weaknesses in the Banking Time intervention itself. Implications for future research and practice are also presented.

USING BANKING TIME TO IMPROVE
STUDENT-TEACHER RELATIONSHIPS AND STUDENT BEHAVIORS

by

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A dissertation submitted to the Graduate Faculty
Of North Carolina State University
In partial fulfillment of the
Requirements for the Degree of
Doctor of Philosophy

PSYCHOLOGY

Raleigh, NC

2005

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ACKNOWLEDGEMENTS

This dissertation is the result of the work and support of many people. My adviser, Dr. Ann Schulte, provided consistent dedication and attention to this project during the last several years. Her supervision throughout the conception, data collection, analysis, and writing phases was always thoughtful, thorough, and practical. I appreciated the high expectations that she set for this research project, while also expressing compassion for me as an individual with broader life goals. Thank you also to my committee members, Dr. Bill Erchul, Dr. Patsy Collins, and Dr. Susan Osborne, for their input and guidance at many times during the last several years.

I am also very appreciative of the interest, hard work, and commitment to this project that was shown by my graduate and undergraduate research assistants, Joylynn Miller, Rebecca Butler, and Adam York. This study also would not have been possible without the cooperation and support of many staff members and students from the elementary school that served as the site for the study. In particular, I was grateful for the dedication, enthusiasm, and open-mindedness of the teachers who carried out Banking Time.

Direct work on the current project has spanned only a few years, though indirect influences on my current academic achievement can be traced to my early childhood. I want to thank my parents for valuing education and helping me to develop an intrinsic interest in knowledge acquisition, for helping me to succeed early in school by establishing high expectations for my achievement and seeking opportunities for me to explore my interests, and for supporting all my decisions regarding college and graduate school. Thanks also to Dodie and Papa, my grandparents, who have also provided

unconditional support throughout my academic career, and particularly during my time at NCSU.

Finally, to my husband, Brian, I truly could not have achieved this goal without his love, support (both emotional and technical!), understanding, and well-timed sense of humor that helped me to keep my goals in sight while maintaining a perspective on what is most important in life.

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CHAPTER ONE: INTRODUCTION

Since Bowlby (1969) first articulated Attachment Theory, there has been a growing appreciation of the importance of child-adult relationships to child adjustment, social functioning, and regulation of emotions (Ainsworth, Blehar, Waters, & Wall, 1978). Early research focused almost exclusively on child-parent attachment (e.g., Matas, Arend, & Sroufe, 1978). However, when contemporary research indicated that children usually develop attachments to *multiple* caregivers and that attachment quality can differ between these caregivers (Howes & Matheson, 1992), researchers began exploring the implications of these attachment relationships, as well. Because of their prominent position in the lives of young children, the role of teachers as attachment figures became a topic of interest to researchers. Indeed, attachment behaviors such as psychological proximity-seeking have been observed in student-teacher relationships (Ainslie & Anderson, 1984).

Based largely on indications that students can develop attachments to their teachers, a growing literature base has emerged showing that student-teacher relationship quality is positively correlated with various student outcomes (e.g., Howes, Matheson, & Hamilton, 1994; Pianta & Steinberg, 1992). As a result of this converging evidence, researchers have hypothesized that high quality teacher relationships may actually create early school success for students and may indirectly lead to positive school experiences later on. Conversely, poor teacher relationships are associated with maladaptive outcomes throughout schooling and may indirectly lead to additional academic and behavioral problems. Good teacher relationships may be particularly important for students with insecure relationship histories who are at risk for poor outcomes (e.g., Lynch & Cicchetti, 1992). The possibility that positive student-teacher relationships in the early grades may alter children's school

trajectories suggests that improving student-teacher relationships may be an important avenue for intervention for children evidencing significant behavioral difficulties in the classroom. One intervention designed to improve student-teacher relationships is Banking Time (Pianta & Hamre, 2001). This intervention evolved from methods used in parent training programs to enhance child-parent relationships and relates closely to the techniques and philosophy of play therapy. With this intervention, a teacher interacts with his or her student using nondirective actions that communicate interest and caring to that child (Pianta & Hamre, 2001).

The purpose of the current study was to examine the effectiveness of Banking Time for improving student-teacher relationship quality, student behavior, and teacher time spent on instructional (rather than disciplinary) activities. To test the intervention's effectiveness, three teachers each implemented Banking Time with a child in their classrooms. Banking Time's impact on student and teacher behavior was evaluated with a multiple baseline, small-n design.

Demonstration of Banking Time's effectiveness would serve two important purposes. From a theoretical perspective, it would provide evidence that a portion of the common variance between relationship quality and student outcomes can be explained by the direct impact of relationship quality on student functioning. Pragmatically, it would validate a particular method for improving student-teacher relationship quality and, through this improvement, student behavioral and academic outcomes.

CHAPTER TWO: LITERATURE REVIEW

This chapter provides a research framework for the present study. It reviews several areas of research and is divided into two broad sections. In the first section, research about student-teacher relationship quality is examined. In the second broad section, the techniques and outcomes of various child-caregiver relationship-enhancing interventions are described. In particular, Banking Time, the intervention that was tested in the current study, is introduced.

Importance of Student-Teacher Relationships for “At-Risk” Students

In this section, the theoretical underpinning for the importance of child-adult relationships, Attachment Theory (Bowlby, 1969), is presented, followed by an examination of direct findings from student-teacher relationship research, and an analysis of the current state of this literature. Overall, this section is intended to explain the importance of student-teacher relationships and the potential for positive relationships to lead to positive student outcomes, particularly for students with significant risk factors.

Theoretical Basis for the Student-Teacher Relationship: Attachment Theory

Attachment Theory provides the broad framework for research concerning the importance of adult relationships in the development of young children. Originally proposed by Bowlby (1969), it has been studied extensively by other prominent researchers, particularly Ainsworth (e.g., Ainsworth et al., 1978) who developed the methodology most commonly used to assess attachment quality.

Within Attachment Theory, adult-child relationships are thought to serve several important functions for developing children and are determined by such factors as the quality of care provided by the caregiver and the nature of the ongoing interactions between child

and caregiver (Ainsworth et al., 1978). In particular, infants form expectations about others' behavior toward them based on the responsiveness and availability of their caregivers. It is through these attachment relationships that children form *internal working models* that shape their expectations about relationships and their interpretations of new interpersonal experiences (Bretherton, 1987). Early attachment style has garnered significant attention because of its apparent effect on various areas of child functioning (Sroufe, 1983).

Attachment Styles

Based on patterns of child behavior and parent behavior during child-parent interactions, and child behavior during separations and reunions, four attachment patterns have been identified. One pattern represents appropriate, or secure, attachment, and three describe types of insecure attachments.

Secure attachment. Securely attached children tend to use their attachment figures as “bases” for exploration when in new situations, facilitating contact and exploration with their environments and creating opportunities for social and cognitive growth. Securely attached children also tend to be moderately upset when separated from their attachment figures and to greet and show warmth toward them upon reunion (Ainsworth et al., 1978).

Insecure attachments. Insecurely attached children demonstrate differing patterns of exploration, separation, and reunion behaviors. Avoidant children tend to explore their environments without checking on their caregivers and show no visible reaction upon separation from or reunion with their caregivers (Ainsworth et al., 1978). Ambivalent or resistant children tend to cling to caregivers rather than explore their environments. They generally demonstrate great upset upon separation from their caregivers, and then ambivalence upon reunion, seemingly having difficulty deciding whether to greet or ignore

them (Ainsworth et al., 1978). Finally, children with disorganized/disoriented attachments demonstrate confused responses across these situations, seemingly combining aspects of both avoidant and ambivalent behaviors. These children tend not to explore their environments while in the presence of caregivers and demonstrate unpredictable responses to separation and reunion situations including contradictory behavior patterns, movements, and expressions, stereotyped movements, freezing, apprehension, and disoriented appearance (Main & Solomon, 1990).

Implications of Early Attachment Patterns

Early caregiver attachment patterns predict a child's interpersonal behavior in other situations and in future relationships. For example, preschoolers with a history of secure maternal attachment relationships were found to be more socially competent, more independent, more compliant, more likely to engage in *positive* attention-seeking behavior, and more likely to demonstrate empathy for others than preschoolers with insecure caregiver attachments (Sroufe, 1983). Another study found that boys with insecure maternal attachments exhibited more problem behaviors and were liked less by their teachers than their securely attached peers (Cohn, 1990). Children with ambivalent or resistant attachment histories tended to be viewed as needy by their teachers and to evoke more nurturance, tolerance, and engagement from them, whereas those with avoidant attachment histories tended to evoke more anger from their teachers (Sroufe & Fleeson, 1986). Self-control and emotion regulation also seem to be influenced by child-caregiver interactions (Greenberg, Speltz, & DeKlyen, 1993). Finally, because maltreated children have higher rates of insecure attachments to primary caregivers than non-maltreated children (Main & Solomon, 1990), they are also predicted to have poorer teacher relationships (Lynch & Cichetti, 1992).

Attachments to Other Caregivers Including Teachers

Attachments between mother and child have received much attention but it is now understood that children can experience attachments to multiple caregivers and that it is actually an exception for a child to have an attachment to only one caregiver (Howes & Matheson, 1992). Attachment behaviors have been observed in student-teacher relationships (Ainslie & Anderson, 1984). In particular, attachment behaviors such as psychological proximity-seeking and seeking the adult when distressed have been observed for young children with both their parents and teachers (Pianta, 1992).

Consistency of children's attachment style across caregivers. Although there is some similarity between attachment relationships for particular children, the nature of children's relationships is not expected to be identical with all significant adults. Similarity among a child's attachment relationships is due largely to individual characteristics that the child brings to the relationship, as well as his or her evolving internal working model of relationships that is shaped by previous attachments (Bretherton, 1987). Current understanding about child-caregiver attachments suggests that children will enter school with predispositions for particular types of teacher relationships. Because attachment relationships are embedded within particular activities and settings, however, differences will exist across caregiver relationships for individual children (Howes & Matheson, 1992). For example, child-parent relationships occur predominantly at home and in other "family" settings and will be somewhat different than child-teacher relationships which occur primarily within the school setting. Teacher relationship quality is therefore not pre-determined by the student's characteristics, but additionally affected by teacher and school characteristics.

The Importance of Positive Teacher Relationships for Children “At Risk”

All students spend a great deal of time in school and engaged in interactions with teachers. It is therefore arguable that teachers have major effects on all students. However, student-teacher relationships may be particularly influential for students who have negative attachment histories and/or are at risk of academic, behavioral, and social problems. Substantial research further indicates that behavioral and emotional problems represent significant risk factors for negative outcomes in adolescence and adulthood (Wood & Cronin, 1999). In particular, aggressive behavior in childhood predicts academic failure, substance abuse, and delinquency (Loeber, 1990).

It has been noted that one major factor underlying success among high-risk children is the presence of at least one secure, self-esteem-promoting relationship with an adult (Garmezy, 1984). When a child lacks such a relationship outside of school, the teacher may become a likely target of attachment (Pianta, 1992). This potential may be particularly strong for maltreated children as one study found that school-age children with a history of maltreatment engaged in greater psychological proximity seeking than their nonmaltreated peers, seemingly in attempts to make the relationships closer (Lynch & Cicchetti, 1992). These children are less likely to begin teacher interactions with optimal relationship patterns, but over the course of the relationship, have the potential to develop adaptive interaction behaviors (Lynch & Cicchetti, 1992).

Strong teacher relationships may buffer children with adverse care-giving experiences from negative outcomes (Pianta & Steinberg, 1992). It is possible that a positive, secure teacher relationship could develop for a child with an insecure attachment history and subsequently alter that child's working model of relationships (Lynch & Cicchetti, 1992).

Children whose parents had insecure attachments to their own caregivers are more at risk for poor parenting than children whose parents had secure attachments of their own. These at-risk students have been shown to benefit from close teacher relationships (Hughes et al., 1999). Notably, one study found that aggressive students with negative parenting histories were more affected by positive teacher relationships than were aggressive students with less remarkable parenting histories (Hughes et al., 1999). Another study found that, among women who had been abused as children, those that became nonabusing parents were more likely to have had childhood support from at least one non-abusing adult (Egeland, Jacobvitz, & Sroufe, 1988). The emotional support provided by the nonabusive adults may have provided children with experiences to alter perceptions of themselves and/or others (Lynch & Cicchetti, 1992). One may conclude from these results that, for some individuals, negative student behavior is related to poor caregiver relationships and that substitute, positive relationships can help to remedy these negative effects. Coupled with the knowledge of the importance of early school experiences for students, one can conclude that early teacher relationships are potentially very important, particularly for students with insecure attachment histories. A strong student-teacher relationship may have the potential to alter student behavior and future interpersonal relationships.

The Importance of Early School Experiences

Though student-teacher relationship quality is important throughout child development, it is arguable that it is most important and most likely to affect student outcomes during the first few years of schooling. Experiences during the beginning years of students' schooling are considered to be very important for determining their later success in school. In particular, kindergarten is a transition year and can be thought of as a sensitive

period for determining later success in school (Rimm-Kaufman & Pianta, 2000). Therefore, positive experiences that occur during this year can prepare students for later school success. More startling is the implication that students who do not have successful kindergarten experiences may have difficulty attaining school success.

According to systems theory, students engage in reciprocal interactions within dynamic, transactional environments (Pianta, 1999). By definition, dynamic systems are constantly changing in reaction to events by all of their components (Pianta, 1999). The “academic system” is thought to be particularly open to influence and change during the transition time of early school (Pianta & Walsh, 1996). Problem behaviors in younger children are less well-established and therefore more open to change than are problem behaviors in older children (Hembree-Kigin & McNeil, 1995). Children seem to be more sensitive to environmental influences that affect their attachment, independence, mastery, and self-control during preschool and early elementary school than they are during later periods of their development (Sroufe & Rutter, 1984). Individual differences in school achievement remain relatively stable after the first few years of school. In fact, students’ academic trajectories are typically set by third grade (Pallas, Entwisle, Alexander, & Cadigan, 1987). Specific predictors of later school problems include retention and special education placement, variables contributing unique variance independent of their precursor factors (Pianta, Steinberg, & Rollins, 1995).

Knowing that early experiences are powerful predictors of later student functioning, teachers can serve important roles during the transition into school. Most obviously, teachers spend a great amount of time with their students, teaching academic skills, and regulating their activity levels, communication, and contact with peers (Pianta, 1997). The formation of

a special relationship with a teacher may serve as one very important external influence on student academic trajectories. For example, a positive student-teacher relationship may facilitate a child's adaptation to school (Sroufe, 1983). Conversely, a negative student-teacher relationship may hinder initial school adaptation and therefore future school success. For these reasons, the current study addresses the issues of student-teacher relationship quality and student behavior in relatively young students.

Defining Student-Teacher Relationship Quality and Positive School Adjustment

Before providing evidence about the association between student-teacher relationship quality and important student outcomes, each of these constructs is defined.

Defining the Student-Teacher Relationship: The Student-Teacher Relationship Scale

In order to better understand research in this field, it is essential to define student-teacher relationship quality. The nature of the student-teacher relationship has been defined in many studies by the factors of the Student-Teacher Relationship Scale (STRS; Pianta, 2001), the most common teacher-report instrument used to measure relationship quality. Three aspects of the student-teacher relationship, closeness, dependency, and conflict, are theorized to be important indicators of the quality of these dyadic relationships (Pianta, 2001). Closeness is characterized by the degree of warmth and open communication between teacher and student and the amount of support provided to the student by the teacher. Dependency is characterized by clingy child behaviors, presumably indicative of an overreliance on the teacher as a source of support. Finally, conflict is characterized by discordant interactions and a lack of rapport between teacher and student. These dimensions have been found in student-teacher relationships across child age, ethnicity, and socioeconomic status (Saft & Pianta, 2001). A longitudinal study has indicated the relative

stability of conflict and dependence, but not closeness, ratings for the same children between kindergarten and second grade (Pianta et al., 1995). The authors suggested that student-teacher closeness may be more situation-dependent whereas, without intervention, conflict and dependency may tend to remain the same for individual children.

Cluster analysis of responses to the STRS have been used to categorize individual dyads into six relationship types (Pianta, 1994). The *dependent* relationship is characterized by high dependency scores and moderate closeness and conflict scores. The *positively involved* relationship includes high closeness scores, low conflict scores, and moderate dependency scores. The *dysfunctional* student-teacher relationship is characterized by high conflict scores, low closeness scores, and moderate dependency scores. The *functional/average* relationships are defined by moderate scores on closeness, conflict, and dependency. The *angry/dependent* relationship is characterized by high conflict and high dependency scores and moderate closeness. The *uninvolved* relationship is characterized by low closeness, conflict, and dependency scores. Specific outcomes associated with some of these relationship patterns are described below.

Positive School Adjustment

In order to appreciate the relevance of associations between student-teacher relationship quality and student outcomes, it is important to first establish a definition for positive school adjustment, looking normatively and empirically at what constitutes success in school. Measures of academic skills, positive peer relations, behavioral adjustment/aggression, and social withdrawal/isolation were examined as dependent variables in one study assessing student school adjustment (Lewin, Hops, Davis, & Dishion, 1993). Similarly, Harris and Wagoner (1973) defined school success in terms of student

social adjustment, academic performance, and emotional adjustment. These dependent variables are arguably important indicators of school success as each has been associated with long-term student outcomes. For example, an accumulation of peer and teacher-reported behavior problems for males between age eight and 14 years predicted criminal offenses at age 27 (Haemaelaenen & Pulkkinen, 1996). Furthermore, among elementary-aged students, social competence has been linked with academic success (Welsh, Parke, Widaman, & O'Neil, 2001). Academic competence, positive peer relations, and a relative absence of internalizing and externalizing behavioral problems therefore seem to be appropriate indicators of positive school adjustment. Each of these variables has been studied in relation to student-teacher relationship quality and will be discussed more thoroughly below.

Correlates of Quality of Student-Teacher Relationship

After considering the theoretical basis for student-teacher relationship quality, Attachment Theory, and defining positive school adjustment and student-teacher relationship quality, the empirical evidence associating relationship quality with student outcomes is now presented. Many correlational studies have described the association between student-teacher relationship quality and student success, particularly in the areas of academic competence, peer relations, and student behavior.

Academic Competence

The association between student-teacher relationship quality and student academic competence has been examined in many studies. One study found that students with positive teacher relationships in kindergarten had greater academic competence in second grade than did peers with more negative kindergarten teacher relationships (Pianta et al., 1995). In fact,

a close student-teacher relationship in kindergarten better predicted academic competence and behavior in second grade than did a kindergarten screening of fine motor skills, language skills, and cognitive ability (Pianta et al., 1995). Positive student-teacher interactions in kindergarten classrooms have also been linked to higher rates of on-task behavior (Pianta, La Paro, Payne, Cox, & Bradley, 2002). Quality of student-teacher relationship has also been correlated with feelings of academic competence including self-concept and expectations for success (Pallas, et al., 1987). Kindergarten relational negativity, characterized by high conflict and high dependency, predicted report card grades in lower elementary school and achievement test scores on the Iowa Test of Basic Skills (ITBS) in lower and upper elementary school (Hamre & Pianta, 2001). Positive student-teacher relationships have also been associated with less academic failure than negative student-teacher relationships (Pianta & Steinberg, 1992).

Peer Relations

Quality of relations with peers is another important indicator of positive school adjustment that has been associated with student-teacher relationship quality. One study found that four-year-olds with secure teacher attachments tended to have more positive peer relationships than those with insecure relationships with their teachers (Howes et al., 1994). In fact, teacher relationships predicted peer relations better than children's attachments to their mothers (Howes et al., 1994). In preschool and elementary school, children with more supportive, less conflicted teacher relationships tended to be more accepted by their peers (Birch, 1997, as cited in Hughes, Cavell, & Willson, 2001). Among second and third graders, the extent of teacher conflict and teacher support predicted peer nominations as cooperative, overtly aggressive, relationally aggressive, and liked least (Hughes et al., 2001).

Student Behavior

Both appropriate and inappropriate student behaviors have also been examined in relation to student-teacher relationship quality. For example, student acting-out behavior at school has been positively associated with both teacher conflict and closed communication (i.e., lack of sharing information, poor understanding of feelings) with one's teacher (Pianta & Steinberg, 1992). Another study found that students with positive teacher relationships in kindergarten had fewer behavior problems and more positive teacher relationships in second grade than did those with more negative teacher relationships in kindergarten (Pianta et al., 1995). Positive student-teacher relationships have also been associated with lower rates of school dropout, fewer behavior problems, and lower rates of psychopathology (Pianta & Steinberg, 1992).

Certain patterns of both appropriate and inappropriate student behaviors have been associated with the six types of student-teacher relationships derived from the STRS. For example, students with angry/dependent and dysfunctional teacher relationships tend to have more behavior problems than those with uninvolved, positively involved, and functional relationships. Conduct problems are also more common among students with dysfunctional teacher relationships than among those with dependent relationships. Learning problems have been found to be greater among students with dysfunctional teacher relationships than among those with all other types of teacher relationships except angry/dependent. Frustration tolerance tends to be higher among students with positively involved and uninvolved teacher relationships than among those with dysfunctional or angry/dependent relationships. Work habits are generally better for students with uninvolved, positively involved, and functional relationships than for those with dysfunctional relationships. Finally, peer relations are

typically better among students with positively involved teacher relationships than among those with dysfunctional teacher relationships (Pianta, 1994).

Correlates for Children “At Risk”

Some studies have looked more closely at student-teacher relationship quality for children with identified concerns. For example, children who, despite significant behavior problems, developed relationships with kindergarten teachers characterized by low levels of negativity were less likely to have future behavior problems than were those with behavior problems and negative kindergarten teacher relationships (Hamre & Pianta, 2001). Another study found that, among students predicted to be retained in kindergarten, those who were promoted had teacher relationships characterized by more emotional warmth, more open and personal communication, and less conflict (Pianta et al., 1995). Conversely, among children predicted to succeed in kindergarten, those who were retained or referred for special education had more conflicted, less positive teacher relationships (Pianta et al., 1995). Another study found that, among high-risk students, those with exceptional first grade teachers exhibited better overall adult status, higher school achievement in grades one through seven, greater effort in most grades, and greater leadership and initiative in grades one through seven (Pedersen, Faucher, & Eaton, 1978). In contrast, classrooms with more student-teacher conflict tended to include students who liked school less and who were less positively involved in school (Birch & Ladd, 1997).

Moderators of the Student-Teacher Relationship Correlates

Interactions among relevant child outcome and student-teacher relationship variables provide further insight into the importance of the student-teacher relationship. For example, relational negativity in kindergarten better predicted suspension for children with above

average estimated verbal intelligence than for those estimated to have below average verbal intelligence (Hamre & Pianta, 2001). Relational negativity also predicted frequency of suspensions better for children who ranked within the top third of the group in terms of behavior problems (Hamre & Pianta, 2001). Student-teacher relationship quality best predicted later disciplinary infractions for students with the most behavior problems in kindergarten. In particular, those students with high levels of behavior problems and positive teacher relationships were less likely to have disciplinary infractions in upper elementary school than were those with high levels of behavior problems and negative teacher relationships. These students were also less likely to experience disciplinary infractions in middle school, an effect that may have been mediated by frequency of upper elementary school disciplinary infractions (Hamre & Pianta, 2001).

What Determines the Nature of Particular Student-Teacher Relationships?

As described above, the association between student-teacher relationship quality and student outcomes is fairly well-established and leads one to wonder about the factors that determine relationship quality for a particular student-teacher dyad. Many variables likely interact to determine the nature of these relationships. In particular, individual characteristics of both teacher and child, as well as interactions between these characteristics, likely affect the quality of the student-teacher relationship.

Student Characteristics

As discussed above, attachment theory promotes the idea that children form internal working models of relationships that they apply to all new, close relationships (Bretherton, 1985). Therefore, one may hypothesize that much of the nature of any student-teacher relationship is influenced by the student's preformed ideas and expectations about

relationships, his or her habits and behaviors when interacting with other significant adults, and his or her other individual characteristics. For example, one study found that teacher-perceived conflict with students was relatively stable across teachers for the same students (Pianta et al., 1995). In addition, child characteristics such as agreeableness may explain why children have positive relationships with both teachers and peers (Graziano & Eisenberg, 1997). Children that display aggressive behavior are more likely to both have negative teacher relationships and engage in delinquent behaviors as adolescents (Blankemeyer, Flannery, & Vazsonyi, 2002). These researchers further concluded that aggressive children with relatively well-developed social skills are likely to have better outcomes, including more positive teacher relationships. Furthermore, dependency relationships may be more common in emotionally immature students (Birch & Ladd, 1997). Therefore, some portion of variance in teacher perceptions of student relationships is likely attributable to stable student characteristics (Saft & Pianta, 2001).

Teacher Characteristics

Although differences exist in the manner with which the same teacher interacts with different students, there are also differences between teachers in terms of their general approaches to students (Pianta et al., 1995). As with children, teachers are thought to have their own internal working models of relationships that guide their behavior in new interactions, including those with their students (Pianta & Steinberg, 1992). For example, beginning teachers with a history of secure parent attachments were more likely to report a child-centered rationale for pursuing a teaching career and to consider student relationships to be important to teaching than were teachers with insecure attachment histories (Horppu & Ikonen-Varila, 2001, as cited in Pianta, Hamre, & Stuhlman, 2003). Calderhead and Robson

(1991) reported that teachers called on personal experiences with their own teachers when instructing and interacting with their students. Furthermore, one study found differences in the quality of student relationships between married and unmarried teachers such that unmarried teachers tended to be more emotionally involved with their students than were married teachers (Pallas et al., 1987). The authors of this study hypothesized that unmarried teachers had greater needs to establish close relationships with others and therefore made greater emotional investments in their students.

Interactions between Student and Teacher Characteristics

Consistent with the idea of “goodness of fit,” there are likely interactions between teacher and student characteristics that influence the quality of individual student-teacher relationships. To some extent, ethnic and gender matches are related to relationship quality. Saft and Pianta (2001) examined trends in STRS ratings among teachers and students of varying ethnicities and found that, generally, teachers viewed relationships with students of the same ethnicity more positively than relationships with students of different ethnicities. In particular, student-teacher ethnicity match predicted higher teacher-reported closeness and lower conflict. For African American and Hispanic children, but not Caucasian children, matched student-teacher ethnicity was associated with lower dependency. Although these correlations were statistically significant, overall, ethnicity match accounted for a small portion of variance in teacher-reported closeness, dependency, and conflict, indicating that the majority of variance determining student-teacher relationship is unrelated to ethnicity. “Goodness of fit” likely applies to many other variables within the student-teacher relationship such as personality characteristics.

Outside Influences

Contextual variables may also play a role in the nature of particular student-teacher relationships. For example, evidence suggests that lower student to teacher ratio is associated with more frequent and more positive student-teacher interactions (NICHD Early Child Care Research Network, 2001, as cited in Pianta et al., 2003).

Possible Explanations for the Student-Teacher Relationship Correlates

Many factors seem to influence the quality of particular student-teacher relationships. Similarly, there are multiple potential explanations for the strong correlations that have been found between student-teacher relationship quality and student outcomes. However, in the current literature, a well-validated explanation for this association has not been determined. One could hypothesize that the two variables are causally related. Because current studies examining this relationship are correlational; however, the association may be explained by “third” variables that could affect both a child’s teacher relationship and aspects of his or her personal functioning.

Indirect Impact of Student-Teacher Relationship Quality on Student Outcomes

Throughout the student-teacher relationship literature, which is wholly correlational, researchers have provided implications for practice, presuming that positive student-teacher relationship *causes* more adaptive student outcomes. Consistent with such assumptions, the quality of student-teacher relationships may indeed affect student outcomes indirectly via various mediators. For example, children who trust and like their teachers may be more motivated to succeed in school than those with poorer teacher relationships (Hamre & Pianta, 2001). Similarly, warm feelings toward a significant figure at school may facilitate positive affect and attitudes toward school in general (Birch & Ladd, 1997). Strong teacher

relationships may also lead to positive outcomes simply by increasing students' interest and engagement in school (Lynch & Cicchetti, 1992).

Another possibility is that students with close, comforting teacher relationships may feel safer to explore their classroom environments and therefore engage in more appropriate academic and social behaviors than peers with poorer teacher relationships (Birch & Ladd, 1997). Conversely, overly dependent children may be tentative when exploring their school environments and therefore take in less social and academic information while at school (Birch & Ladd, 1997).

Strong, positive student relationships may also motivate teachers to spend extra time and energy working with students and helping them to succeed (Hamre & Pianta, 2001). In contrast, teachers may be more likely to control the behavior of students with whom they have poorer relationships, thus hindering their exploration, experience, and enjoyment of school (Hamre & Pianta, 2001). Furthermore, high conflict in student-teacher relationships likely limits the extent to which teachers serve as sources of student support (Birch & Ladd, 1997).

Quality of student-teacher relationship may also indirectly influence peer relations (Hughes et al., 1999) as peers detect teacher attitudes toward particular students and use this information to form opinions about potential friends (Babad, 1993). In particular, the positive or negative emotional tone of teachers' behavior toward students is associated with peers' preferences (White & Kistner, 1992).

Third Variable Explanations

In addition to speculations that student-teacher relationships lead to positive student outcomes, it is possible that these associations are simply correlational, accounted for by any

of a number of associated variables. As discussed above, student characteristics likely influence the nature of teacher relationships. Individual student characteristics also likely affect the various student outcomes that have been studied in association with student-teacher relationship quality. It is therefore highly plausible that the association between student-teacher relationship quality and student outcomes is largely explained by student characteristics themselves such that the students who tend to be liked by teachers also tend to do well academically, socially, and behaviorally.

Problems with the Current Examination of Student-Teacher Relationship Correlates

Two primary methodological problems exist within the current student-teacher relationship literature. First, associations with student outcomes have been examined solely through correlational techniques, making the often causal assumptions premature. Second, the measures used in this research tend to be subjective and to be based on reports from a single informant.

Purely Correlational Research

Because the research in this area has been largely correlational, researchers have appropriately refrained from making firm, causal attributions about the associations between student-teacher relationship quality and student outcomes. In order to have confidence in the validity of this field of research as well as suggestions for improving student outcomes via student-teacher relationship interventions, it is important to attempt to establish that these variables are causally related. Studies which demonstrate that interventions that change relationship quality produce corresponding changes in student outcomes would provide evidence of a causal association.

Lack of Independence among Relevant Measures

A common methodology for gathering information about relevant variables represents another, arguably more serious, problem within this literature. Many of the variables of interest in this area of research have been measured solely through teachers' self-report, a common measurement method. For example, the most commonly used measure of student-teacher relationship quality, the STRS, is a self-report measure completed by teachers (Pianta, 2001). Measures of behavior, academic skills, and social skills are also often completed by teachers (e.g., Pianta, 1994; Pianta & Nimetz, 1991). Some of the overlapping variance between student-teacher relationship and student characteristics discussed in these studies must therefore be attributed to subjective impressions of the teachers. Furthermore, the magnitude of association that might result between these variables given truly objective measures must be questioned.

Other outcome measures that have been associated with student-teacher relationship quality include grade retention and referral for special education (e.g., Pianta et al., 1992). A teacher's decision to retain a student or to refer a student to be evaluated for special education eligibility is not only a function of that student's classroom behavior and academic skills, but is also related to the teacher's perceptions and feelings about his or her relationship with the student (Cadigan, Entwisle, Alexander, & Pallas, 1988; Pianta & Steinberg, 1992). These indicators of student-teacher relationship quality and student outcomes cannot be deemed independent. Again, the meaningfulness of results from studies using this methodology must be questioned. It is important for new research in this area to examine the extent to which these variables are related when they are measured using independent, objective methods.

Interventions to Improve Child-Adult Relationships

In order to build on the purely correlational methods that were implemented in past studies and directly address the potential that student-teacher relationship quality is causally related to student outcomes, it was necessary to identify an intervention that could be implemented to directly manipulate student-teacher relationship quality and student outcomes. A group of similar interventions has been implemented by behaviorists (e.g., Barkley, 1987) and play therapists (e.g., LeBlanc & Ritchie, 2001) to improve the quality of child-caregiver relationships. The relationship-enhancing focus of these interventions relates directly to attachment theory and the philosophy that internal working models of relationships are somewhat dynamic and open to influence (Bretherton, 1985). These interventions originated in the parent training literature but, as described below, have been adapted to use with students and teachers. Though the methodology for studying many of the techniques is not strong, the outcomes provide promise for these techniques and some background for the intervention that was examined in the current study, Banking Time (Pianta & Hamre, 2001). Because of its similarity to the interventions used to improve child-parent relationship quality, these methods and their effectiveness are discussed before the philosophy and method of Banking Time is introduced.

Play Therapy

Various techniques related to play therapy have been implemented to improve child-adult relationships. Whereas play therapy was initially designed to be administered by a clinician in a professional setting, the techniques have been expanded and used in consultation models in which other adults, such as parents and teachers, are trained to carry out the therapy. Home-based, “parent as consultee” programs include filial therapy (Guerney,

1964) and the child's game, or attending (Barkley, 1987). School-based, "teacher as consultee" models have been discussed more recently and include Kinder Therapy (Draper, White, O'Shaughnessy, Flynt, & Jones, 2001), Teacher-Child Interaction Therapy (TCIT; McIntosh, Rizza, & Bliss, 2000), and Banking Time (Pianta, 1999). Filial Therapy and Kinder Therapy evolved directly from Rogerian and Adlerian forms of play therapy, whereas attending and Banking Time are more behaviorally-based. Prior to discussing these practices in more detail, a general introduction to play therapy is important.

Virginia Axline incorporated play therapy into child psychotherapy practices in the 1940's (LeBlanc & Ritchie, 1999). The Association for Play Therapy (2001) has defined play therapy as "the systematic use of a theoretical model to establish an interpersonal process wherein trained play therapists use the therapeutic powers of play to help clients prevent or resolve psychosocial difficulties and achieve optimal growth and development" (p. 20). It is believed that play therapy can benefit nearly all children with the exception of those that are severely autistic or actively schizophrenic (Guerney, 2001). Play therapy is considered to be a particularly appropriate option for at-risk and/or developmentally delayed children as it can be tailored to the child's developmental level (Cochran, 1996). Play therapy also tends to de-emphasize verbal expression and therefore can be helpful in overcoming verbal barriers that may exist in other forms of therapy (Cochran, 1996). Traditional play therapy is generally carried out between a trained mental health provider and one child, one time per week for approximately thirty minutes each time (Bratton & Ray, 2000).

Multiple forms of play therapy exist including Child-Centered Play Therapy (CCPT) and Adlerian Play Therapy. CCPT was the original form of play therapy introduced by Axline and that follows from some of Carl Rogers' work with adults (LeBlanc & Ritchie,

2001). In particular, Axline's therapy is considered client-centered, nondirective, and unstructured, and developed from the idea that therapy will be most beneficial if the therapist does not direct the therapy but rather allows the child to do so (Guerney, 2001). Additional core components of CCPT include unconditional positive regard by the therapist, respect for the child by the therapist, a child-directed stance, and attention to child safety (White et al., 1999). The tenets of CCPT are as follows: the child directs the content of therapy; therapy is not symptom specific or problem-oriented; the child's perceptions of reality are accepted without question by the therapist; the use of the whole system, not chosen components, is imperative; and therapists using CCPT must believe in its effectiveness and remain true to its methods (Guerney, 2001).

Play Therapy Outcomes

The effectiveness of play therapy has been examined in many populations of children. A review of case study research on play therapy suggests that it has been effective at increasing the frequency of children's positive behaviors and decreasing their negative behaviors (Bratton & Ray, 2000). Effectiveness has been reported among a range of populations including children with schizophrenia, enuresis, encopresis, anxiety disorders, trichotillomania, selective mutism, withdrawn behavior, acting-out behavior, sexual abuse history, trauma, neglect, learning and academic problems, and life adjustment problems (Bratton & Ray, 2000). An experimental study of play therapy's effectiveness among kindergarten through third graders following six sessions with a school counselor suggested improved self-efficacy immediately following treatment (Fall, Balvanz, Johnson, & Nelson, 1999). Another experimental examination of play therapy for at-risk fourth, fifth, and sixth graders demonstrated maintenance, but not improvement, of self-esteem for play therapy

participants and a drop in self-esteem among the control group (Post, 1999). The author of that study concluded that play therapy may have prevented a drop in self-esteem and other negative outcomes for the participants.

More substantial evidence for the effectiveness of play therapy comes from meta-analyses. Two meta-analyses of play therapy studies yielded average effect sizes across outcomes of .61 (LeBlanc & Ritchie, 1999; LeBlanc & Ritchie, 2001) and .80 (Ray, Bratton, Rhine, & Jones, 2001), respectively, effects consistent with the estimated effect size, .71, of child psychotherapies overall (Casey & Berman, 1985) and cognitive-behavior therapy in particular (Sukhodolsky, Kassinove, & Gorman, 2004). Effectiveness of play therapy did not differ based on the sex of the client, the clients' presenting problems, use of other therapies in conjunction with play therapy, group versus individual treatment, or age of the participants (LeBlanc & Ritchie, 2001; LeBlanc & Ritchie, 1999). Two variables did predict differential effectiveness of play therapy. First, play therapy including parent involvement [i.e., Filial Therapy and Parent-Child Interaction Therapy (PCIT)] resulted in significantly higher average effects (.83) than more traditional play therapy administered by a therapist (.56; LeBlanc & Ritchie, 1999). Second, duration of therapy also predicted its effectiveness, with outcomes improving up to approximately 30-35 sessions and then decreasing with more sessions (LeBlanc & Ritchie, 1999). A second meta-analysis yielded similar results, indicating that 35-45 play therapy sessions yielded the most effective results (Ray et al., 2001). Although these results provide substantial support for the effectiveness of this method of therapy, most studies have compared play therapy with no-treatment control groups, rather than comparison groups that involve an alternate treatment (Ray et al., 2001). Future studies should examine play therapies in relation to well-established child psychotherapies.

Consultation Models Using Play Therapy Techniques

Evidence suggests that play therapy is effective when administered in its traditional form; however, several models have been developed in which mental health providers work with parents or teachers to help them administer play therapy techniques with their children. The consultation forms of play therapy offer several advantages. First, because both parents and teachers spend more time with the children than a therapist and have established relationships, they generally require significantly less time to establish rapport (Guerney & Flumen, 1970). Second, the consultation format provides parents and teachers with opportunities to learn new skills that they can use with other children (Draper et al., 2001). Indirectly, therefore, the therapist may affect more clients through consultative treatments. Another advantage of consultation models is that services are typically provided in the primary context in which a child functions, therefore improving the likelihood that results will be generalized (Guerney, 1964).

Parent as Consultee: Filial Therapy

Filial Therapy is a consultation model in which therapists train parents to conduct client-centered play therapy with their children (Guerney, 1964). The goal of Filial Therapy is to enhance the child-parent relationship by improving parental acceptance of their children, reducing inappropriate child behaviors, improving the quality of parenting skills, and increasing children's confidence and competence (Athanasίου & Gunning, 1999). Filial Therapy is typically taught to parents in small, weekly support groups via didactic instruction, observation of videotapes, and role-playing (Kale & Landreth, 1999). Parents are instructed to carry out Filial Therapy sessions one time per week for about 30 minutes, similar to the model for therapist-administered play therapy (Kale & Landreth, 1999).

Outcomes. Overall, results of studies examining Filial Therapy suggest that it is effective at improving child and parent outcomes as well as child-parent relationship quality. Various studies have indicated that Filial Therapy can result in improved child behavior (Bratton, 1994, as cited in Kale & Landreth, 1999), particularly decreased aggression, increased affection, improved leadership (Oxman, 1971), increased self-esteem and self-concept (Rennie & Landreth, 2000), and improved child adjustment overall (Rennie & Landreth, 2000). Improved parent outcomes following Filial Therapy include decreased parental stress (Kale & Landreth, 1999; Rennie & Landreth, 2000), increased parent self-esteem (Glass, 1987), and an overall improved family environment (Rennie & Landreth, 2000). Finally, improved child-parent relationship was evidenced in more positive parental attitudes toward their children (Bratton & Landreth, 1995) and greater parental acceptance of their children (Kale & Landreth, 1999).

As was described above, meta-analyses of play therapy studies in general have indicated their effectiveness at improving social skills, and behavioral and cognitive outcomes, particularly when parents become involved in the administration of treatment (LeBlanc & Ritchie, 2001; Ray et al., 2001). For example, one meta-analysis demonstrated a significantly higher effect size for Filial Therapy, 1.06, than for traditional therapist-led play therapy, .73 (Ray et al., 2001).

Teacher as Consultee: Kinder Therapy

Relatively recently, the methods of Filial Therapy have been integrated with theory from Adler's Individual Psychology to create Kinder Therapy, a consultation method carried out in a school setting such that school counselors or psychologists train teachers to conduct play therapy with their students (White, Flynt, & Draper, 1997). The goals of Kinder Therapy

are primarily twofold. First, by implementing nondirective play therapy techniques in student-teacher sessions, this intervention is intended to enhance the student-teacher relationship and indirectly improve student school adjustment, including behavior and academics (Draper et al., 2001). It is thought that when children feel encouraged and have a sense of belonging within the classroom, they will be more likely to cooperate, exhibit appropriate behavior, and demonstrate empathy toward others (White et al., 1997). Second, by applying the philosophy of Individual Psychology, Kinder Therapy is intended to improve teachers' classroom management skills by implementing more natural and logical consequences during the regular school day (Draper et al., 2001). Teachers are generally taught the techniques of Kinder Therapy in groups, most commonly led by school counselors (White et al., 1997). Following training, play sessions with students generally occur weekly for approximately six weeks.

Outcomes. Draper et al. (2001) examined the effectiveness of Kinder Therapy on behavior, social skills, and early literacy skills among kindergarten and first grade students. Following therapy, the authors noted improved student-teacher relationships, greater feelings of encouragement among students within the classroom, and generalization of appropriate teacher behaviors to other students. In addition, improved student outcomes were noted including decreased problem behaviors, increased adaptive behaviors, and improved academic capability. Because this study was not carried out experimentally, and did not include a control group, the findings described by the authors cannot confidently be attributed to the Kinder Therapy intervention. They also did not attempt to determine if the effects were attributable to the nondirective play therapy or to the classroom management techniques related to Individual Psychology. Further empirical examination of this method

will be important in order to understand its potential effectiveness. An older study did implement appropriate methodology to examine the effectiveness of a similar program that included only a play therapy component. Guerney and Flumen (1970) examined the effectiveness of group play therapy that was administered to students by their teachers. Relative to controls, initially behaviorally withdrawn students demonstrated increased assertiveness following participation in this program.

Parent as Consultee: The Child's Game

A technique similar to Filial Therapy is called the “child’s game” or “attending.” Unlike Filial Therapy, which is largely rooted in client-centered therapy, the child’s game technique is more behaviorally based (LeBlanc & Ritchie, 1999). Similar to play therapy, during the child’s game, parent and child interact one-on-one as the child leads play (Hembree-Kigin & McNeil, 1995). Although the child’s game is a technique which can be used in isolation, it has been incorporated into several multifaceted parent training programs.

Parent-Child Interaction Therapy. One parent training program that includes the child’s game is Parent-Child Interaction Therapy (PCIT). This program is targeted at families with children ages two to seven who exhibit conduct problem behavior, emotional problems, or developmental problems. Traditional play therapy skills are implemented in PCIT to improve child-parent relationships while problem-solving skills are taught to aid parents in developing strategies for managing challenging child behaviors (Hembree-Kigin & McNeil, 1995).

PCIT consists of two phases, child-directed interaction (CDI) and parent-directed interaction (PDI). PCIT begins with the CDI stage in which parents learn to conduct nondirective play, or the child’s game. The focus of this stage is to improve the quality of

child-parent relationships. Parents learn to “DRIP” while interacting with their children during the child’s game. Specifically, they are trained to *describe* their children’s behavior, to *reflect* back their children’s conversation, to *imitate* their children’s play, and to *praise* their children’s appropriate behaviors while ignoring their inappropriate behaviors (Eisenstadt et al., 1993). The CDI techniques are taught to parents via instruction, modeling, and role-playing (Schuhmann, Foote, Eyberg, Boggs, & Angina, 1998). The second phase of PCIT is the PDI, for which parents learn to direct their children’s behavior with clear, age-appropriate instructions and consistent consequences, praise for compliance, and implementation of time-out for noncompliance (Schuhmann et al., 1998). Within PCIT, CDI was designed to precede PDI because limit setting is generally more effective when a positive child-parent relationship already exists (Campbell, 1990). Furthermore, Dowdney and Pickles (1991) have found that mothers who are less affectionate and more critical during play are more likely to become negative during limit setting than are mothers who are more positive during play. Therefore, it is thought that if caregivers can gain skills at being positive during play first, they may be more successful at limit setting.

Researchers have examined the effectiveness of PCIT overall, as well as that of the CDI and PDI components separately. Overall, the program has been found to be effective at improving child compliance and changing the child-parent interactional style immediately following treatment and at a four month follow-up (Schuhmann et al., 1998). Furthermore, parenting skills have been found to generalize to use with other siblings and to subsequent improvement in sibling behavior (Eyberg & Robinson, 1982), though results of that study must be viewed critically as they implemented a pre-post design with no control group. Eisenstadt et al. (1993) examined the relative effectiveness of each component stage of PCIT

separately by implementing PCIT in its traditional order with one group (i.e., CDI prior to PDI) and reversing the order of the components (i.e., PDI prior to CDI) in another group. Although both treatments resulted in significant improvements in child behavior, greater behavioral improvement and maternal satisfaction resulted from the nontraditional, reversed treatment. That finding was inconsistent with the theory that behavior management is more effective following improved child-caregiver relationship quality. Other observations have indicated that some families have responded so positively to the CDI stage that treatment could be discontinued prior to the PDI stage (Eyberg, 1979, as cited in Eisenstadt et al., 1993).

Although filial therapy and PCIT differ in theoretical foundation and methodology, they are similar in their inclusion of parents as treatment providers. Results of a meta-analysis of play therapy outcomes including both filial therapy and PCIT studies suggests that these techniques are about equally effective at improving child outcomes (LeBlanc & Ritchie, 1999).

Barkley's program for defiant children. Barkley (1987) published a treatment manual outlining a plan similar to that of PCIT. Like PCIT, Barkley's program is intended for relatively young children, specifically those younger than 11 or 12 years, who engage in noncompliant, but not seriously aggressive, behavior (Barkley, 1987). The goals of this program are to improve parent competence at dealing with their children's behavior problems, to improve parent knowledge of the causes of child misbehavior and the principles underlying the social learning of that behavior, and to improve child compliance to commands and rules given by parents (Barkley, 1987). Children with more serious problems

may demonstrate improvement following the treatment program but their behavior is likely to remain outside of normal limits (Barkley, 1987).

Although Barkley (1987) does not promote improved child-parent relationship as one of the primary goals of his program, one early component of the program is intended to do just that. Step two out of ten involves parents learning “attending” skills. Similar to the CDI portion of PCIT, attending involves special playtime between a parent and child. During this playtime, the child is allowed to choose the play activity. The parent is to observe for several minutes before joining in, then describe out loud what the child is doing in an excited and action-oriented tone, and, occasionally, give positive verbal and nonverbal praise and feedback. Parents are to refrain from asking questions or giving commands and are taught to ignore their children while misbehaving. During the first week of attending, each parent participant is to interact with the child this way for 15-20 minutes per day. Each subsequent week, parents and children should engage in attending about three to four times per week.

Teacher as Consultee: Teacher-Child Interaction Therapy (TCIT)

Just as Kinder Therapy evolved from the methods of Filial Therapy, at least two teacher-as-consultee methods relate to the child’s game technique. Teacher-Child Interaction Therapy (TCIT) was created as a direct modification of PCIT, applying it to the teacher-child relationship. (McIntosh et al., 2000). The goals of TCIT are to improve the quality of student-teacher relationships by teaching behavior therapy skills to teachers and to provide teachers with problem-solving training. As with PCIT, phase one of treatment consists of CDI in which the teacher uses DRIP skills in play sessions with a student while ignoring inappropriate behavior, and refraining from questioning and commanding. During the second phase, teacher-directed interaction (TDI), the teacher is helped to give effective commands,

to react to noncompliance appropriately, and to increase consistent responding to positive and negative behaviors. Overall, the goal of TDI is to increase the positive social interactions of the student in the classroom and to decrease disruptive behaviors. The TCIT sessions occur for about 30 minutes, once weekly for 12 weeks. In addition, each day the student and teacher engage in five minutes of special time within the classroom that is structured similarly to the CDI sessions.

Outcomes. McIntosh et al. (2000) completed a case study to examine the effectiveness of TCIT with a two-year-old, female child in a preschool setting. Observations throughout this case study indicated improved teacher use of descriptive statements, reflective statements, and praise, and a decrease in the use of commands during CDI. Furthermore, the student's disruptive behavior decreased. Because this technique was examined through case study methodology, firm conclusions regarding the effectiveness of TCIT were not possible.

Teacher as Consultee: Banking Time

Pianta and Hamre (2001) have published a consultation system, Students, Teachers, and Relationship Support (STARS), that is intended to improve student-teacher relationship quality. This program is particularly designed for students with relatively poor teacher relationships that are typically characterized by low closeness, high dependency, and high conflict. Although the STARS program includes three components, the primary intervention is called Banking Time and is similar in methodology to the child's game described above.

Teachers work with a consultant, typically a school psychologist, to learn the Banking Time method. Following training, the teacher begins carrying out Banking Time sessions with the identified student. According to the STARS program, Banking Time sessions should

occur between student and teacher for ten to fifteen minutes, preferably two or more times per week (Pianta and Hamre, 2001). During Banking Time sessions, teachers engage in very specific types of behaviors and communications with the purpose of allowing the child to lead interactions. In particular, teachers narrate student behavior by describing out loud what they are doing. In addition, the teacher imitates the student's behavior, reflects back appropriate student talk, labels student feelings, and conveys nonverbal interest through such actions as smiles, nods, and gentle touches. During Banking Time, teachers are not to give commands, ask questions, criticize, or attend to activities other than those involving the target student. Finally, after several sessions, teachers are to develop relational themes that they emphasize during Banking Time sessions. Relational themes are messages about the roles that the teacher can play in the student's life and may include such things as "teachers are helpers" and "I will be here for you even when times are tough." The teacher and consultant work together to individualize themes to the specific student-teacher relationship. Resources for implementing Banking Time are available within the published STARS package that includes a manual, explicit directions on conducting Banking Time, a videotape describing the intervention and the importance of enhancing student-teacher relationship quality, and additional materials related to other portions of the STARS program (Pianta & Hamre, 2001). Currently, there is no published research examining the effectiveness of Banking Time at improving student-teacher relationships or student outcomes.

Purpose of the Current Study and Hypotheses

Given research showing that (a) early student-teacher relationships are associated with important social and academic outcomes for students, and (b) interventions aimed at improving child-adult relationships can change child behavior, Banking Time appears to be a

promising preventive intervention for children at risk for negative academic, social, and behavioral outcomes that merits further exploration. The current study was intended as a pilot test of Banking Time in order to gather initial validation for this intervention. Furthermore, it was intended to advance knowledge regarding the nature of the association between student-teacher relationship quality and student outcomes by experimentally manipulating student-teacher relationship quality for young students at risk for negative social and behavioral outcomes. In particular, the study was designed to test the following hypotheses:

Hypothesis one: Teacher behavior toward the target student will become more positive (i.e., more approving and less disapproving) following Banking Time.

Hypothesis two: Teacher behavior will become more instruction-focused (i.e., less discipline-focused) following Banking Time.

Hypothesis three: Student problem behavior will decrease following Banking Time.

Hypothesis four: Student appropriate behavior will increase following Banking Time.

Hypothesis five: Student-teacher relationship quality will improve following implementation of the Banking Time intervention.

Hypothesis six: Teachers will consider the Banking Time intervention to be acceptable and effective.

CHAPTER THREE: METHOD

Participants and Setting

School Context

An elementary school in a suburban school district serving a socioeconomically and ethnically diverse population in North Carolina was the site for this study. The district ranked among the best in the state in terms of pupil achievement and the school had earned recognition from the state as a high achieving school. At the primary level, classroom teachers had full-time classroom assistants.

Recruitment of Participants

The participants were three dyads, each consisting of a child, aged 6-7, and his classroom teacher. Participants were recruited through the multiple-step process displayed in Table 1.

Three children qualified for study participation based on the quality of their relationships with their classroom teachers as measured by teacher ratings on the Student-Teacher Relationship Scale (STRS). STRS criteria for study participation included Conflict and Dependency subscale scores at or above the 75th percentile, a Closeness score at or above the 25th percentile, and a Total Relationship score at or below the 25th percentile. This STRS profile describes angry/dependent student-teacher relationships and, although it suggests a difficult relationship, it also indicates at least a moderate level of closeness that can serve as a foundation for relationship-building (Pianta, 2001). During the study screening phase (Step 2 in Table 1), two of the three students nominated by their teachers met eligibility criteria. A third student did not meet criteria and was therefore ineligible for the study. This teacher

Table 1

Participant Recruitment Process

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- Step 1: The researchers met with three potential teacher participants to describe the purpose, procedures, and requirements for the study. The teachers also received a profile of the prototypical student predicted to benefit from the intervention (based on Pianta, 2001). All three teachers signed informed consents to participate in the study.
- Step 2: Each teacher identified one student that was likely to benefit from the intervention. During parent-teacher conferences, the teachers briefly introduced the purpose and procedures of the study to the student's parent(s) and gained permission to complete a screening measure to determine if the child qualified for the study.
- Step 3: Each teacher completed the STRS to determine if the students qualified for study participation. Qualifying criteria on the STRS included conflict and dependency subscale scores above the 75th percentile, a closeness score above the 25th percentile, and a total relationship score below the 25th percentile (based on Pianta, 2001).
- Step 4: If the student did not qualify for study participation, the teacher was asked to choose another student. After parent permission was received to complete the screening measure, the teacher completed the STRS for that student.
- Step 5: After determining that her student qualified for the study, each teacher notified her student's parent(s) and obtained informed consent for the child's participation in the study.
- Step 6: Prior to beginning the Banking Time intervention, the consultant met with each student-teacher dyad to obtain oral student assent to participate in the study.
-

identified a second student who did qualify for the study and became the third student participant.

Student-Teacher Dyads

Student-teacher dyads were randomly assigned to be Dyad One, Dyad Two, and Dyad Three. Dyad One consisted of a first grade, female, Caucasian teacher and her seven year-old, male, African American student. Student One exhibited a history of oppositional behavior that had interfered with his academic progress. He had been retained in kindergarten the previous year and, during the course of the study, received special education services for speech and motor weaknesses, and attended a specialized program (Reading Recovery) to address poor reading skills. Student One also met with the school's behavioral specialist to address behavioral goals within the school setting. Toward the end of the current study, during the post-intervention phase, Teacher One and the school's behavioral specialist implemented a comprehensive behavior management plan within the classroom.

Dyad Two included a Caucasian, female teacher of a combined second and third grade class and her African American, second-grade, seven year-old, male student. Student Two had reportedly mastered age appropriate academic skills but did not routinely produce an adequate amount of work. His teacher reported that he exhibited inappropriate behaviors and tantrums, and displayed other avoidance tactics to delay completing school work (e.g., sharpening his pencil, going to the bathroom). Student Two did not receive any services or instruction outside of his primary classroom.

Dyad Three consisted of an Asian-American, female, kindergarten teacher and her six-year-old, African American, male student. Student Three reportedly performed below

grade level academically and received special education services for weaknesses in speech and motor skills. He also received support outside the classroom with the behavior specialist.

Consultant

One consultant was involved in this study. She was an African American doctoral student in school psychology at North Carolina State University who was recruited due to her classroom training in dyadic consultation as well as her interest in gaining varied experiences with teacher consultation.

Instrumentation/Measures

Student-Teacher Relationship Scale

The Student-Teacher Relationship Scale (STRS; Pianta, 2001) is a 28-item teacher report measure intended to assess the quality of student-teacher relationships. On the STRS, the teacher rates how well each item applies to his or her relationship with a particular student on a scale from one to five where a rating of “one” indicates that it does not apply and “five” indicates that the item definitely applies. The STRS yields a Total Relationship Score as well as three subscale scores: Conflict, Closeness, and Dependency. In the present study, the STRS served as a screening measure to identify participants that qualified for the study. It was also used post-intervention to assess change in student-teacher relationship quality.

The STRS subscale and Total Relationship Scores have been found to have adequate reliability and validity. In particular, test-retest reliability has been measured at .89 for total STRS and at .88, .92, and .76 for the Closeness, Conflict, and Dependency subscale scores, respectively (Pianta, 2001). Concurrent and predictive validity have also been demonstrated by correlating STRS ratings with ratings of student behavior concurrently and in future

grades (Pianta et al., 1995). In particular, concurrently, the total relationship score on the STRS correlated $-.72$ with the Behavior Problems subscale from the Teacher-Child Rating Scale (TCRS; Hightower et al., 1986). Total relationship score on the STRS at the end of kindergarten correlated $-.56$ with scores on the TCRS in first grade (Pianta et al., 1995). Finally, construct validity was established through a factor analysis that confirmed the three-factor structure (Pianta, 2001).

Scale for Assessing Emotional Disturbance

The Scale for Assessing Emotional Disturbance (SAED; Epstein & Cullinan, 1998) is a 53-item teacher rating scale that assesses the five areas of emotional and behavioral difficulty outlined in the federal definition of Emotional Disturbance (ED). The SAED consists of seven subscales and an eighth, single-item measure. Five of the subscales address the five categories of ED qualification outlined in the U.S. Department of Education's definition of Emotional Disturbance and include Inability to Learn, Relationship Problems, Inappropriate Behaviors, Unhappiness or Depression, and Physical Symptoms or Fears. Respondents rate each behavior on a scale of "zero" to "three" with "zero" indicating that the behavior is not a problem and "three" indicating that it is a severe problem for the target student. Subscale ratings are summed and both percentiles and scaled scores with a mean of 10 and a standard deviation of three can be derived for each subscale. For the ED characteristics subscales, scores above 13 are considered significantly deviant and scores above 120 for the overall SAED quotient are considered deviant (Epstein & Cullinan, 1998). In this study, the SAED was administered pre-intervention and post-intervention as a measure of teacher-reported student problem behavior.

Reliability and validity for the SAED have been found to be adequate (Epstein & Cullinan, 1998). In particular, internal consistency reliability has been estimated above .75 for all of the subscales, with six exceeding .90. Two assessments of test-retest reliability yielded estimates of .94 and .89, respectively. Interrater reliability has been estimated at .51-.84 for the subscales and .79 for the SAED quotient. Criterion-related validity has been measured at .80 when correlated with Achenbach's (1991a) Teacher Report Form.

The Abbreviated Child Behavior Rating Form

The Abbreviated Child Behavior Rating Form (CBRF-A; Van Egeren, 1999) was developed from the Child Behavior Rating Form (CBRF; Edelbrock, 1985) to serve as a shortened, daily rating of child and adolescent behavior. Items from three subscales (Oppositionalism, Compliance/Self-control, Positive/Adaptive Social) of the CBRF-A were used to rate daily student behavior. These subscales were chosen for the current study because items are representative of both inappropriate, disruptive behaviors and appropriate, prosocial classroom behaviors. The CBRF-A was completed daily by the teachers throughout the study in order to measure teacher-reported student problem behavior (i.e., Oppositionalism subscale) and appropriate behavior (i.e., Compliance/Self-Control subscale; Positive/Adaptive subscale).

The scales of the CBRF-A were developed based on a confirmatory factor analysis (Van Egeren, 1999). Internal consistency reliability is adequate for each subscale, with alpha coefficients of .90, .95, and .91 for the Oppositionalism, Compliance/Self-Control, and Positive/Adaptive Social scales, respectively. Concurrent validity (Van Egeren, 1999) was established by correlating CBRF-A subscale scores with those of the Child Behavior Checklist (CBCL; Achenbach, 1991b). In particular, scores on the Oppositionalism subscale

correlated positively with scores on the CBCL Aggressive Behavior ($r = .29$), Attention Problems ($r = .19$), Externalizing ($r = .28$), Internalizing ($r = .19$), and Thought Problems ($r = .22$) subscales, and negatively with the Somatic Complaints subscale ($r = -.26$). The Compliance/Self-Control subscale correlated positively with the CBCL Somatic Complaints subscale ($r = .25$) and negatively with the Aggressive Behavior ($r = -.26$), Delinquent Behavior ($r = -.28$), Attention Problems ($r = -.28$), Externalizing ($r = -.30$), and Thought Problems subscales ($r = -.29$). Finally, the Positive/Adaptive Social subscale correlated negatively with the Delinquent Behavior ($r = -.23$), Attention Problems ($r = -.20$), and Thought Problems ($r = -.20$) subscales of the CBCL. Though these correlations are relatively low, the investigators for this study determined them to be adequate because one expects only moderate correspondence between a measure of daily or “state” behavior (i.e., CBRF-A) and a measure of traits, or long-term psychological functioning (i.e., CBCL).

Classroom Observations

All classroom observational data were collected using the Mainstream Version of the Code for Instructional Structure and Student Academic Response (MSCISSAR), a component of the Ecobehavioral Assessment Systems Software (EBASS; Greenwood, Carta, Kamps, & Delquadri, 1995) which is a computerized classroom observation system that has been used extensively in classroom research (e.g., Greenwood, Arreaga-Mayer, & Carta, 1994). The student variable category includes three subcategories (i.e., Academic Response, Task Management, Competing Response) and 21 events. Of particular interest in the current study was the frequency of inappropriate behaviors (i.e., “Competing Responses” including “Aggression,” “Disrupt,” “Talk Inappropriate,” “Looking Around,” “Noncompliance,” “Self-stimulation,” and “Self-abuse”) and appropriate behaviors (i.e., “Academic Responses”

including “Writing,” “Task Participation,” “Reading Aloud,” “Reading Silently,” and “Talking Academically” and “Task Management” behaviors including “Raising Hand,” “Playing Appropriately,” “Manipulating Materials,” “Moving,” “Talk Management,” and “Attention”) emitted by the target students. The teacher variable category includes five subcategories (i.e., Teacher Definition, Teacher Behavior, Teacher Approval, Teacher Focus, Teacher Position) and 36 events. Most relevant to the current study was frequency of instruction-focused versus disciplinary teacher behaviors. Teacher behaviors that were both academic (i.e., “Question Academic,” “Command Academic,” “Talk Academic,” “Nonverbal Prompt,” “Attention,” “Reading Aloud,” and “Singing”) and management-oriented (i.e., “Question Management,” “Command Management,” and “Talk Management”) were considered to be promoting instruction and suggestive that disciplinary problems were not interfering with learning time. In order to determine the value for each of these variables, the percent occurrence of all relevant subcategories was summed for each observation.

Interrater reliability for the MSCISSAR taxonomy was reported by the program authors to be 90% for observations of students with both learning disabilities and autism (Greenwood et al., 1995). Reliability of these observations was also determined for the current study and is reported within the “observer training” portion of the procedure section. Validity of the instrument has been established in several studies that have correlated student academic responding with both achievement gains (using standardized measures of achievement) and effective instructional procedures (Greenwood et al., 1994).

Behavior Intervention Rating Scale (BIRS)

The Behavior Intervention Rating Scale (BIRS; Elliott & Treuting, 1991) is a 24-item measure of social validity, or perceived acceptability and effectiveness of an intervention.

The BIRS may be used to measure consumer satisfaction in the areas of acceptability and effectiveness after either implementing an intervention firsthand or after reading about it. Consumers, in this case teachers, rated each of 24 items on a scale from one to six, with one indicating strong disagreement and six indicating strong agreement. Adequate internal consistency reliability was demonstrated through strong coefficient alphas of .97 for total BIRS and alphas of .97, .92, and .87 for the Acceptability, Effectiveness, and Time factors, respectively. The BIRS also has adequate validity. In particular, factor analysis confirmed that the scale was assessing three dimensions: treatment acceptability, effectiveness, and time to effectiveness (Elliott & Treuting, 1991). Concurrent validity has been measured at .86 when correlated with scores on the Semantic Differential (Osgood, Suci, & Tannenbaum 1957; Von Brock & Elliott, 1987). The BIRS was completed by the teachers post-intervention to assess their perceptions of the effectiveness and acceptability of the Banking Time intervention.

Banking Time Integrity Checklist

A checklist used to assess the integrity of the Banking Time intervention (see Appendix A) was developed by the primary investigator based on guidelines in the “Banking Time Basics for Teachers” publication by Pianta and Hamre (2001). This checklist was used by the consultant when training the teachers to conduct the intervention. A revised version of this form was also used as an integrity checklist to monitor the implementation of the intervention during the study. The original checklist was modified for this purpose to include only those behaviors that could be monitored through audiotape, the method considered to be the most manageable and unobtrusive during the actual intervention (see Appendix B).

Intervention

The Banking Time intervention was designed to operate within a consultation system whereby each intervention effort includes one consultant, one teacher, and one student (Pianta & Hamre, 2001). This intervention was published in 2001 by Pianta and Hamre, as a portion of a somewhat more complex intervention for improving student-teacher relationships, *Students, Teachers, and Relationship Support (STARS)*. The Banking Time manual provides specific materials and procedures for carrying out the intervention. In particular, Banking Time sessions are recommended to take place between a teacher and student for ten to fifteen minutes, two or more times per week. During Banking Time sessions, teachers engage in very specific types of behaviors and communications with the purpose of allowing the child to lead interactions. In particular, teachers narrate student behaviors by describing out loud what they are doing. In addition, the teacher imitates the student's behavior, reflects back appropriate student talk, labels student feelings, and conveys nonverbal interest through smiles, nods, gentle touches, etc. Simultaneously, teachers refrain from giving commands, asking questions, criticizing, and attending to activities other than those involving the target student. After several sessions, teachers begin to develop relational themes that they emphasize in their Banking Time narratives. Relational themes are messages about the roles that the teacher can play in the student's life and may include such things as "teachers are helpers" and "I will be here for you even when times are tough." Table 2 provides specific examples of behaviors and statements that would be characteristic of a teacher implementing Banking Time.

Table 2

Examples of Teacher Behaviors During Banking Time

Goal	Student's Behavior	Teacher's Response
Narrate student's behavior	Stacking many blocks on top of each other	State, "You are making a tall tower."
Imitate student's behavior	Drawing a picture of a dog	Draw a picture of a dog
Reflect student's speech	States, "I'm matching" while sorting geometric shapes	States, "You're trying to match the shapes with each other."
Label student's feelings	States in an enthusiastic tone of voice, "I got this at the arcade when I went with my brother."	States, "You had fun at the arcade and it makes you feel happy to think about it."
Express relational theme that "teachers are helpers"	Student is having difficulty completing a portion of a puzzle	States, "I can help you with that" and joins in with the work.

Design

A multiple baseline design across participants was used for this study. Student-teacher pairs were randomly assigned to be “Dyad One,” “Dyad Two,” and “Dyad Three,” labels that determined their order of treatment initiation. Baseline data were collected on all participants prior to intervention. Data collection continued as the dyads began the intervention in a staggered order (see Figure 1 for a diagram of the multiple baseline procedure). The initial baseline phase lasted for two weeks, after which Dyad One began the intervention. Two weeks later, Dyad Two began the intervention. Finally, one week later, Dyad Three began Banking Time. Data were collected for a total of 12 Weeks, though the study did not run uninterrupted due to both scheduled school breaks and unscheduled, missed school days that resulted from inclement weather. Because these circumstances are common in schools, treatment implementation in the current study was considered to approximate what is feasible in the typical school setting.

The advantage of the multiple baseline design for small-n research is its ability to demonstrate experimental control over the dependent variable when changes in the target behavior occur for each participant only following intervention implementation. The lagged intervention across participants also controls for maturation, history, and other potential confounding variables (Kazdin, 1994).

The independent variable in this study was Banking Time. As part of the multiple baseline design, all participants received this treatment. The study examined the impact of the intervention on four domains of student and teacher functioning (a) student-teacher relationship quality, (b) teacher instructional behavior, (c) student appropriate behavior, and

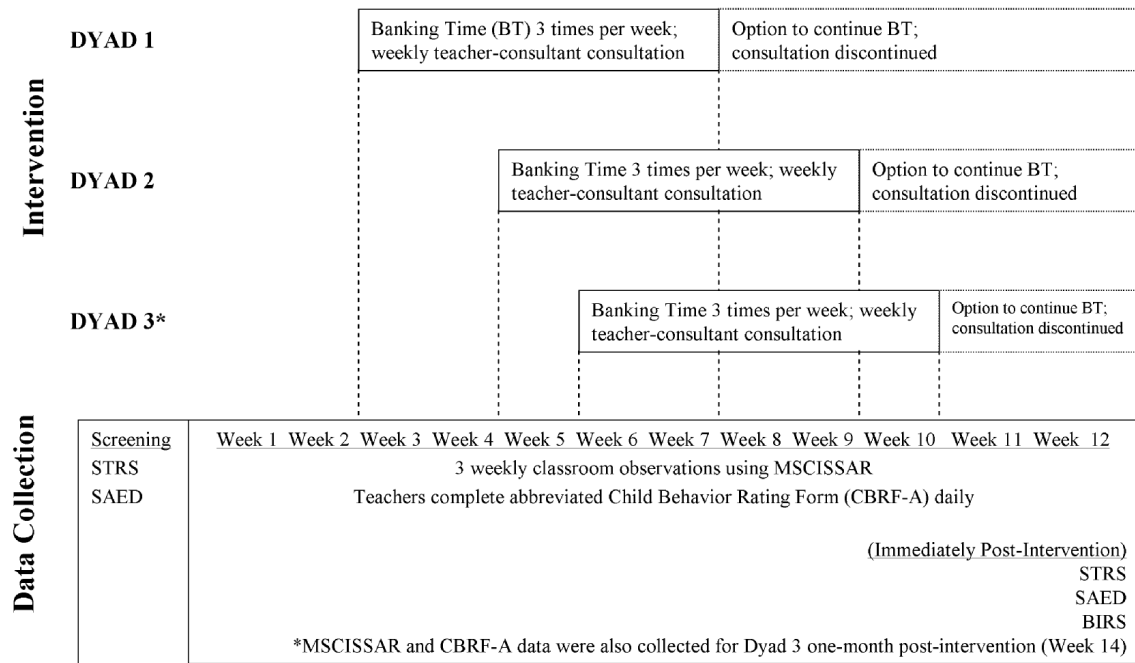


Figure 1. Intervention and Data Collection Timeline.

(d) student inappropriate behavior. In addition, teacher perceptions of the acceptability and effectiveness of Banking Time were gathered post-intervention.

Procedure

Observer Training

Three observers, two undergraduate research assistants and the primary investigator for this study, all completed training to carry out direct classroom observations using the MSCISSAR observation system following the training procedures outlined in the observation manual (Greenwood et al., 1995; see Appendix C for an outline of training components). To summarize, the observers learned the operational definitions of student and teacher behaviors, practiced recording “mock” classroom situations on the computer (with greater than 90% mastery), and calibrated to a training tape in order to test their agreement with the developer (greater than 90% overall agreement). They then conducted live practice observations in elementary school classrooms with less than 2% missing data. In order to ensure interrater reliability, each assistant conducted observations with the primary investigator until the training criteria, at least 80% agreement on each of the eight coded categories and a mean percent agreement of at least 90%, were reached. In particular, prior to data collection, mean interobserver agreement across the eight categories was 96% (range of 90%-100%; kappa of .90) and 93% (range of 84% to 100%; kappa of .76) for the two research assistants.

These three observers conducted the observations during the three phases of the study. The two undergraduate research assistants who were blind to the timing of the intervention implementation conducted the majority of the observations. In addition, the primary investigator conducted a portion (20 out of 84 or 24%) of the actual classroom

observations herself. Interrater reliability was established between the primary investigator and the research assistants on 15 out of 84, or 18%, of the classroom observations. The mean percent agreement across the eight coded categories for all observations was 92.3% (kappa of .80). Reliability was monitored weekly in order to enable retraining if the kappa fell below .70. Following a short delay between training and data collection, the reliability for the first three observations (one per dyad) did fall below .70, after which the assistants received retraining. After this booster session, the mean percent agreement rose to 93.8% (kappa of .846) for the remaining observation sessions. Because low reliability was present for only one observation for each dyad, it was not believed to have significantly altered the results.

Teacher Training

Each teacher underwent training in Banking Time during three to four individual sessions with the consultant, a doctoral student in school psychology who was supervised by the primary investigator. First, the consultant provided each teacher with the “Banking Time Basics for Teachers” packet (Pianta & Hamre, 2001), orally reviewed the major components of Banking Time, and presented a training video of an adult and child engaged in Banking Time. This video was created by the primary investigator based on Pianta and Hamre’s (2001) description of Banking Time. During subsequent sessions, the consultant and teacher engaged in a practice Banking Time session with the consultant acting as the teacher and the teacher acting as a student. As each teacher became more comfortable with the procedures, the teacher and consultant continued to practice Banking Time, with the teacher leading Banking Time and the consultant role-playing as a student. The consultant provided feedback and the teacher and consultant again practiced Banking Time. A criterion checklist (see Appendix A) was consulted to determine each teacher’s competency at carrying out Banking

Time, and training continued until each teacher demonstrated these criteria. In order to ensure integrity during the teacher training phase, the consultant completed a checklist (see Appendix D) of the training components.

As the final component of the training phase, the consultant and teacher generated a plan for the teacher to carry out Banking Time with the target student by choosing three days and times that were available consistently each week, identifying an appropriate setting for the sessions, and selecting potential activities and materials to be used during Banking Time.

Due to uncontrollable, pragmatic factors that are common within a school setting, the duration of training sessions was sometimes shortened, leading to an increase in the total number of sessions needed. Therefore, the training components were not always carried out on the assigned training days, as displayed by the checklist in Appendix D; however, each component was covered prior to treatment implementation.

Implementation of the Intervention

The intervention phase was introduced to the first dyad in week three, to the second dyad in week five, and to the third dyad in week six. After carrying out Banking Time with her student for two weeks, each teacher began to focus on a particular relational theme during subsequent sessions. Each teacher identified one theme that was particularly appropriate for her student. Teacher One identified the theme, “This is a safe and consistent environment.” Teacher Two focused on the theme, “I am interested in you.” Teacher Three communicated the theme, “You have competencies and strengths.”

The consultant met weekly with each of the three teachers during the baseline and intervention phases. As noted earlier, these meetings were approximately 30 to 60 minutes in duration each week during the baseline period to train them on the Banking Time procedures.

She then continued to meet with each of the teachers for 15 to 30 minutes weekly during the intervention phase. The primary purpose of these meetings was to problem solve any difficulties that occurred with the intervention. Examples of problems reported by the teachers included minimal talking by one student during Banking Time sessions, teacher difficulty refraining from asking questions, and the challenge of coordinating Banking Time sessions into the school day. After the first two weeks of the intervention, the consultant also helped the teachers to identify the relational themes that they incorporated into their sessions. Each week during the intervention phase, the consultant also provided feedback to the teachers about their performance at carrying out Banking Time based on the results of the treatment integrity monitoring by the primary investigator (see below). The consultant did not meet with the teachers during the post-intervention phase.

Data Collection

Baseline data collection began shortly after teacher training was started. During the baseline and intervention phases, direct observations of teacher and student behaviors were made using the MSCISSAR program approximately three times weekly during a consistent 30-minute time interval. Daily teacher ratings of student behaviors were also recorded via the CBRF-A. Data collection of student and teacher behaviors using the MSCISSAR and of student behavior using the CBRF-A continued for several weeks following the conclusion of the intervention phase for each dyad. In particular, post-intervention data were collected for five weeks for Dyad One, for three weeks for Dyad Two, and for two weeks for Dyad Three. Additional follow-up data were collected two weeks later, or four weeks post-intervention, for Dyad Three. Initially, the researchers had planned to collect data four weeks post-intervention for Dyad Two, as well, but Teacher Two began a planned leave of absence

before this could be accomplished. Follow-up data collection was not required for Dyad One because continuous post-intervention data collection spanned the full one-month follow-up period. Immediately following the conclusion of the intervention phase for each dyad, the teachers also completed the STRS, the SAED, and the BIRS. (See Figure 1 for a summary of the data collection and intervention implementation procedures.)

Treatment Integrity

All Banking Time sessions were audiotaped and the content of the teachers' conversations was evaluated using the Banking Time criteria checklist (see Appendix B) to ensure that the training criteria were met throughout the intervention. The criteria checklist included four behaviors that the teachers were trained to avoid and three sets of behaviors that they were taught to exhibit, for a total of seven observable criteria. Integrity of a particular session was determined by calculating the percent of criteria that were met out of a total of seven. The primary investigator coded each of the 36 Banking Time sessions. In addition, one research assistant coded eight sessions in order to establish interrater reliability for the Banking Time integrity. Interrater agreement was strong, with a mean agreement of 95 percent.

Teacher One's mean treatment integrity score was 80% (range of 57-100%) across her twelve Banking Time sessions. Most frequently, she strayed from Banking Time criteria by asking questions and, to a lesser extent, commanding or leading her student's behavior. Several times she also exhibited too little narration, or too few instances of describing her student's behavior, to earn credit for that criterion.

Teacher Two's mean treatment integrity score was 83% (range of 57-100%) across the eleven Banking Time sessions that were coded (She forgot to record one session).

Teacher Two also tended to have difficulty refraining from asking questions, though she did so fairly infrequently and generally in order to clarify something that was said by her soft-spoken student. She also sometimes exhibited too little narration of her student's behavior to earn credit for that criterion.

Teacher Three's mean treatment integrity score was 89% (range of 71-100%) across the thirteen Banking Time sessions that she completed. This teacher tended to provide praise statements more frequently than is suggested for this method (i.e., a maximum of one time per minute). She also asked questions of her student during several sessions, therefore failing to meet the criterion that she avoid all question-asking. Also noteworthy was Student Three's very quiet nature that provided few opportunities for his teacher to "reflect" back the content of his conversation. Because she had no impetus for reflecting in three of the sessions, the integrity of her behavior was computed based on her performance on the other six criteria.

The primary investigator coded the audiotapes weekly in order to provide frequent feedback to the consultant regarding each teacher's strengths and weaknesses at carrying out Banking Time. During their meetings throughout the intervention phase, the consultant shared this information with the teachers and, as necessary, gave them suggestions for improving their performance during Banking Time sessions.

CHAPTER FOUR: RESULTS AND DISCUSSION

In keeping with the multiple baseline design of the present study, extensive data were collected on each of the three student-teacher dyads. Of primary interest are the time series data for each dyad which were analyzed using two methods, visual analysis and the ITSACORR statistical procedure. ITSACORR is an interrupted time series analysis designed for short data series (Crosbie, 1993). Time series data frequently have significant degrees of autocorrelation among observations that violate the independence of observations assumption required for most parametric analyses. ITSACORR estimates autocorrelation within a data series and controls for it, thus controlling Type I error. ITSACORR yields an F-test for overall change as well as t-tests for changes in slope and intercept.

It was hypothesized that changes in aspects of teacher behavior, student behavior, and student-teacher relationship quality would occur following the Banking Time intervention. Most of the variables were measured continuously throughout the study and others were measured only pre-intervention and post-intervention. For the time series data, it was initially hypothesized that significant changes from baseline values would result during the intervention, post-intervention, and one-month follow-up phases. Due to practical factors that interfered with follow-up data collection for one of the three dyads (i.e., maternity leave for Teacher Two), and efforts to improve power, the post-intervention and one-month follow-up data were collapsed when compared to the baseline data. It was hypothesized that the variables measured through pre- and post-testing would improve to within normal limits following the intervention.

A multiple baseline across participants design consists of multiple case studies that are carried out sequentially to demonstrate experimental control (Kazdin, 1994). Typically,

the results of a study using a multiple baseline across participants design are examined by looking at a graph that displays changes in a specific target behavior or set of behaviors in question across all participants. The intervention is considered effective if the target behavior changes when the intervention is implemented, provided that experimental control is shown. That is, the changes in the target behavior should only occur in response to the intervention. If extraneous factors are responsible for the change in the target behavior, then changes seen in some of the participants would occur independent of implementation of the intervention, or there would be no change in the target behavior when the intervention was implemented for some of the participants (Kazdin, 1994).

Using the traditional reporting format, the results of the present study relevant to each hypothesis would be presented sequentially, with those results displayed as a single graph depicting the changes in a particular target behavior across study phases for all three dyads. However, such a presentation format, by its partitioning of the results hypothesis-by-hypothesis rather than by dyad-by-dyad, makes the impact of the intervention on individual participants harder to discern and the discussion of factors relevant to the results for individual dyads somewhat disjointed. Therefore, this chapter is organized in a less traditional format. It begins with a presentation of results for each dyad, hypothesis-by-hypothesis, and a brief discussion of the results for the dyad. The presentation of outcomes for individual dyads is followed by a broader analysis of the results in terms of the multiple baseline design. A general discussion of findings is presented in Chapter Five.

Dyad One

Dyad One consisted of a first grade, male student and his female teacher. Figures 2-5 display observational and teacher rating results related to teacher approval behavior, teacher

instructional behavior, student appropriate behavior, and student inappropriate behavior for the baseline, intervention, and post-intervention phases for Dyad One. Figure 6 depicts results related to student-teacher relationship quality pre- and post-intervention for this dyad.

Teacher Behavior Will Become More Positive Following Banking Time

Observational data regarding teacher approval for Dyad One are displayed in Figure 2. It was predicted that the percent of intervals in which the teacher expressed “disapproval” toward the target student would decrease and the percent of intervals in which she expressed “approval” toward her student would increase following Banking Time. This hypothesis was not confirmed. Across all conditions, Teacher One rarely expressed approval or disapproval toward the student. In most of the intervals observed, Teacher One’s actions were coded as expressing “neither approval nor disapproval.” This situation was not unique to this dyad and, as a result, statistical analysis was not completed to address this question for any dyad.

Teacher Behavior Will Become More Instruction-Focused Following Banking Time

Observational data regarding teacher instructional behavior for Dyad One are also displayed in Figure 2. Visual analysis indicated that this teacher displayed instructional behavior during a relatively high percentage of the observation intervals throughout the baseline period. This level appeared to remain stable during the intervention and post-intervention phases, and did not increase or decrease noticeably. Statistical analysis using ITSACORR yielded findings consistent with the results of the visual analysis. Teacher behavior did not become more instruction-focused during Banking Time or following the intervention. The results, therefore, do not support the hypothesis that teacher behavior would become more instruction-focused following Banking Time. Because Teacher One entered the baseline phase exhibiting a very high rate of instructional behavior, a ceiling

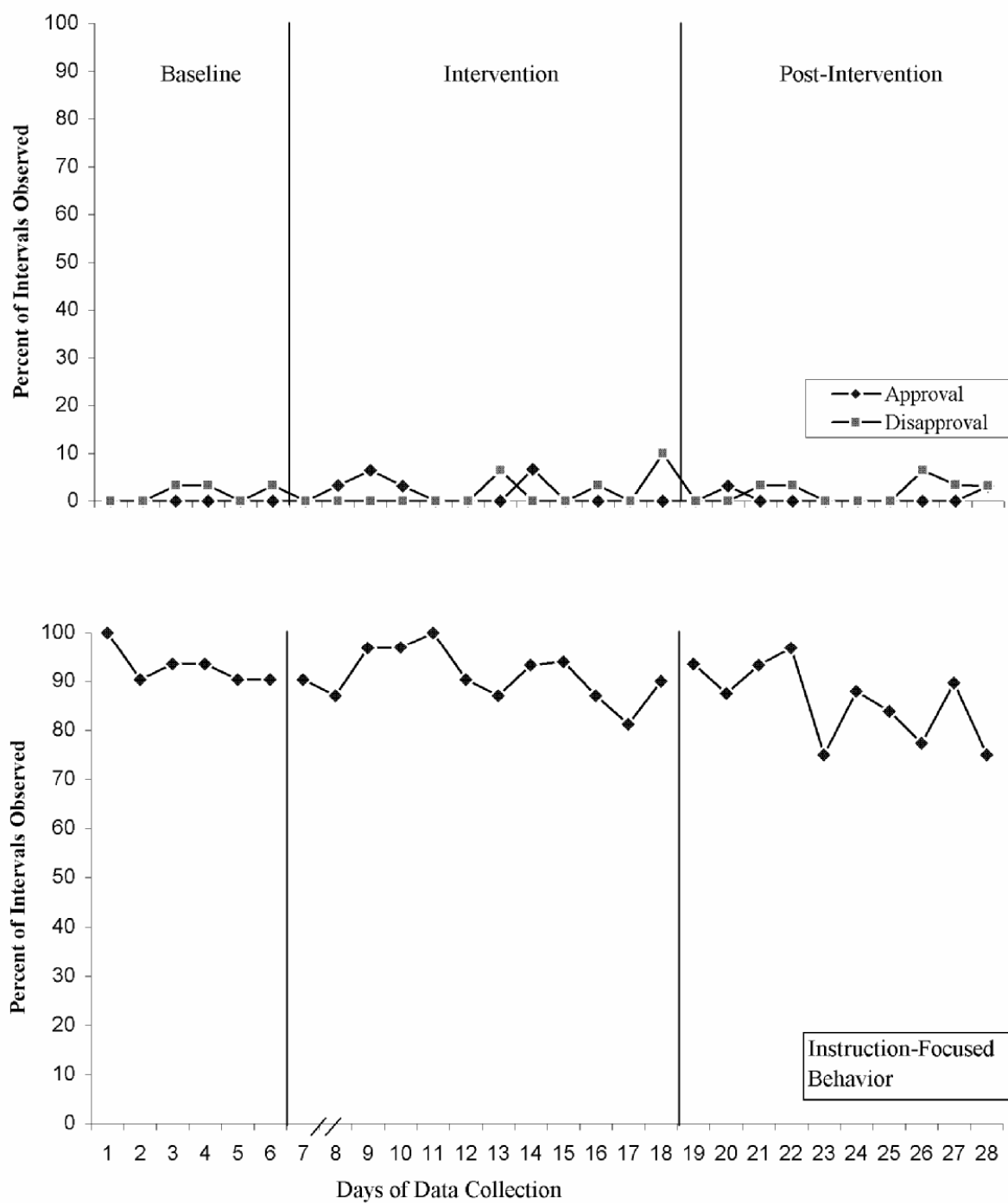


Figure 2. MSCISSAR observational data of Teacher One's approval, disapproval, and instruction-focused behavior.

effect may have occurred such that rate of instructional behavior could not have improved considerably.

Inappropriate Student Behavior Will Decrease Following Banking Time

MSCISSAR Observation

Figure 3 displays percent of intervals in which the student exhibited inappropriate behavior as measured through the MSCISSAR direct observations. Student One exhibited a relatively high rate of inappropriate behavior during baseline, with inappropriate behavior recorded in 16% to 58% of the intervals observed. This student was sick and left school with the flu and a fever on the first day after the intervention was begun, on the seventh observation day. Because his behavior seemed to be associated with his illness, this data point was omitted from the ITSACORR analysis, as depicted by a dashed line on Figure 3. Visual inspection did not suggest a significant change in problem behavior during the intervention and post-intervention phases. Similarly, statistical analysis failed to indicate significant changes in inappropriate behavior between the baseline and intervention or post-intervention phases.

Daily Teacher Report

Student problem behavior, as measured by teacher ratings on the CBRF-A Oppositionalism subscale, is depicted in Figure 4. Across baseline, intervention, and post-intervention phases of the study, Student One exhibited marked variability in his behavior. Neither visual analysis nor statistical analysis supported the hypothesis that problem behavior would decrease following implementation of Banking Time.

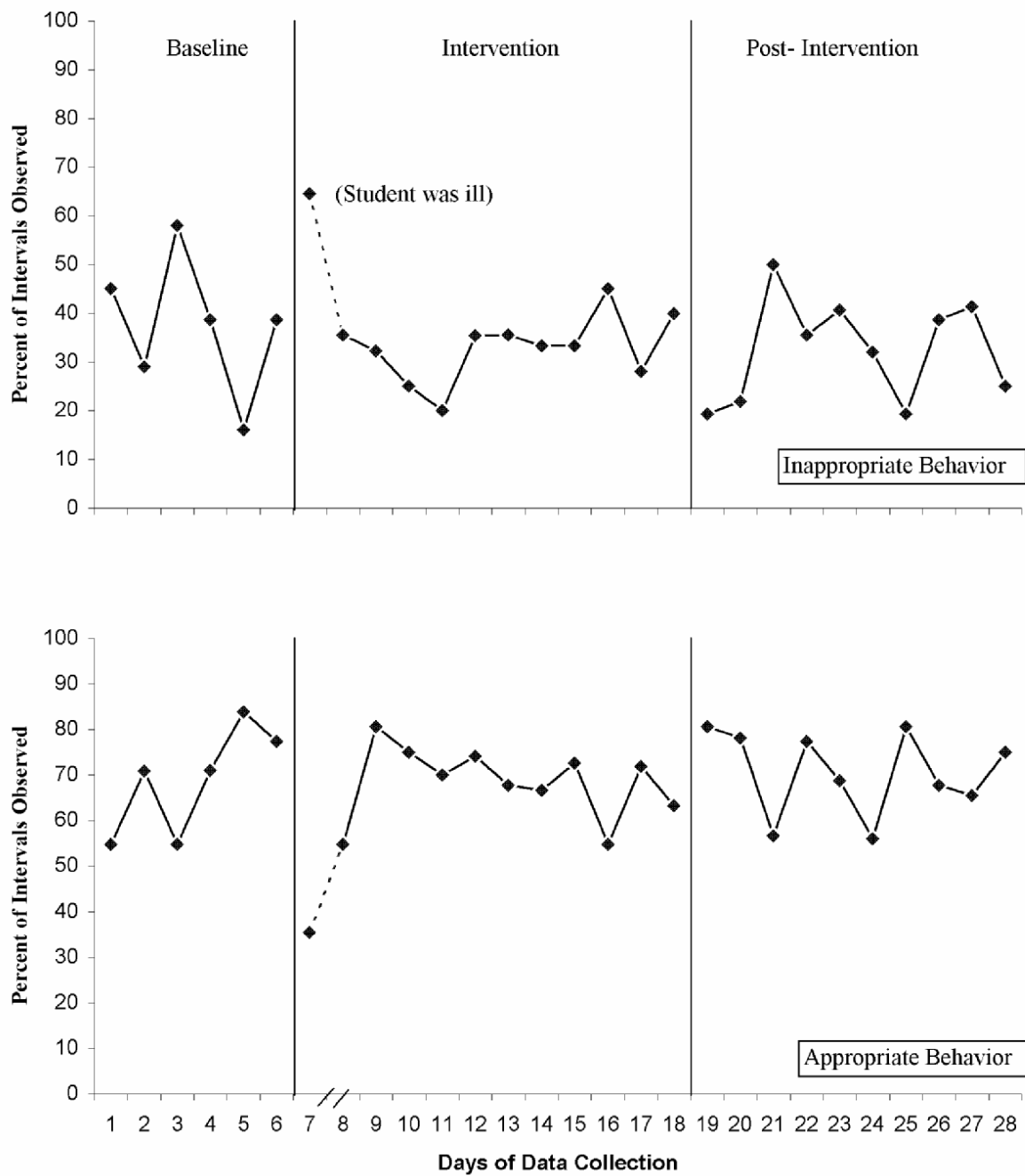


Figure 3. MSCISSAR observational data of Student One's inappropriate and appropriate behavior.

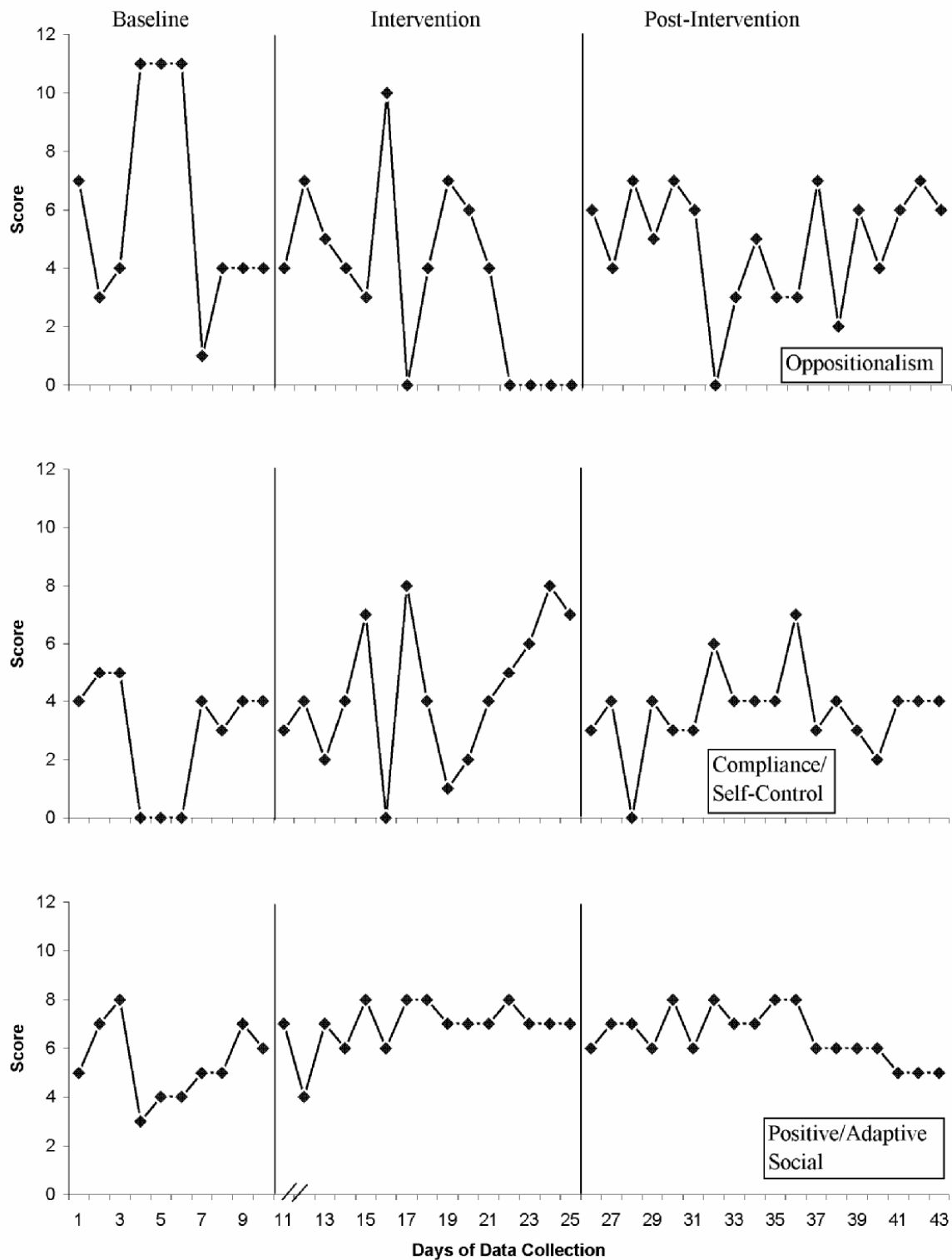


Figure 4: Scores for Dyad One on the *Abbreviated Child Behavior Rating Form* (CBRF-A).

Pre-Post Teacher Report

Figure 5 displays teacher-reported pre- and posttest scores on the SAED for Student One. Prior to intervention, Student One demonstrated problem behaviors, or indicators of emotional disturbance, at a level that was one standard deviation above the mean for his age. Following Banking Time, the teacher's ratings indicate that problem behaviors increased by nearly one-half of a standard deviation. This student's problem behaviors were therefore persistent, and perhaps worsening, over the course of the study.

Appropriate Student Behavior Will Improve Following Banking Time

Daily Teacher Report

Student appropriate behavior, as measured by teacher ratings on the CBRF-A Compliance/Self-Control and Positive/Adaptive Social subscales are represented by Figure 4. Visual inspection of Figure 4 indicated significant variability in this student's compliance during baseline. Compliance continued to be variable during the intervention and post-intervention phases and did not appear to improve substantially. Results of ITSACORR were consistent with the visual inspection and did not support the hypothesis that compliance would improve during the intervention or post-intervention phases.

Visual inspection of Figure 4 indicated that Student One demonstrated a moderate to high level of positive/adaptive social behaviors during the baseline period. The student's positive behaviors appeared to remain relatively stable during the intervention and post-intervention phases. Statistical analyses were consistent with the visual analysis and did not indicate significant changes between the baseline and intervention or post-intervention phases.

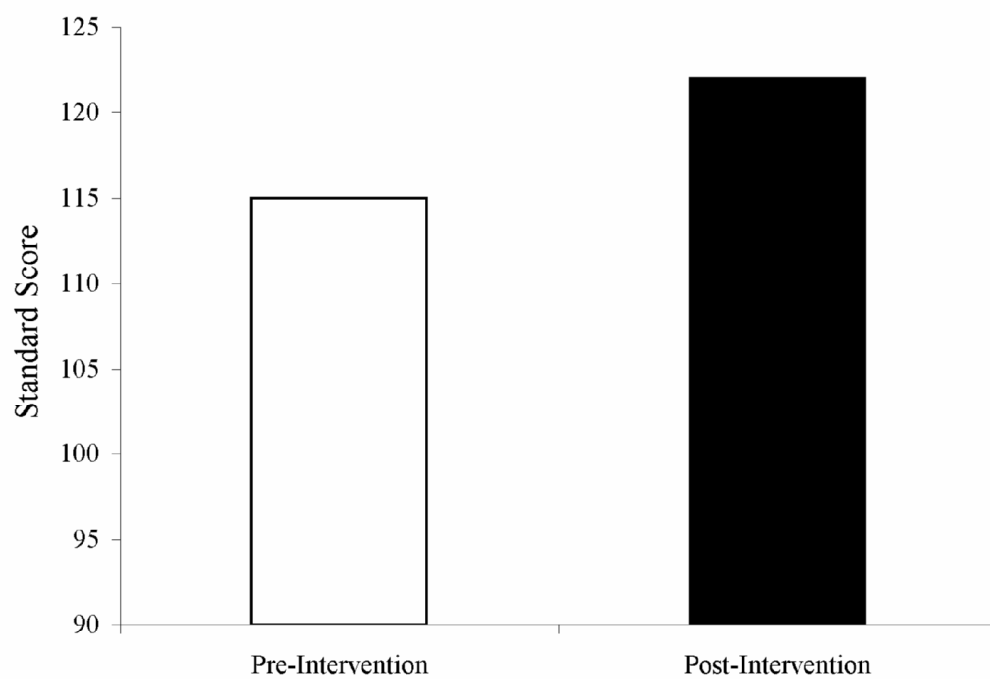


Figure 5. Pre-intervention and post-intervention scores on the *Scale for Assessing Emotional Disturbance (SAED)* for Student One.

MSCISSAR Observation

Figure 3 depicts percent of intervals that Student One was determined to be engaged in appropriate behavior during the direct classroom observations. Visual inspection showed that Student One's appropriate behavior seemed to improve somewhat during the baseline period. As described above, data regarding this student's behavior on the seventh observation day was omitted from the ITSACORR analysis due to his illness. Following that day, he exhibited a relatively high percentage of on-task behavior during both the intervention and post-intervention periods, though this behavior did not seem to represent a significant improvement from his baseline level functioning. Statistical analyses were consistent with visual inspection and did not indicate significant differences in appropriate behavior between the baseline and intervention or post-intervention phases.

Student-Teacher Relationship Quality Will Improve Following Banking Time

Because the STRS was not designed for frequent administrations, these results were compared pre- and posttest for each student. Figure 6 depicts pre- and posttest STRS scores on the Conflict, Dependency, and Closeness subscales and the Total Scale score for Dyad One. Prior to the beginning of the study, Student One demonstrated very high Conflict and Dependency scores, well above the 75th percentile, a low Total Relationship score, below the 25th percentile, and a moderate Closeness score, greater than the 25th percentile. At posttest, teacher ratings were similar. There was not evidence that the intervention improved the student-teacher relationship quality for this dyad.

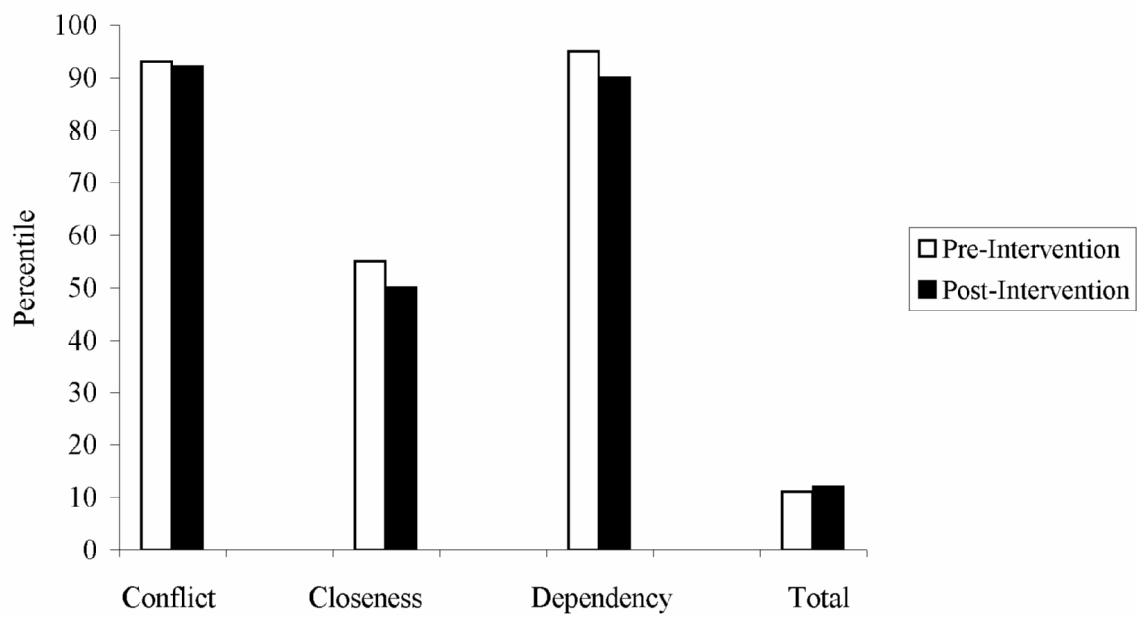


Figure 6. Pre-intervention and post-intervention scores on the Student-Teacher Relationship Scale (STRS) for Dyad One.

Teachers Will Consider the Intervention to be Effective and Acceptable

Table 3 displays teacher ratings on the BIRS. Teacher One's scores on both the acceptability and effectiveness scales fell below four, indicating that she did not find the intervention to be acceptable or effective for her student.

Conclusion for Dyad One

None of the hypotheses were confirmed for this dyad; thus, there is no evidence that Banking Time was effective at improving teacher behavior, student appropriate or inappropriate behavior, or student-teacher relationship quality for this student-teacher dyad. After examining the notes about the intervention implementation and data collection, there seem to be several possible explanations for this dyad's pattern of results. This teacher was highly skilled at managing classroom behavior problems and, even so, Student One's behavior stood out as much more challenging and inappropriate than that of his classmates. Although Banking Time is intended to be used with students who have poor teacher relationships, most of whom have problem behavior, perhaps the severity of his difficulties was too great to be significantly affected by this intervention. Alternately, the intensity of the intervention as implemented in this study may have been too weak. In particular, the 10-15 minute sessions, three times per week, for four weeks may not have been powerful enough to change the student's behavior. Perhaps longer, more frequent sessions would have produced better results.

It is also interesting to consider that Student One's behavior was highly variable throughout the study, seemingly very appropriate and compliant on some days and highly inappropriate other days. Interviews with the teacher by the consultant and the primary investigator did not reveal a pattern to his behavior that could be linked to factors that

Table 3

Teacher-Reported Effectiveness and Acceptability of Banking Time for Dyad One on the Behavior Intervention Rating Scale (BIRS)

Effectiveness Score	Acceptability Score
1.1	3.8

occurred within the school setting. Rather, it was reported that this student experienced significant challenges at home and his misbehavior seemed to be more closely related to events at home than any contingencies operating in the classroom. Theoretically, Student One's negative home situation made him an appropriate candidate for a relationship-building, school intervention because of his minimal opportunity for adult support outside of school (Pianta, 1999). However, when powerful, negative factors exist outside of school, it becomes questionable if actions that occur during the school day can significantly counteract them. This issue will be discussed further in the general discussion in Chapter Five.

Finally, it is important to consider treatment integrity for this dyad. Teacher One experienced some difficulty learning the Banking Time techniques, particularly changing her behavior to enable Student One to lead their interactions. Despite weekly feedback on her behavior during Banking Time sessions, she sometimes asked questions and made other statements to direct Student One's actions. Results may have been more positive if the intervention had been carried out with greater fidelity.

Dyad Two

Dyad Two was composed of a second grade, male student and his female teacher who instructed a combined second and third grade class. Figures 7-10 display observational and teacher rating results related to teacher approval behavior, teacher instructional behavior, student appropriate behavior, and student inappropriate behavior across the baseline, intervention, and post-intervention periods for Dyad Two. Figure 11 displays teacher-reported student-teacher relationship quality pre- and post-intervention for this dyad.

Teacher Behavior Will Become More Positive Following Banking Time

Figure 7 displays observational data regarding teacher approval for Dyad Two. As explained above, this hypothesis could not be addressed for any of the three dyads because restricted range was present in the variable used to measure positive teacher behavior. In particular, 96% of Teacher Two's behaviors were coded as "neither approval nor disapproval," leaving very few instances of behaviors that were coded as "approval" or "disapproval."

Teacher Behavior Will Become More Instruction-Focused Following Banking Time

Observational data regarding teacher instructional behavior are displayed in Figure 7. During the baseline period, Teacher Two's behaviors were coded as instructional for a high percentage of the observation intervals. She continued to demonstrate a high percentage of time engaged in instructional activities during the intervention and post-intervention phases, though her time engaged in instruction dropped below 50% during several sessions. An unusual circumstance explained one of these drops. During the 24th day of observing, the class worked on a Language Arts assignment in a computer lab that was divided by a partition such that half of the class worked on one side and half worked on the other side. The observers positioned themselves to enable constant observation of the target student. This position did not, however, enable consistent view of the teacher, as she spent some class time assisting students on the other side of the partition. Though she was likely engaged in instructional behavior during many of these intervals, per MSCISSAR definition, she was coded as being "out of the room" and, therefore, not engaged with students. Because the teacher's instructional behavior was not adequately recorded on this day, the data point was

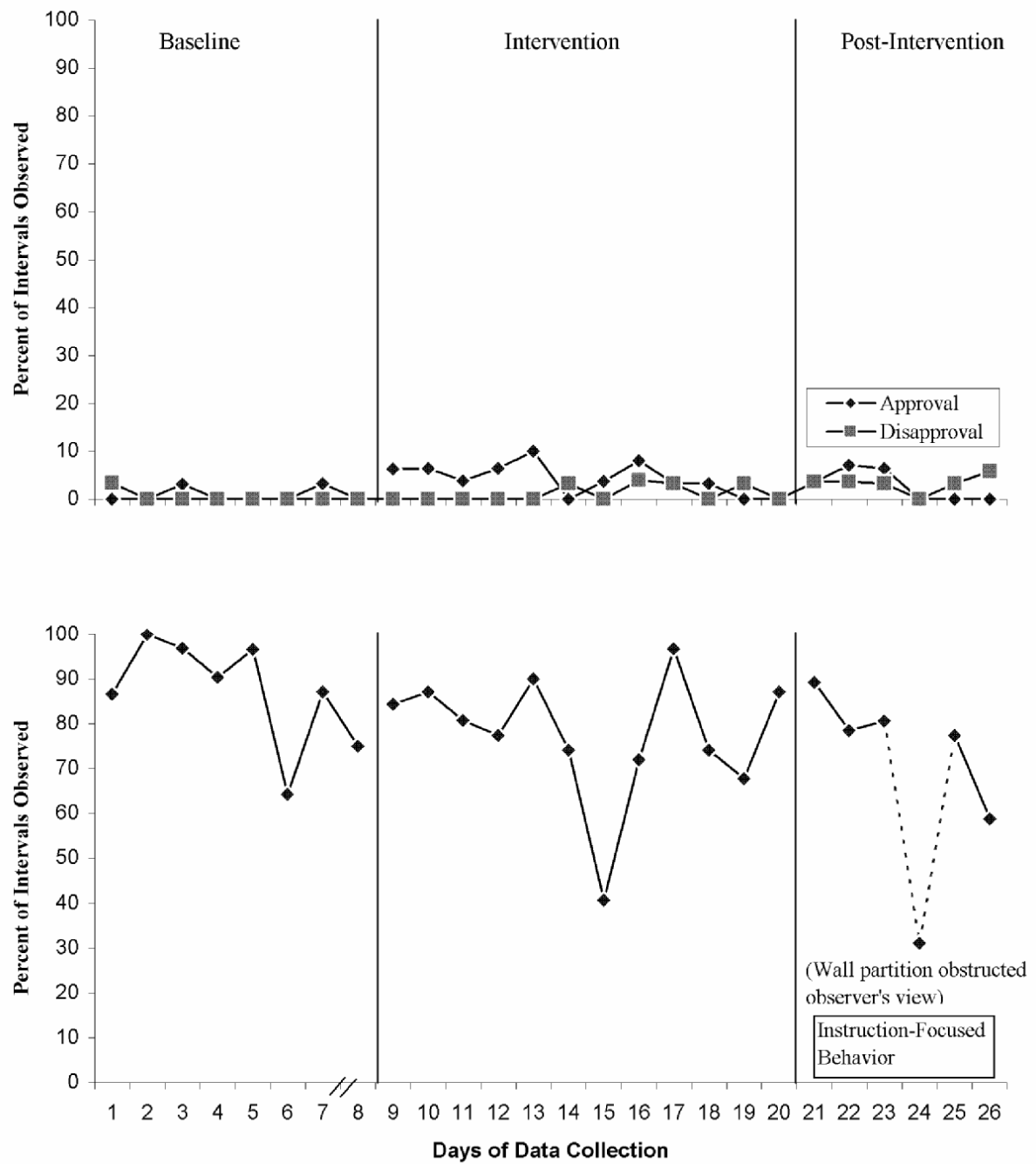


Figure 7. MSCISSAR observational data of Teacher Two's approval, disapproval, and instruction-focused behavior.

omitted from the ITSACORR analysis, as indicated by a dashed line on the figure. Overall, neither visual analysis nor statistical analysis of Teacher Two's instructional behavior supported the hypothesis that instructional behavior increased following Banking Time.

Inappropriate Student Behavior Will Decrease Following Banking Time

MSCISSAR Observation

Figure 8 displays percent of intervals that the student was considered to be engaged in inappropriate behavior during the direct observations. Visual inspection indicated some variability in Student Two's observed inappropriate behavior during the baseline period, and a slight decrease in inappropriate behavior at the intervention phase, with some regression toward the end of the intervention period. He then seemed to demonstrate a decrease in his inappropriate behavior during the post-intervention period compared to his baseline values. When examined statistically, no differences emerged for the baseline versus intervention phase comparison. However, the mean percent of time engaged in problem behavior was significantly lower post-intervention than it was during baseline [$t(9) = -2.918$, $p = 0.017$]. On the basis of observational data, Student Two did decrease his inappropriate behavior over the course of the study.

Daily Teacher Report

Student inappropriate behavior, as measured by teacher ratings on the CBRF-A Oppositionalism subscale, is depicted in Figure 9. Visual inspection indicated that Student Two exhibited significant variability in his behavior during the baseline period, such that he demonstrated minimal to severe oppositionality from day to day. Due to the continued instability of this student's oppositional behavior during the intervention and post-intervention phases, visual analysis did not confirm the hypothesis that problem behavior

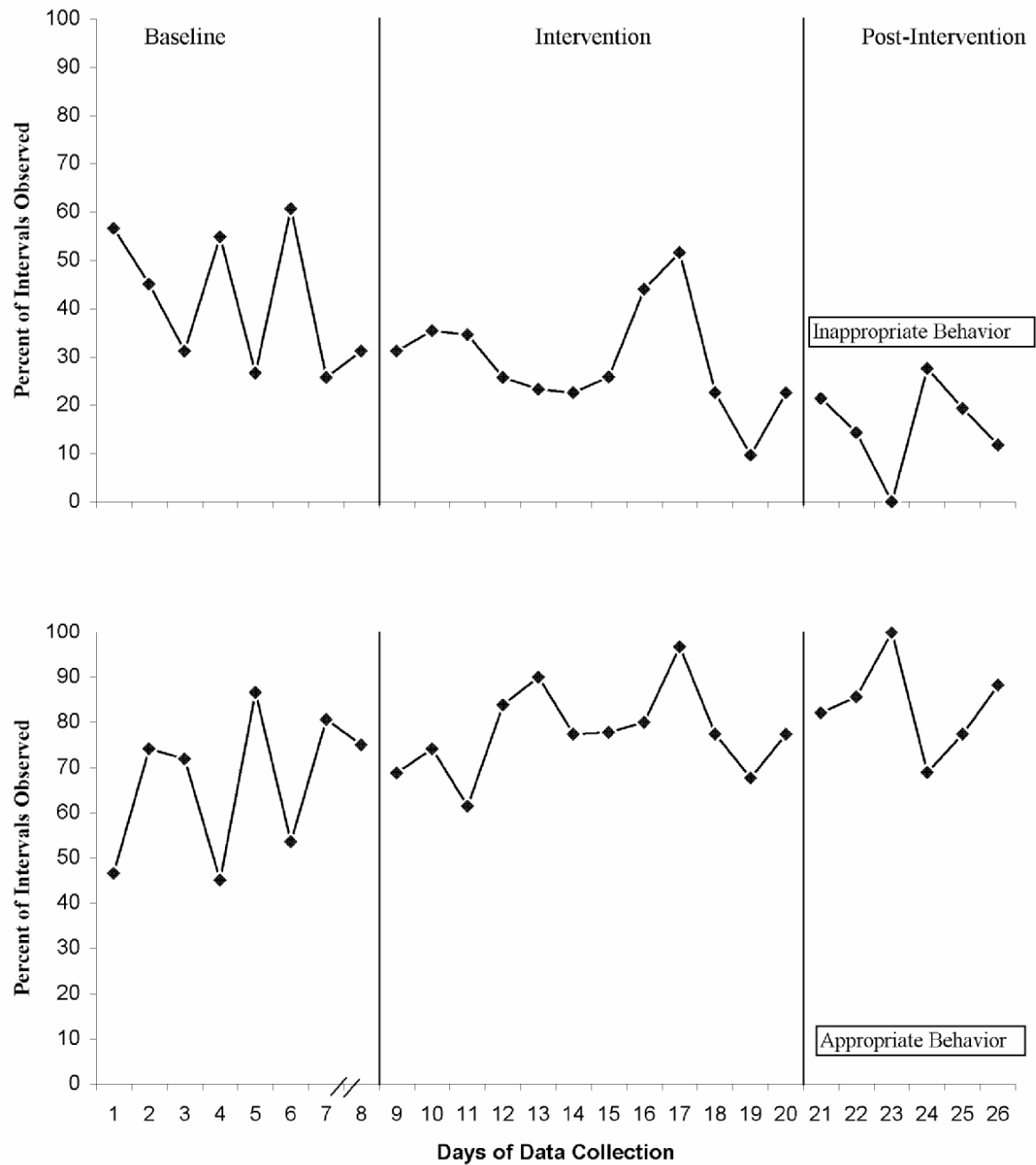


Figure 8. MSCISSAR observational data of Student Two's inappropriate and appropriate behavior.

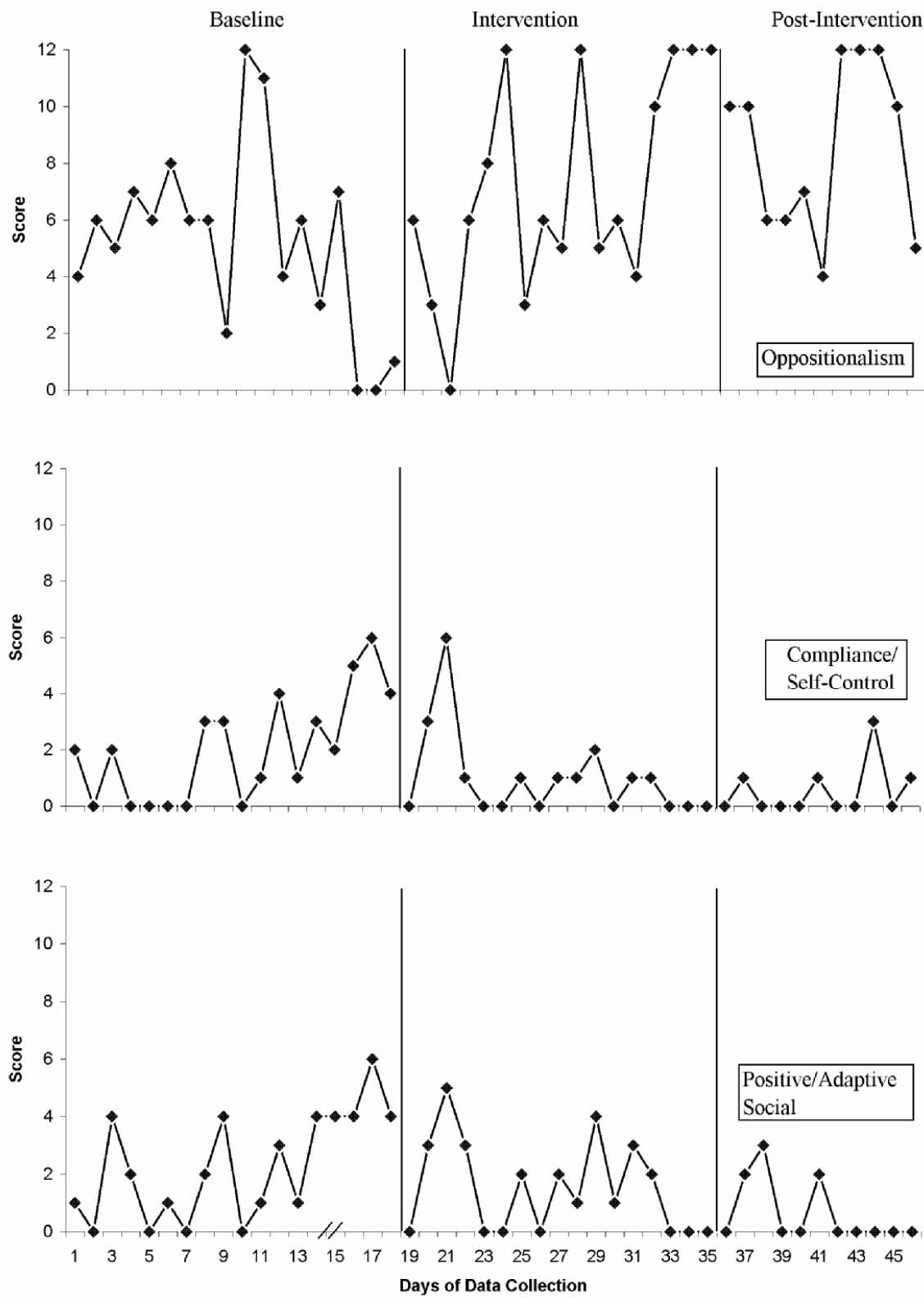


Figure 9. Scores for Dyad Two on the *Abbreviated Child Behavior Rating Form (CBRF-A)*.

would decrease following Banking Time. When examined statistically, the slope of scores between the baseline and intervention phases was significantly different [$t(30) = 2.277$, $p = 0.03$], suggesting that he was becoming more oppositional during the intervention phase. Statistical analysis did not indicate significant changes between baseline and post-intervention phases

Pre-Post Teacher Report

Figure 10 displays teacher-reported pre- and posttest scores on the SAED for Student Two. Prior to intervention, Student Two demonstrated problem behaviors, or indicators of emotional disturbance, at a level that was approximately one and one-half standard deviations above the mean for his age. Following Banking Time, the teacher's ratings indicated that problem behaviors decreased slightly, but remained markedly elevated, indicating that he continued to demonstrate problem behaviors that would likely interfere with his academic progress.

Appropriate Student Behavior Will Improve Following Banking Time

Daily Teacher Report

Student appropriate behavior, as measured by teacher ratings on the CBRF-A Compliance/Self-Control and Positive/Adaptive Social subscales are represented in Figure 9. Visual inspection of Figure 9 indicated improving compliance during baseline for Student Two, and then a decline in compliance during the intervention and post-intervention phases. Analysis using ITSACORR confirmed that the slope for compliance scores was significantly different, and negative, during the intervention phase compared to the baseline phase [$F(2, 30) = 3.676$, $p = 0.037$; $t(30) = -2.147$, $p = 0.04$]. Though statistical analysis did not indicate a significant difference in compliance between baseline and post-intervention, the student's

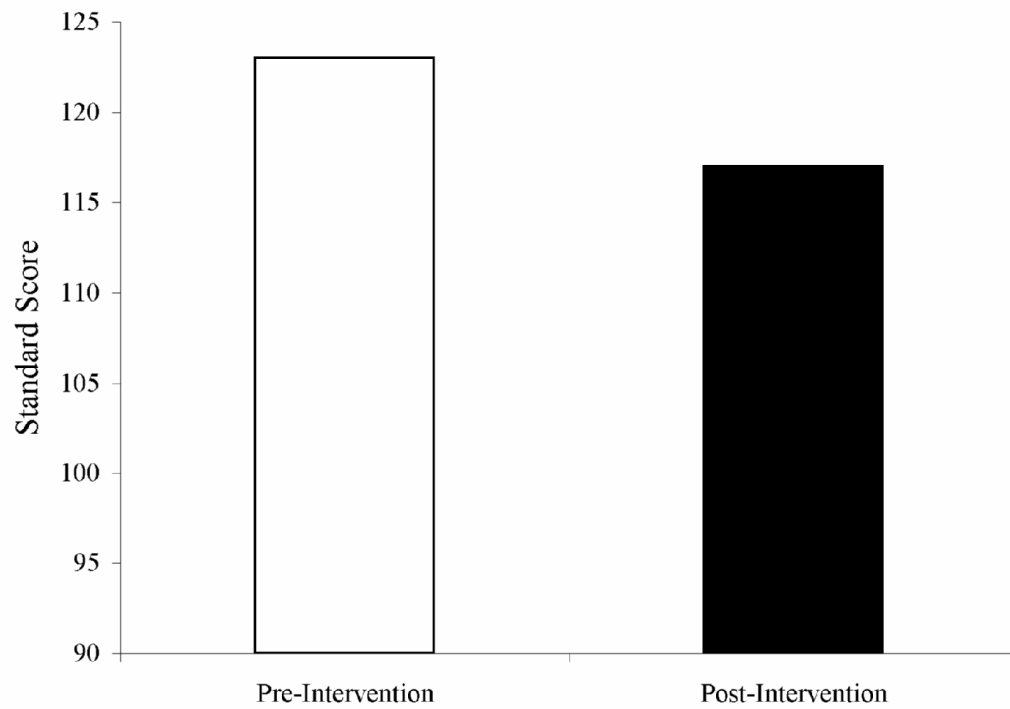


Figure 10 . Pre-intervention and post-intervention scores on the Scale for Assessing Emotional Disturbance (SAED) for Student Two.

mean compliance score was lower following the intervention than it was during the intervention. The lack of statistical significance may have resulted from the fewer number of observations that were made during this period that resulted in lower power. Overall, this student's average compliance declined over time. This apparent decrease in compliance will be discussed in the concluding comments for Student Two.

Visual inspection of Figure 9 indicates that Student Two demonstrated low to moderate positive/adaptive social behaviors during baseline, with continuing erratic behavior during the intervention and post-intervention phases, seemingly declining somewhat over time. Statistical analysis indicates that the difference in slope, but not level, of this student's positive/adaptive behavior between the baseline and intervention phases approached statistical significance [$F(2, 30) = 2.712, p = 0.083$; $t(30) = -1.876, p = 0.07$], suggesting that the student's positive behavior was slowly declining with time. No significant findings resulted when positive/adaptive behavior was compared between the baseline and post-intervention phases.

MSCISSAR Observation

Figure 8 depicts percent of intervals that Student Two was observed to be engaged in appropriate behaviors during the direct classroom observations. Visual inspection showed that he demonstrated some variability in his on-task behavior during the baseline period and then a high percentage of on-task behavior during the intervention and post-intervention phases that may have represented a slight improvement from his baseline behavior. Statistical analysis did not indicate a significant change in appropriate behavior between the baseline and intervention phases but did show a significant improvement in student behavior post-intervention relative to baseline [$t(9) = 2.463, p = 0.036$]. Again, during the portion of the

day when he was being observed, Student Two's appropriate behavior improved over the course of the study.

Student-Teacher Relationship Quality Will Improve Following Banking Time

Figure 11 depicts pre- and posttest STRS scores for Dyad Two. Prior to the intervention, Student Two demonstrated very high Conflict and Dependency scores, above the 75th percentile, a low Total Relationship score, below the 25th percentile, and a moderate Closeness score, above the 25th percentile. At posttest, teacher ratings indicated that the relationship still reflected the pre-intervention pattern. The intervention did not appear to improve the student-teacher relationship quality for this dyad.

Teachers Will Consider the Intervention to be Effective and Acceptable

As indicated in Table 4, Teacher Two's scores on both the acceptability and effectiveness scales fell below four, indicating that she did not find the intervention to be acceptable or effective for her student.

Conclusion for Dyad Two

None of the hypotheses were strongly supported for Dyad Two, providing no evidence that Banking Time was effective for this student and teacher. Further examination of some trends apparent in the data and consideration of informal information gathered during the study help to explain the lack of results. The most striking trend noted in the data for Dyad Two is that, based on teacher report, Student Two's behavior seemed to become worse (i.e., inappropriate behavior was increasing and appropriate behavior was declining) over the course of the study. In contrast, the opposite trend is observed in the direct observation data such that this student's behavior seemed to improve somewhat over the course of the study. Several possibilities may explain this disparity.

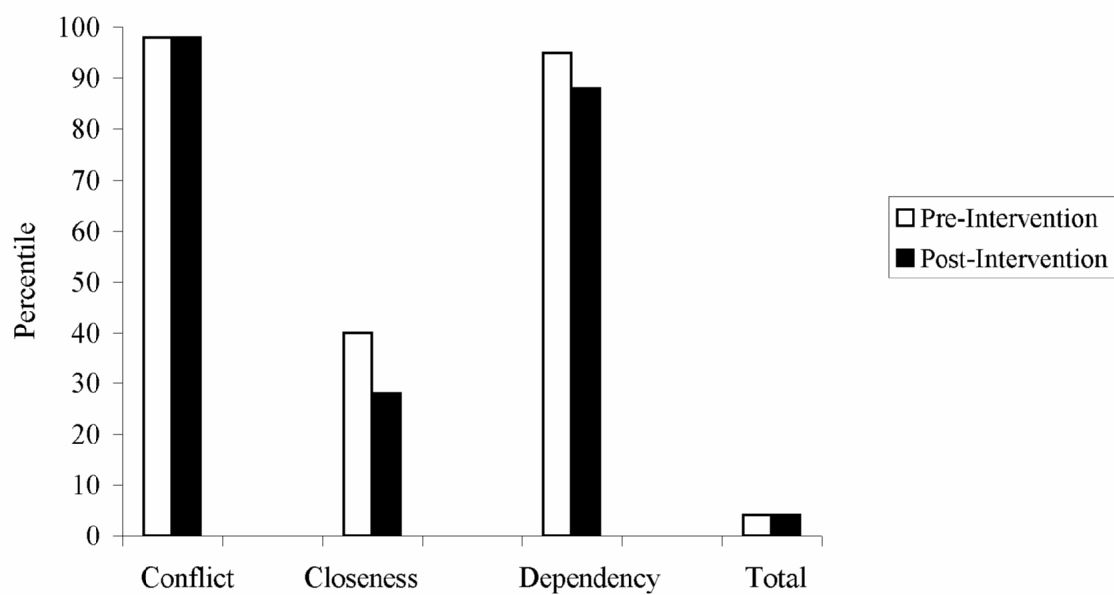


Figure 11. Pre-intervention and post-intervention scores on the *Student-Teacher Relationship Scale (STRS)* for Dyad Two.

Table 4

Teacher-Reported Effectiveness and Acceptability of Banking Time for Dyad Two on the Behavior Intervention Rating Scale (BIRS)

Effectiveness Score	Acceptability Score
1.4	2.3

First, one must consider that the direct observations spanned only thirty minutes and occurred approximately three times per week. In contrast, teacher observations were based on approximately six hours of interactions each school day. Clearly, much less information was captured and considered by the direct observations compared to what was available for the teacher report data. The direct observations of Student Two occurred early in the morning each day, minutes after the school day had started. After this observation time had been chosen and implemented for several weeks, the teacher reported a pattern that the student's behavior deteriorated during the course of the school day and, therefore, the observers were not viewing his most inappropriate behaviors. Because a significant portion of baseline data had already been collected, it was not possible to move the observation time without altering the meaning of any behavioral changes observed over the course of the study. Therefore, the direct observations did not capture the problem behaviors for which Student Two was initially referred to this study.

Another possible explanation for the disparate results may be the difference in subjectivity in the two sets of measures. The direct observations were made by research assistants who had been trained to carry out the observations objectively and who had little information about the target student and teacher. In contrast, because of the nature of self-report data, teacher-reported information was subjective. Teacher Two's judgments were based on her personal perceptions of appropriate and inappropriate behavior, and could have been influenced by preformed ideas about this student.

The apparent improvement in Student Two's behavior during the direct observations could be accounted for in several ways. The observations happened to follow the time chosen for Banking Time implementation, though the observations did not always occur on the same

days as the intervention. Perhaps small, positive effects of the intervention did result but only lasted for a short portion of the school day. Such positive effects may have developed for Student Two and persisted even post-intervention as this time of the day may have been associated with positive feelings for him. Alternately, it is possible that outside factors (e.g., repetition of the routine) explained his improved work habits over the course of the school year.

It is important to consider possible explanations for the seeming failure of this intervention for this student and teacher. As noted above, when discussing the results for Student One, it is quite possible that the intervention itself is not powerful enough to elicit substantial behavior change when implemented for a relatively short period of time. Teacher Two's reports suggest that Student Two's behavior actually became worse during the study. Increases in academic demands and other situational factors may have led this student to exhibit more difficult behavior over time that may not have been responsive to a short, relatively infrequently delivered strategy. Other factors unique to this dyad may also explain the poor results. In particular, implementation notes by both the consultant and the primary investigator suggest that Teacher Two disagreed with some aspects of the intervention. She reported that relationships with students are very important but she did not think that Banking Time was a good method for improving the relationships. She felt particularly uncomfortable with some aspects of the Banking Time methodology (i.e., refraining from asking questions) that she believed actually hindered her from improving the relationship with her student. Evidence from the treatment integrity data indicated that Teacher Two did stray from the criteria at times. Again, results may have been somewhat different if she had been more comfortable with the intervention.

Dyad Three

Dyad Three was composed of a male, kindergarten student and his female teacher. Figures 12-15 display observational and teacher report results related to teacher approval behavior, teacher instructional behavior, student appropriate behavior, and student inappropriate behavior across the baseline, intervention, and post-intervention phases for Dyad Three. Figure 16 displays teacher-reported student-teacher relationship quality pre- and posttest for this dyad.

Teacher Behavior Will Become More Positive Following Banking Time

Figure 12 displays observational data regarding teacher approval for Dyad Three. As explained above, this hypothesis could not be addressed for any of the three dyads because restricted range was present in the variable used to measure positive teacher behavior. In particular, 95% of Teacher Two's behaviors were coded as "neither approval nor disapproval."

Teacher Instructional Behavior Will Improve Following Banking Time

Observational data describing teacher instructional behavior for Dyad Three is displayed in Figure 12. Teacher Three demonstrated a high rate of instructional behavior during the baseline period and continued to engage in instructional activities for a high percentage of the intervals observed following intervention implementation. Percent of intervals that teacher behavior was considered to be instruction-focused did drop significantly on three occasions due to an unusual circumstance. Toward the end of the data collection for the study (observation points 22, 23, and 24), a student teacher began working in this classroom. On the first three occasions that the student teacher acted as the primary instructor, she had not given written consent to be systematically observed. Therefore, the

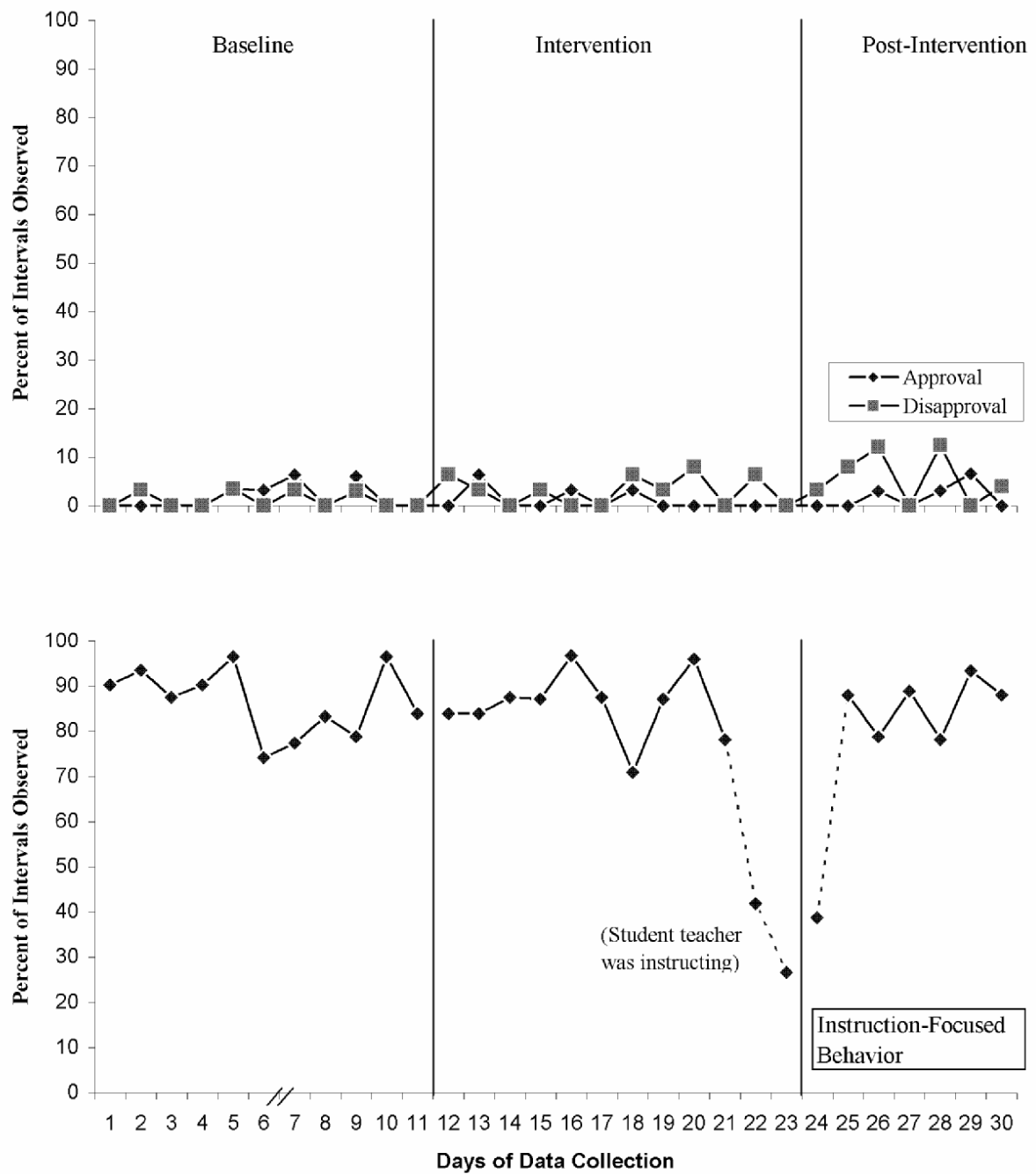


Figure 12. MSCISSAR observational data of Teacher Three's approval, disapproval, and instruction-focused behavior.

regular classroom teacher, who was engaged in less student-focused activities (e.g., grading papers), served as the target teacher for those observations. Although the student teacher was engaged in significant instructional behaviors, they were not captured by the observation system. Because the resulting observations did not accurately reflect the academic activities that occurred in the class that day, these data points were omitted from the ITSACORR analyses and have been indicated on the figure by dashed lines. Following these observations, the researchers obtained informed consent for the student teacher to be part of the study and her behaviors were recorded on the subsequent occasions when she was interacting directly with the students.

In sum, visual analysis of Teacher Three's instructional behavior did not support the hypothesis that it would improve following Banking Time. Statistical analysis also did not indicate significant changes when comparing the baseline and intervention or post-intervention data.

Inappropriate Student Behavior Will Decrease Following Banking Time

MSCISSAR Observation

Figure 13 displays percent of intervals that student behavior was considered to be inappropriate during the direct observations. Student Three demonstrated a variable, but substantial, rate of inappropriate behaviors during the baseline period. Visual inspection did not indicate a significant improvement in inappropriate behavior during the intervention or post-intervention phases. Similarly, statistical analysis did not indicate significant differences in problem behavior between baseline and intervention or post-intervention phases.

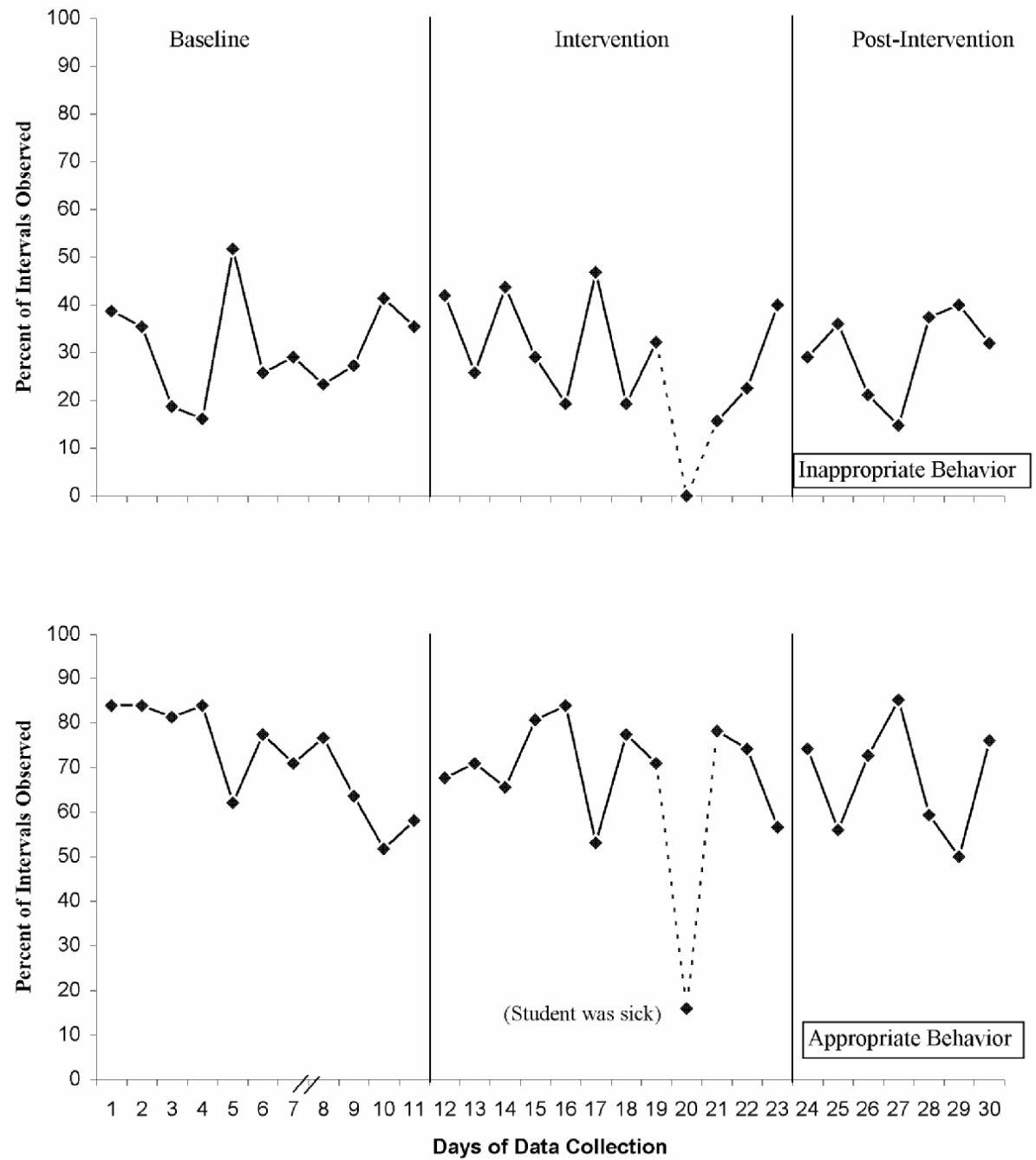


Figure 13. MSCISSAR observational data of Student Three's inappropriate and appropriate behavior.

Daily Teacher Report

Student inappropriate behavior, as measured by teacher ratings on the CBRF-A Oppositionalism subscale, is depicted by Figure 14. Visual inspection indicated a relatively consistent pattern of minimal oppositionality throughout the baseline period that seemed to continue during the intervention and post-intervention phases. Therefore, oppositionality did not appear to improve following Banking Time. Consistent with the visual analysis, statistical analysis did not support the hypothesis that oppositionalism would decrease during the intervention and post-intervention phases.

Pre-Post Teacher Report

Figure 15 displays teacher-reported pre- and posttest scores on the SAED for Student Three. Prior to intervention, Student Three demonstrated significant problem behaviors or emotional difficulty, at a level more than one standard deviation above the mean for his age. Following Banking Time, teacher-reported emotional difficulty decreased substantially, to a level that was within normal limits for his age. Based on his teacher's perspective, Student Three's global behavior improved markedly after participating in Banking Time.

Appropriate Student Behavior Will Improve Following Banking Time

Daily Teacher Report

Student appropriate behavior, as measured by teacher ratings on the CBRF-A Compliance/Self-Control and Positive/Adaptive Social subscales are displayed in Figure 13. Visual inspection of Figure 14 indicated low to moderate compliance for Student Three during the baseline period. Teacher ratings of compliance remained quite stable during the intervention and post-intervention phases, suggesting that the student's behavior did not improve following Banking Time. ITSACORR results indicated no significant changes in

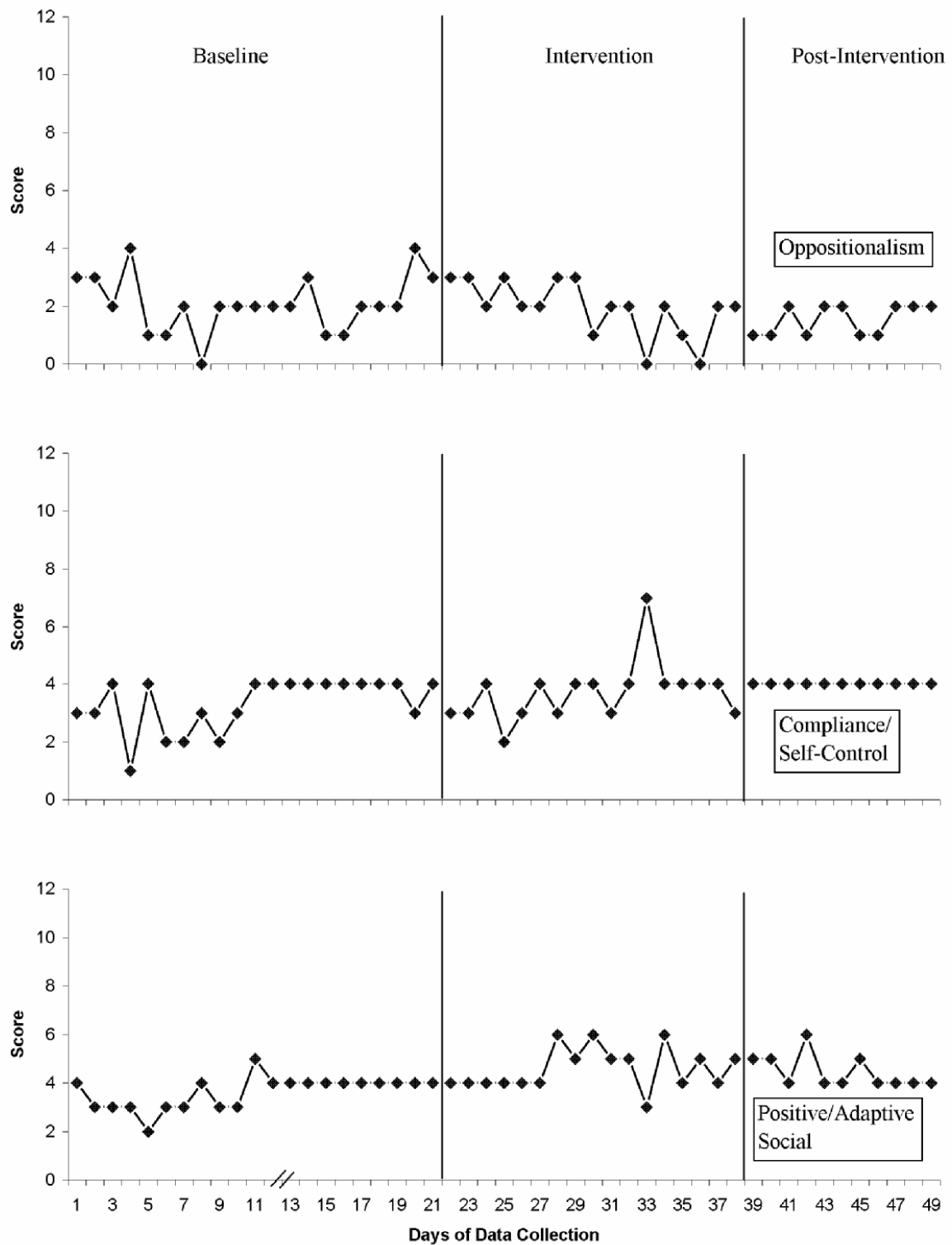


Figure 14. Scores for Dyad Three on the *Abbreviated Child Behavior Rating Form (CBRF-A)*.

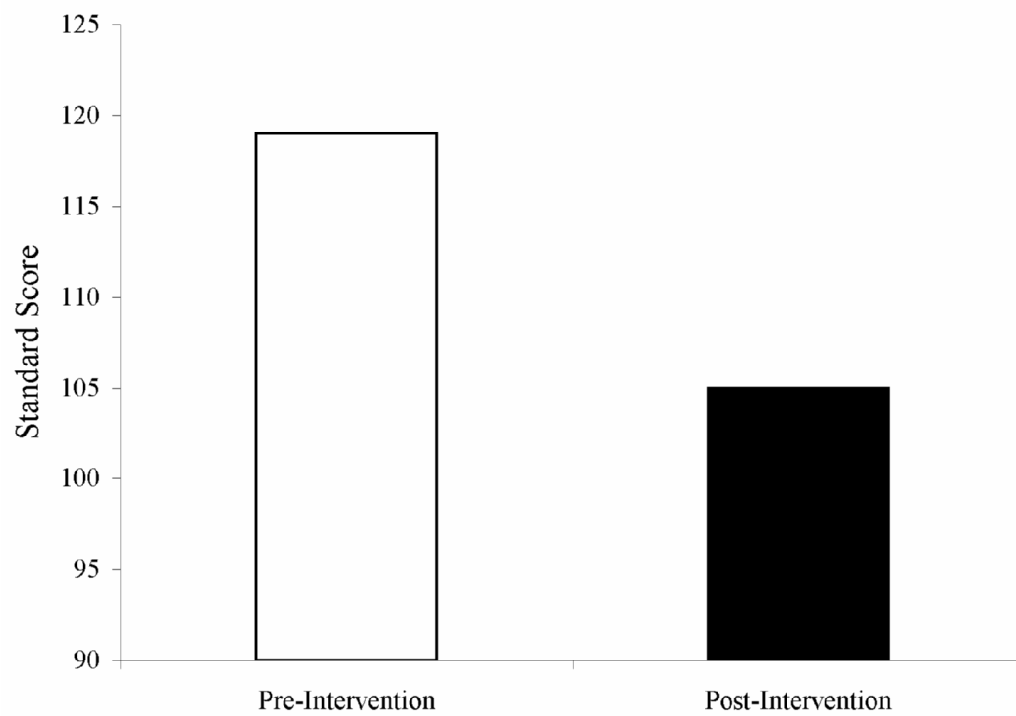


Figure 15 . Pre-intervention and post-intervention scores on the Scale for Assessing Emotional Disturbance (SAED) for Student Three.

compliance between the baseline and the intervention phases. Statistical analysis did indicate that compliance was significantly better post-intervention than it was during baseline [$t(27) = 3.015$, $p = 0.006$].

Visual inspection of Figure 14 indicated that Student Three demonstrated low to moderate positive behaviors during baseline, slightly improved behaviors during the intervention phase, and then some regression toward the baseline level during the post-intervention phase. Statistical analysis indicated that Student Three's positive behavior was greater during the intervention [$t(33) = 3.144$, $p = 0.004$] and post-intervention [$F(2, 27) = 4.562$, $p = 0.02$; $t(27) = 4.788$, $p < 0.001$] phases than it was during baseline. The slope is negative during the post-intervention phase, however, and significantly different than the baseline slope, indicating that positive behavior was beginning to decline at that time [$t(27) = -3.018$, $p = 0.005$].

MSCISSAR Observation

Figure 13 depicts percent of intervals that student behavior was considered to be appropriate during the direct classroom observations. Visual inspection shows that Student Three demonstrated some variability in his appropriate behavior during the baseline period and then maintained a relatively consistent level of on-task behavior during the intervention and post-intervention phases that did not seem to reflect an improvement from his baseline behavior. Of note, on observation day 20, the student's on-task behavior was noticeably low. He was sick that day, sat removed from his classmates with his head on the table throughout most of the observation (with teacher approval), and went home before the end of the school day. This data point was omitted from the ITSACORR analysis, as depicted by a dashed line

on Figure 13. Statistical analysis did not indicate a significant change in appropriate behavior between the baseline and intervention or post-intervention phases for this student.

Student-Teacher Relationship Quality Will Improve Following Banking Time

Because frequent administration of the STRS was not possible, STRS results were compared pre- and post-test. Figure 16 Depicts pre- and posttest STRS scores for Dyad Three. Prior to the intervention, Student Three demonstrated Conflict and Dependency scores higher than the 75th percentile, a Closeness score greater than the 25th percentile, and a Total Relationship score below the 25th percentile. Following the intervention, Dyad Three reportedly achieved the desired improvement in relationship quality as each subscale score and the Total Relationship score was within normal limits (i.e., between the 25th and 75th percentile) following the intervention. Per teacher report, the quality of the student relationship therefore improved significantly following Banking Time.

Teachers Will Consider the Intervention to be Effective and Acceptable

As indicated in Table 5, Teacher Three's score on the Acceptability subscale fell above 4, indicating that she found the intervention to be acceptable for her student. In contrast, her Effectiveness score fell below four, indicating that she did not view Banking Time to be substantially helpful at improving this student's problem behaviors.

Conclusion for Dyad Three

Support for the effectiveness of Banking Time for this dyad is somewhat mixed and minimal, when present. Among the three dyads, this student and teacher did appear to make the most improvement during the course of the study. Strong, consistent support across measures (i.e., teacher report and direct observation) is not apparent, but findings suggest some gains for both the student and the student-teacher relationship following Banking Time.

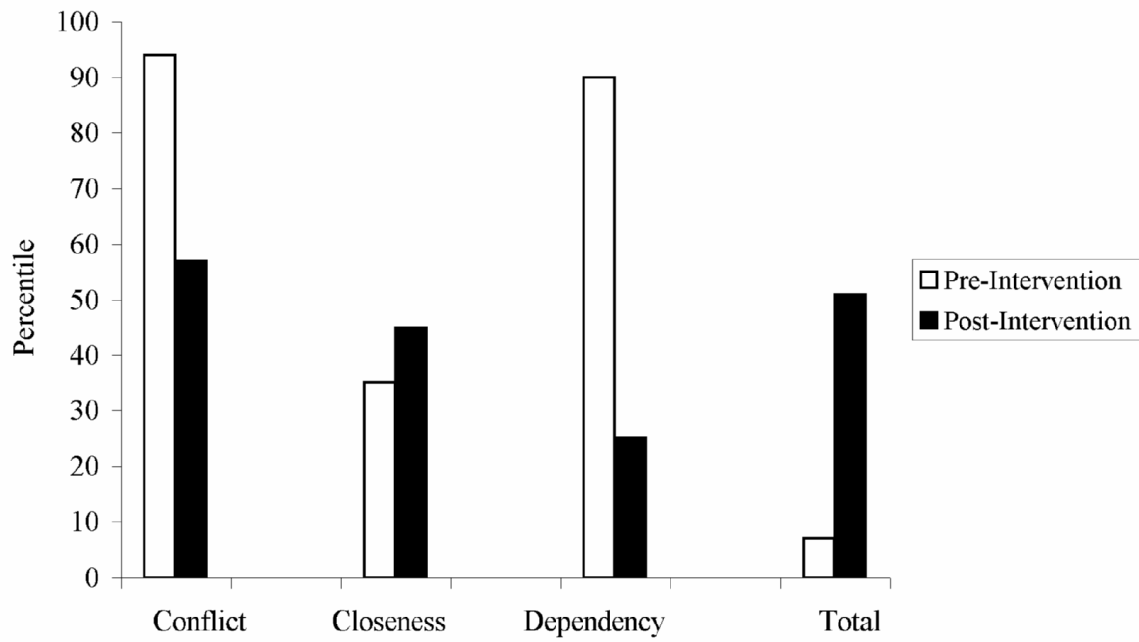


Figure 16. Pre-intervention and post-intervention scores on the Student-Teacher Relationship Scale (STRS) for Dyad Three.

Table 5

Teacher-Reported Effectiveness and Acceptability of Banking Time for Dyad Three on the Behavior Intervention Rating Scale (BIRS)

Effectiveness Score	Acceptability Score
3.5	5.2

Specifically, teacher reports about student behavior and relationship quality indicated improvements following Banking Time. However, direct observations did not indicate that student behavior improved markedly. In addition, teacher behavior did not become more instruction-focused. On both pre-post measures, the SAED and the STRS, Teacher Three reported significant gains for her student. On the daily checklists, she did not report a significant decrease in problem behavior but she did note increased compliance and positive behaviors for Student Three. Several possibilities may explain this pattern of results.

First, the disparity in teacher-report and direct observation may be explained in several ways, similar to those described for Dyad Two. The direct observations, lasting thirty minutes each, captured much less information than the teacher's reports that considered student behavior across a school day. She may therefore have observed changes in behavior that occurred at times when the observers were not present. Second, subjectivity of the measures differs such that direct observation is considered more objective than teacher reports. One must consider the possibility that Teacher Three's perceptions were affected by a desire to please the experimenter and/or demand characteristics of the study that involuntarily altered her view of the student to make his behavior appear to be improved.

Though the limitations described above must be noted, it is also necessary to consider the possibility that significant changes did occur for this dyad during the course of the study. At least two explanations for such changes seem likely. First, the Banking Time intervention may have led to improved student-teacher relationship quality and student behavior. Among the teachers, Teacher Three seemed most comfortable with the intervention and implemented it with the greatest integrity. Student Three also had various personal characteristics that were unique to him such as younger age and a quiet demeanor that seemed to make him less

verbally outgoing during regular classroom interactions. Perhaps these or other individual traits made him better suited to benefit from this intervention. Second, one must also consider that Banking Time did not lead to the positive effects noted but that outside factors were responsible. The study spanned approximately four months' time, during which Student Three gained experience with school and underwent biological maturation. The changes noted may have resulted independently of his participation in Banking Time.

General Conclusion

After examining the data for each dyad individually, it is now important to evaluate the effectiveness of the Banking Time intervention overall, in terms of the multiple baseline design. It was hypothesized that several student and teacher characteristics would change as a result of Banking Time. The multiple baseline design was implemented to control external factors and facilitate experimental analysis of this intervention within a small-n methodology. It was predicted that, for each hypothesis, significant change would be evidenced by each dyad and that this change would coincide with the staggered implementation of the intervention. Because none of the hypotheses were supported for all three dyads, one must conclude that there is little or no evidence that Banking Time is an effective intervention at improving student-teacher relationship quality, teacher instructional behavior, and student appropriate behavior, or at decreasing student inappropriate behavior. A summary of all results is presented in Table 6.

Table 6

Summary of Results

Domain/Variable	Dyad One	Dyad Two	Dyad Three
Time Series Data			
Teacher Instruction-Focused behavior (MSCISSAR)	ns	ns	ns
Student Inappropriate Behavior			
MSCISSAR	ns	2	ns
CBRF-A			
Oppositionalism	ns	3 [#]	ns
Student Appropriate Behavior			
MSCISSAR	ns	2	ns
CBRF-A			
Compliance/Self-Control	ns	3 [#]	2
Positive/Adaptive Social	ns	ns	1, 2, 4 [#]
Pre-Post Data			
Student-Teacher Relationship Quality (STRS)	no	no	WNL
Scale for Assessing Emotional Disturbance (SAED)	no	no	WNL

Note. For the time series data,

ns = none of the analyses were significant;

1 = significant change in mean intercept between the baseline and intervention phases;

2 = significant change in mean intercept between the baseline and post-intervention phases;

3 = significant change in slope between the baseline and intervention phases;

4 = significant change in slope between the baseline and post-intervention phases;

[#] indicates that the results were statistically significant but opposite than what was predicted.

For the pre-post data,

WNL = post-intervention scores were within normal limits;

no = post-intervention scores were still outside of normal limits and similar to pre-intervention scores.

CHAPTER FIVE: GENERAL DISCUSSION

Across the three student-teacher dyads, there was little evidence that Banking Time was an effective intervention for improving student-teacher relationship quality or student behavior. Possible explanations for the failure to find evidence of Banking Time's effects are presented below, including a discussion of several methodological limitations within the present study. This section is followed by a presentation of additional study limitations. Finally, implications of the study for future research and practice are discussed.

Possible Explanations for the Limited Effects of Banking Time in the Current Study

There are many possible reasons to explain the failure to find the expected changes in student and teacher functioning following implementation of Banking Time. These reasons can be broadly classified into two categories. First, limitations unique to the current study may have interfered with the effectiveness of Banking Time and/or the detection of effects that may have been present. Second, the possibility that there were no effects for Banking Time is considered and various aspects of the intervention that may have limited its impact on student-teacher relationship quality and student behavior are discussed.

Limitations of This Study Interfered with the Effectiveness of Banking Time

Although efforts were made to implement Banking Time with integrity, many pragmatic factors affected the implementation of the present study and may have interfered with the measured effectiveness of the intervention.

Limited Duration of the Intervention and Data Collection

The limited duration of the intervention was one significant drawback to this study. The students participated in 12 or 13 Banking Time sessions of 10-15 minutes each over the course of four weeks. The four-week time period was chosen so that study participation

would appear feasible to teachers who are inevitably overwhelmed with other classroom responsibilities. The intervention, however, may not have been sufficiently intense to cause significant changes in the nature of the student-teacher interactions after only 12-13 sessions. Research on play therapy has shown that, to a certain point, greater effectiveness results from more sessions. In particular, the most positive results have been observed in children that experienced 30-45 play therapy sessions (LeBlanc & Ritchie, 1999; Ray et al., 2001), a frequency that is three to four times greater than what was delivered in the current study.

The short duration of the intervention also translated into a short period of data collection, and therefore relatively few data points, during each phase of the study. Thus, there was limited power to detect significant effects on the dependent variables. For some variables, only the minimum number of data points (i.e., five) required to carry out the ITSACORR analyses existed in a particular phase, meaning that small effects would not likely have been detected.

Disadvantages of a Small n Study

Another design characteristic that led to limitations in this study was the use of a small n, multiple baseline design. In particular, a great quantity of resources, particularly time, was required to carry out this intervention for each dyad. Without empirical support for the effectiveness of Banking Time, it was not justifiable to pursue a larger scale project. The three-dyad, multiple baseline design represented a compromise as it conserved resources while maintaining an experimental design. Many limitations are clearly present, however, in small n research designs. In particular, the opportunities for detecting positive effects are lessened when the intervention is attempted with only three dyads. Had positive results

occurred, the ability to generalize to other students, teachers, and schools would also be very limited.

Predetermined Duration of Baseline Data Collection

Another limitation to the implementation of the intervention and the timing of data collection arose for both practical and ethical reasons. When conducting studies using multiple baseline designs, it is advisable to wait for data points to stabilize, or become “flat” when examined graphically, before beginning the next phase in the study (Kazdin, 1994). By establishing this stability during the baseline phase, for example, one can more clearly determine if and when significant changes occur in the dependent variable during later phases. Because establishing this stability takes an undetermined amount time and the student participants were experiencing significant problem behaviors that interfered with their personal functioning and the overall classroom atmosphere, it was not considered to be ethically appropriate to delay intervention implementation indefinitely. For practical purposes, too, a significant delay was not possible as one teacher was planning an extended leave near the anticipated conclusion of the study. Because a stable baseline was not established for some of the observational variables, it was more difficult to detect a distinct change in the variables after initiation of Banking Time.

Lack of Correlation Between Observational Data and Teacher Report Data of Student Behavior

Overall, there was a surprising lack of correspondence between daily teacher ratings and the direct observations of student behavior. For both Dyads Two and Three, marked differences resulted from analyses of teacher report versus direct observation of student appropriate and inappropriate behaviors. In particular, Teacher Two’s reports indicated more

oppositonality and less compliance and positive behavior during the intervention phase than during baseline, whereas direct observations showed a decrease in inappropriate behaviors and an increase in appropriate behaviors during the post-intervention phase. Teacher Three reported improved compliance post-intervention and improved positive behaviors during the intervention and post-intervention phases for her student, although no significant changes were detected by the direct observations. As noted in the previous chapter, several factors likely contributed to this inconsistency. First, teacher reports are inherently more subjective than information gathered from direct observations and may have been influenced by such factors as preconceived expectations for the students and demand characteristics in the study. Also, the direct observations reflected only thirty minutes of student behavior, three times per week, which may not have been representative of their functioning across the school day, whereas behavior during the entire day was likely taken into consideration by the teachers in their ratings.

Despite the lack of correspondence between measurement methods, the utility of the daily teacher report measure, the CBRF-A, was considered to be strong for several reasons. In addition to its psychometric validity (presented in Chapter Three), it possessed face validity in the current study as the examples of appropriate and inappropriate student behaviors were representative of the target students' range of positive and negative functioning. It was also a quick measure that could easily be completed daily by teachers with limited time to invest in extra duties. When examining the data patterns following the intervention, the three subscales of the measure (i.e., oppositionalism, compliance/self-control, positive/adaptive behavior) there were marked differences in how the scales intercorrelated across the three dyads, indicating the measure's utility at demonstrating

individual differences in behavior patterns. This measure would likely be useful in future time series studies examining student behavior.

Moderate Treatment Integrity

Weak treatment effects could also be attributed to the manner in which Banking Time was implemented by the teachers. Teacher One and Teacher Two seemed to have more difficulty adhering to the criteria than did Teacher Three, obtaining overall integrity percentages of 80% and 83%, respectively. Teacher Three had somewhat greater integrity, 89%. Though improvements were modest, Dyad Three experienced greater change in both relationship quality and student outcomes than either Dyad One or Dyad Two, suggesting that stricter adherence to the intervention may be associated with more positive treatment effects. Because many other systematic differences existed between the dyads (e.g., age and grade of the target students, type and quantity of additional student services, family experiences), it is not possible to clearly attribute the differential effectiveness to treatment integrity.

Possible Ceiling Effect for Teacher Instructional Behavior

None of the teachers demonstrated a significant increase in their time devoted to instructional activities (i.e., rather than disciplinary activities) following the intervention. Effects on teacher instructional behavior may not have been detectable due to ceiling effects. All three teachers spent a high rate of time engaged in instructional activities during the baseline period, allowing little room for improvement over the course of the study. This high proportion of instruction-focused time was remarkable due to the reportedly severe behavior problems exhibited by their target students. Informal observations of teacher behavior and classroom structure suggested that the teachers had very well-developed behavior

management skills that enabled them to provide consistent instruction to classes challenged by students with disruptive behavior.

The Full STARS Intervention Was Not Implemented

In addition to the implications of design choices on the measured effectiveness of Banking Time, it is also important to consider that the form of the intervention that was implemented may have resulted in limited effects. Banking Time is part of the broader *Students, Teachers, and Relationship Support (STARS)* program that was developed by Pianta and Hamre (2001). Prior to implementing Banking Time, *STARS* incorporates student and teacher interviews, videotaping and analysis of student-teacher interactions, and consultation between the teacher and consultant. These intervention components are intended to reframe the teacher's perception of the student's inappropriate behaviors. When the *STARS* program was pilot-tested with one student-teacher dyad prior to the current study, the entire program was overwhelming to the teacher and therefore could not be implemented fully. Because the entire program was not considered to be practical in most school settings and because the Banking Time portion of *STARS* is most consistent with empirically-supported child-caregiver interventions, the primary investigator decided to test only that component of the program. The precursor steps may, however, be necessary components that could interact with Banking Time to improve student-teacher relationships.

Target Students Transitioned Between Adults Frequently

Due to behavioral needs and developmental delays, two of the target students (i.e., Student One and Student Three) received multiple forms of pull-out services (e.g., speech therapy, occupational therapy). As a result, they transitioned between adults during the day and had less contact with their regular teachers than students who did not receive these pull-

out services. Pianta (1999) commented that the common practice of pulling high-risk students from their regular classrooms to deliver services from various “experts” limits their opportunity for stable, relationship-building interactions with any one teacher. He noted that the students who may benefit most from intense, supportive adult relationships tend to spend the most limited time with their regular teachers. In the current study, efforts to improve teacher relationships for Students One and Three may have been hindered due to frequent transitioning and, therefore, reduced stability in their teacher interactions.

Cultural Mismatch Impeded Banking Time’s Effectiveness

The current study was also limited by the homogeneous nature of the student participants, who were all African American males. The investigators set only grade (i.e., kindergarten through third) requirements for student participants and provided behavioral descriptions of the students expected to be most appropriate for the study. Each teacher chose the student that she believed would fit the criteria best. Teacher Three’s first choice was a Caucasian male student, but when he did not meet the study criteria, she chose an African American male student who did qualify. The homogeneous nature of this sample leads to two questions. First, why did African American males seem to qualify more easily for study participation than other students? Second, would the results have been different if the participants were not African American? Research addressing student-teacher relationships, behavior problems in school-aged children, and parenting styles can help to answer these questions.

Why did African American Males Qualify More Easily? Saft and Pianta (2001) found a low, but significant correlation between relationship quality and student-teacher ethnic consistency. In particular, teachers reported greater closeness and less conflict with students

of their same ethnicity. Because there was no ethnic consistency between students and teachers in the current study (i.e., Two teachers were Caucasian and one was Asian-American), one may have predicted slightly poorer relationship quality initially than if the teachers were also African American. Other studies have found that minority students tend to be more dependent on their teachers than Caucasian students, particularly in schools in which the leaders and teachers are primarily Caucasian (Kesner, 2000). Hilliard (1992) observed that traditional schools in the United States promote the European American culture. As a result, minority students may logically become more dependent on their teachers in order to navigate within an unfamiliar system (Kesner, 2000). Thus, cultural differences may have made it more likely that African American students would be targeted for the present study.

Other research suggests that African American males demonstrate more severe and more frequent behavior problems than students of other groups (e.g., Nelson, 2000). The inclusion of African American males in the current study may simply reflect the higher prevalence of behavior problems in this group of students. One hypothesis regarding this overrepresentation nationally is the higher rate of poverty in minority families (Boyd-Franklin & Bry, 2000). Poverty status predicts school failure and behavior problems for children, likely due to such factors as limited exposure to academics prior to school and resulting frustration from poor school progress (Nelson, 2000).

Research on parenting styles is also relevant to the overrepresentation of African American students with perceived behavior problems. There is mixed evidence of cross-cultural differences in parenting. Research regarding restrictive parenting, characterized by parental authority, control, and monitoring of child behavior (Dearing, 2004), and maternal intrusiveness, defined as less child-focused, more directive behavior toward children (Ipsa et

al., 2004), may be particularly relevant to the current discussion. Some research has shown that strict parenting behaviors are more prevalent in African American than European American families (Bradley, Corwyn, McAdoo, & Garcia Coll, 2001; Ipsa et al., 2004). For African Americans from moderate to high socioeconomic circumstances and for European Americans, a restrictive parenting style has generally been associated with negative child outcomes, including lower academic performance and more depressive symptoms (Dearing, 2004). However, there is evidence that, for African American children from neighborhoods with poverty and a high rate of crime, restrictive parenting is actually associated with more positive academic performance (Dearing, 2004). Other research has shown that, for African American families overall, high parental control in combination with high warmth results in neutral to positive outcomes for children (Spieker, Larson, Lewis, Keller, & Gilchrist, 1999). It has been hypothesized that the cultural differences in outcomes occur because intrusiveness either has a different, more positive, meaning or is more normative in at least some segment of the African American culture (Ipsa et al., 2004). For example, the relationship between restrictive parenting and positive outcomes may arise for children in high crime areas because more restrictive parenting prevents children from becoming involved in maladaptive activities within their neighborhoods that could create academic and behavioral problems.

This information suggests that African American students may exhibit more acting-out behavior, or be perceived as doing so, when the classroom expectations and methods of control are grossly different than what they experience from their parents. It may be that there is a poor fit between classroom teachers' management strategies and the restrictive parental control many African American children experience with significant adults.

Did cultural mismatch impede Banking Time's effectiveness? The previous section suggested that potential mismatches between African American children's home and school experiences may affect student-teacher relationship quality and partially account for the higher prevalence of perceived behavior problems in African American males. If this is the case, these same factors might have interfered with the effectiveness of Banking Time. In particular, the nondirective methods of Banking Time might have been less culturally consonant and therefore less likely to communicate adult acceptance and warmth to these students because, in their experiences, parental directiveness may have communicated warmth and concern.

*Banking Time Is Ineffective at Improving Student-Teacher Relationships
and Student Behaviors*

In addition to the many factors that were specific to the current study that may have interfered with the adequate examination of Banking Time, it is necessary to consider that the intervention itself may not be effective at improving student-teacher relationship quality and student behavior. Several possible reasons are discussed below.

Student-Teacher and Child-Parent Relationships Are Different

The majority of research supporting interventions similar to Banking Time has targeted child-parent relationships (e.g., Schuhmann et al., 1998; White et al., 1999). Although there is some rationale for predicting that similar strategies could be effective with student-teacher relationships, significant differences exist between the relationships that children have with their parents and those that they have with their teachers. Most obviously, teachers generally spend considerably less time with children and have fewer opportunities for individual interactions with them than their parents do. If children have been raised by the

same parents since infancy, they have years of history and more opportunities for individual interactions than do teachers who typically work with students for only one year and in the context of a large classroom of students. The attachment relationship can therefore be quite different, particularly in terms of its intensity, such that parent attachments are generally much stronger than teacher attachments (Pianta, 1992). It may be unrealistic to expect that a similar intervention will work in both child-caregiver relationships. Furthermore, artificially imposed child-adult relationships such as those present in mentor relationships and, perhaps some student-teacher relationships, have been criticized as being inadequate at providing the benefits present in naturally formed, unconditionally supportive bonds between a child and a family member or close friend (Hamilton & Hamilton, 1992, as cited in Dubois, Holloway, Valentine, & Cooper, 2002).

Inconsistency with Typical Classroom Context and Student-Teacher Interactions

Banking Time may not be an appropriate intervention for teachers and students due to the inconsistency between traditional teaching practices and the methods of Banking Time. Banking Time requires that, for brief portions of time, teachers provide their students with undivided attention, unconditional support, and interest, while completely refraining from directing the students' behavior (Pianta & Hamre, 2001). During the course of their interactions throughout the rest of the school day, teachers, by definition, must guide their students and teach them, both academically and behaviorally, by setting particular expectations and providing conditional feedback (Good & Brophy, 2000). Banking Time would therefore change the nature of student-teacher interactions qualitatively from those seen in typical student-teacher dyads. This altered relationship may be difficult to maintain when it is inconsistent with the demands on teachers to elicit appropriate behavior and

significant academic progress from all of their students. *Unconditional* support may not be feasible in the context of the student-teacher relationship.

The relationship between a teacher and a student that engage in Banking Time can be likened in many ways to the relationship between a mentor and a mentee (Pianta, Stuhlman, & Hamre, 2002). Examination of findings within the mentor literature provides some hypotheses about why Banking Time may not be a highly effective intervention for at-risk students. In general, mentor programs are intended to provide disadvantaged children with experiences with positive role models in order to improve their academic, social-emotional, and behavioral functioning (Tierney & Grossman, 2000). One study examined the internalizing and externalizing behaviors of young adolescents before and after their participation in an intense mentor program (Jackson, 2002). Mentees met with their mentors for at least 15-20 hours each week for eight months. Over time, parent, but not teacher, reports indicated decreases in internalizing and externalizing problems for the mentees. Dubois et al. (2002) conducted a meta-analysis of mentoring research and found, overall, an effect size of .14 across measures of positive mentee outcomes. They also discovered several moderators of the effectiveness of mentor programs. In particular, programs that were conducted outside of schools were more effective overall than those conducted within schools (Dubois et al., 2002). Programs with explicit expectations for frequency of contact between mentor and mentee were more effective than those without such expectations (Dubois et al., 2002). Effects were also greater for youth with environmental risk factors such as low socioeconomic status (but not individual risk factors such as low academic performance), leading the authors to hypothesize that mentoring is likely most helpful as a prevention for students with environmental risk factors who have not yet developed

dysfunctional behaviors (Dubois et al., 2002). Additional factors that predicted greater effectiveness included ongoing training to mentors, provision of structured activities to engage in with their mentees, parent involvement, incorporation of mentoring “best practices” in the programs, and use of mentors with backgrounds in helping roles, such as teachers (Dubois et al., 2002). Though significant and important, these findings suggest that the positive effects of mentoring are relatively small. Most striking are the implications of some of the moderating variables that are associated with successful mentoring.

If the Banking Time intervention, particularly its application in the current study, is evaluated in terms of findings from the mentor literature, it seems to fall short in many areas. In particular, the time invested by the teacher is significantly less than that encouraged in most larger-scale mentor programs; it takes place entirely within the school setting; and it was targeted at students that had already developed personal risk factors (i.e., poor academics and behavior problems). The time investment and the nature of the typical mentoring relationship differs significantly from what is involved with Banking Time and what is likely feasible for a classroom teacher. Overall, when evaluated in the context of mentoring research, Banking Time would not be predicted to be highly effective at improving student outcomes.

Banking Time Is Not Powerful Enough to Counteract Outside Influences

It is also possible that Banking Time, when implemented with greater intensity and duration than it was in the current study, could be effective for some students. However, it may not be powerful enough on its own to counteract negative factors that affect high risk children outside of the school setting. Various factors have predicted risk for student disruptive behavior including biological factors, aspects of family ecology, such as family

distress, poor parenting practices, and insecure child-caregiver attachment during the first two years of life (Greenberg et al., 1993). Disruptive behavior is much more likely to result when a combination of these factors exist and interact with each other (Greenberg et al., 1993). Given the likely duration and impact of these factors prior to elementary school, a time-limited, school-day intervention may not be powerful enough to counteract the negative influences already acting on the troubled students. Even a very intense mentor program that provided at-risk students with a positive role-model both during and after school hours remediated only maladaptive behaviors but did not improve their positive, adaptive skills (Jackson, 2002). The author of that study hypothesized that the influence of one positive role model may not be powerful enough to counteract the effects of multiple, negative adult figures that have been present in the lives of the children over a longer time period.

Banking Time Is Not Effective as a Stand-Alone Intervention

Finally, Banking Time may not be effective at remediating problem behaviors on its own but may be more suitable as a component in a more comprehensive intervention program. Some of the play-based therapy programs that have been studied previously (e.g., Barkley, 1987; Hembree-Kigin & McNeil, 1995) have paired a relationship-enhancing intervention (e.g., attending) with a systematic behavior management program. In these programs, the relationship-enhancing intervention is intended to increase closeness and decrease conflict between child and parent and to increase the likelihood of compliance to the behavior management portion of the program. Some research suggests that the behavior management portion of the intervention is the crucial component for effecting behavioral change in noncompliant children (Eisenstadt et al., 1993). The Banking Time methods, likewise, may be more effective when implemented in conjunction with a well-developed,

structured behavior plan (Pianta, 1999) or as part of the more comprehensive *STARS* program (Pianta & Hamre, 2001) described earlier in this chapter. When combined, these interventions may be more effective than any individual component is on its own.

Other Limitations

The previous section discussed limitations in the present study that may have accounted for failure to demonstrate Banking Time's effectiveness. Various additional limitations were present in this study that were not directly related to the effectiveness of the intervention. These limitations are presented below.

Limited Measures of Student-Teacher Relationship Quality

The Student-Teacher Relationship Scale (STRS; Pianta, 2001) is the most commonly used instrument for assessing the quality of student-teacher relationships. Although psychometrically sound, it is not an adequate measure of student-teacher relationship quality in and of itself when that variable is central to the hypotheses of a time series design, as it was in the current study. The STRS measures relationship quality only from the perspective of the teacher. Although the teacher's perceptions are very important, they are undoubtedly biased to some extent and have been shown to correlate very weakly with student perceptions of their relationships. Hughes et al. (1999) found low, nonsignificant correlations of .23, .15, and .11 between teacher and student-reported relationship quality across three collection points. The meaning of these correlations is limited somewhat by the measure used to assess teacher-perceived relationship quality that was developed by the authors who reported only minimal psychometric characteristics for it. With that caveat in mind, the lack of correspondence in relationship perception by the two members of the dyadic relationship is surprising and illustrates the subjectivity in interpreting interpersonal interactions. A well-

validated measure of student-perceived relationship quality for young children is needed. In addition, creation and validation of a direct observational technique for classifying student-teacher interactions by unbiased observers would add to the objectivity of this research. At least two direct observation methods, the Classroom Assessment Scoring System (CLASS; La Paro, Pianta, & Stuhlman, 2004) and the Caregiver Interaction Scale (Arnett, 1989), have been created to assess classroom climate and the nature of a teacher's relationship with his or her students. Perhaps these methods could be adapted to evaluate *dyadic* student-teacher interactions more objectively. Alternately, observational methods used to evaluate child-caregiver interactions in parenting relationships such as the Dyadic Parent-Child Interaction Coding System (DPICS; Eyberg & Robinson, 1983, as cited in Hembree-Kigin & McNeil, 1995) may be modified to assess the quality of student-teacher interactions.

Measurement of student-teacher relationship quality was also limited in the current study because it was not considered appropriate to administer the STRS frequently during the study. Unlike items on measures intended as daily checklists that tend to be rather concrete and specific, the items of the STRS tap behaviors and perceptions that are more global and are unlikely to change significantly from day to day or even week to week. The length of the scale (i.e., 28 items) also contraindicated frequent administrations during a study that already required significant teacher time and commitment. As a result of these factors, student-teacher relationship quality was not measured continuously throughout the study. STRS scores therefore could not be examined statistically or visually for trends across the three phases of the study. Instead, pre-post scores were compared. It was therefore not possible to determine if changes in relationship quality occurred at various times during the study. For the only dyad that reportedly experienced improved relationship quality post-intervention,

Dyad Three, it was not possible to attribute the improvements to the intervention due to various potential confounding factors (e.g., maturity, various standard classroom practices and interventions).

All Observers Were Not Blind to Order and Timing of Intervention Implementation

Due to difficulties recruiting research assistants with flexible schedules, the primary investigator carried out about one-fourth of the direct classroom observations herself. Both of the research assistants were uninformed about the order and timing of treatment implementation, but the primary investigator was fully knowledgeable about this information. This knowledge could have biased her judgment when coding student and teacher behaviors in the classroom, leading to results that favored the a priori hypotheses. Because few of the hypotheses were supported for any of the dyads, however, this limitation did not seem to significantly impact the findings in this study.

Implications for Research and Practice

Research

Although the results of this study did not provide evidence to support the effectiveness of Banking Time for improving student-teacher relationships and student behavior, it is important to consider the sizable research base that has linked student-teacher relationship quality with various student outcomes (e.g., Howes et al., 1994; Pallas et al., 1987; Pianta et al., 1995; Pianta et al., 2002). Greater understanding of this association should be pursued. In order to do so, additional measures of student-teacher relationship quality should be developed and validated to enable more comprehensive measurement in this area. In particular, student-report and third-person, observational techniques should be developed and validated. The development of a well-validated student-report measure of

teacher relationship quality, particularly one appropriate for preschool and early elementary-aged students, could lead to further advancement of this research. It would allow for better examination of the correspondence between student and teacher perceptions of relationship quality which, in turn, may have important implications for relationship interventions. Second, the validation of observational methods for evaluating dyadic student-teacher relationship interactions objectively would enhance the methods for studying outcomes in relationship intervention studies. As noted above, modifications of existing observation systems (e.g., Arnett, 1989; La Paro et al., 2004) may be possible in order to expedite this process.

The development of better evaluation tools will facilitate more intricate study of methods of enhancing student-teacher relationships. Future research endeavors should focus on two broad areas. First, additional research regarding the effectiveness of Banking Time for improving student-teacher relationship quality and student outcomes should be pursued. Second, efforts should be made to identify the natural methods that teachers use to enhance student relationships within the context of typical school activities.

Further Study of Banking Time

Multiple design and implementation issues created limitations to the current study that likely interfered with the potential effectiveness of Banking Time for improving student-teacher relationship quality and student outcomes. It is therefore recommended that further study of this technique be carried out using methods that are more rigorous and that it be implemented in a setting that is better matched with the philosophy and components of Banking Time. In particular, rather than examining only Banking Time, it is suggested that the entire *STARS* (Pianta & Hamre, 2001) intervention be empirically tested. In addition,

STARS could be paired with a systematic behavior management plan, similar to the model used in Parent-Child-Interaction Therapy (PCIT; Hembree-Kigin & McNeil, 1995). One or two of the students' most dysfunctional behaviors could be targeted in the behavior plan. This comprehensive intervention may be studied in a preschool setting where the play therapy techniques of Banking Time are more consistent with the existing classroom structure that includes a greater focus on play than what is apparent in elementary school classrooms. Alternately, it could be tested in a Montessori school that promotes more student-directed learning (Soundy, 2003) that may be consistent with the procedures implemented in Banking Time. Also, the number of Banking Time sessions should be doubled or tripled to match the number of sessions of play therapy found to be most effective (Ray et al., 2001).

Because results of the present study suggest that Banking Time may be difficult to implement with integrity and may not be considered acceptable to teachers due to the large time commitment, studies in the near future should continue to implement small n designs that require significantly fewer resources than group experiments. If the effectiveness of Banking Time on its own, or in combination with other techniques, is established, treatment acceptability is likely to improve and provide justification for larger scale studies.

Identify Ecologically Valid Methods for Improving Student-Teacher Relationship Quality

In addition to testing the effectiveness of Banking Time, a technique that is imposed on normal school setting activities, researchers should work to identify the natural means by which teachers develop positive relationships with their students during the course of school day interactions. Rather than training teachers to engage select students in entirely new activities, perhaps there are ways to change the manner in which they carry out existing

instructional practices. Research has shown that some teachers tend to have closer, less conflicted relationships with their students than do other teachers (Kesner, 2000). Perhaps the teaching and interactional styles of these teachers can be examined to identify specific behaviors that lead to more positive student relationships. One such characteristic may be teacher sensitivity, defined by warm, consistent, and positive interactions, as it is associated with more on-task behavior and more socially appropriate behavior in young students (Pianta et al., 2002) and may lead to more effective behavior management (Pianta, 1999).

Exploratory studies of classroom ecology may uncover other contextual factors, such as student-teacher ratio, that relate to relationship quality. It will be important to identify ecologically valid methods for enhancing student-teacher interactions as they may be more acceptable to teachers and easier to implement than interventions such as Banking Time that require more training and time of teachers who are often overwhelmed with responsibilities.

Practice

Despite the continued uncertainty regarding the nature of the association between student-teacher relationship quality and student outcomes, some preliminary implications for practice can be discussed. Considering the student-teacher relationship literature broadly, it is clear that benefits are present for students that develop close teacher relationships that are relatively low in conflict and dependency (Pianta, 1994). School psychologists and teachers should be aware of this association and, when appropriate, develop plans to increase students' feelings of belongingness in their schools and classrooms and to increase teachers' relationship-enhancing interactions with their students. Because well-validated interventions for improving relationships have not been documented, school psychologists and teachers

should work collaboratively to develop plans on a case-specific basis as they do through behavioral consultation.

This large research base further provides theoretical support for various classroom practices that increase the opportunities for students and teachers to bond with each other. For example, the practices of looping (e.g., Graue, 1999), in which a teacher works with a group of same-aged students for two or more consecutive years as they progress through grades, and multi-age classrooms (e.g., Cavalcante, 1998), in which classrooms are composed of two or more grade levels of students who remain with the same teacher for multiple years, are consistent with the philosophy that student-teacher relationships are important for student development. School psychologists can share this information with administrators and teachers who are in positions to make relevant school policy decisions.

The absence of evidence for Banking Time, as well as converging evidence that factors outside of the school setting impose major obstacles on the success of high-risk students, both imply the need for additional actions by practicing school psychologists. Psychologists may find that interventions for these high-risk students are most effective when they are implemented both at school and in the home setting. It may be necessary to broaden the role of the school psychologist from assessing children's functioning and problem-solving about their needs within the school setting to working closely with their families to facilitate home-based interventions (Christenson, 2003). School-home collaboration can be accomplished through such methods as conjoint behavioral consultation (Sheridan, Kratochwill, & Bergan, 1996) and more traditional family therapy. School psychologists are in prime roles to work conjointly with both parents and teachers to identify patterns of problem behaviors, develop interventions, and monitor the integrity and effectiveness of the

plans. In order to facilitate more intense, in-home treatment, psychologists should be well-informed about the availability of local community resources and the most effective ways to access them. School psychologists could be involved in educating families about the types of programs available to them, what services they would involve, and the potential benefits to their participation. Once they have initiated these outside services, the school psychologists could continue to monitor student progress and act as a liaison between the family, home-based mental health worker, and other school personnel.

Conclusion

The present study provided little support for the effectiveness of Banking Time at improving student-teacher relationship quality and student functioning. The student-teacher relationship quality literature as a whole, however, supports the potential importance of these dyadic interactions for child development. As described in more detail above, additional study of the processes involved in student-teacher relationships and identification of ways of enhancing them should be pursued. Second to parents, teachers likely represent the most stable caregivers to many children and continued efforts should be made to capitalize on the potential power of those relationships.

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Appendix A: Banking Time Training Checklist

Teacher ID# _____ Date _____

The following *never* occur within the ten-minute student-teacher interaction:

- _____ commands
- _____ questions
- _____ criticism
- _____ obvious attention toward other students or activities

A minimum number of instances of each of the following occur within the ten-minute student-teacher interaction:

- _____ Describe student's appropriate behavior (6)
- _____ Reflect student's talk (2)
- _____ Imitate student's play (4)
- _____ Convey nonverbal interest through smiles, nods, and/or gentle touches (6)
- _____ Genuine praise (maximum: 1 per minute)

Appendix B: Banking Time Integrity Checklist

Teacher ID# _____ Date _____

The following *never* occur within the ten-minute student-teacher interaction:

_____ commands

_____ questions

_____ criticism

_____ obvious attention toward other students or activities

A minimum number of instances of each of the following occur within the ten-minute student-teacher interaction:

_____ Describe student's appropriate behavior (6)

_____ Reflect student's talk (2)

_____ Genuine praise (maximum: 1 per minute)

Appendix C: MSCISSAR Training Schedule

Research Assistant: _____

Week 1

- _____ Read pp. 4-16 in Practitioner's Manual (PM)
- _____ Read pp. 29-38 in Technical Manual (TM)
- _____ Study instrument taxonomy with emphasis on Student Events (pp. 75-85)
- _____ Complete tutorial exercise for Level One to 90% mastery (on computer with Tutorial disk)
- _____ Meet with Primary Investigator to review Level One tutorial together and discuss readings

Week 2

- _____ Read pp. 17-22 in PM
- _____ Read pp. 49-62 in TM
- _____ Study instrument taxonomy for Student and Teacher Events (pp. 75-85 in PM)
- _____ Complete tutorial exercise for Level Two to 90% mastery (on computer with Tutorial disk)
- _____ Meet with Primary Investigator to review Level Two and discuss readings

Week 3

- _____ Read pp. 23-52 in PM
- _____ Read pp. 75-122; 39-44; 136-157 in TM
- _____ Study instrument taxonomy (pp. 75-85 in PM)
- _____ Conduct practice classroom observations
- _____ Calibrate with tape for first 10 minutes
- _____ Meet with Primary Investigator to review calibration tape

Week 4

- _____ Study instrument taxonomy (pp. 75-85 in PM)
- _____ Continue practice observations in classrooms
- _____ Calibrate with tape for full 25 minutes
- _____ Meet with Primary Investigator to calibrate full tape
- _____ Conduct reliability check with Student Investigator in classroom

Appendix D: Banking Time Training Checklist

DYAD # _____

Session 1

- _____ Consultant gives teacher copy of “Banking Time Basics for Teachers”
- _____ Consultant orally reviews major issues of Banking Time (BT) with teachers
 - _____ Scheduling Suggestions
 - _____ How to introduce banking time to the student
 - _____ Observation
 - _____ Narration
 - _____ Labeling
 - _____ Relational Themes
- _____ View videotape of teacher and student engaged in banking time
- _____ BT role-play: consultant is teacher; teacher is student
- _____ Consultant asks teacher if he/she has any questions
- _____ Consultant encourages teacher to carefully read “Banking Time Basics for Teachers” prior to session 2
- _____ Arrange a date, time, and location to meet for Session 2

Session 2

- _____ Consultant asks teacher if he/she has any questions or comments about BT
- _____ BT role-play: teacher is teacher; consultant is student
- _____ Consultant provides feedback to teacher based on the BT criteria checklist
- _____ Consultant and teacher generate plan for teacher to carry out BT sessions with target student:
 - _____ Teacher chooses days and times (three 10-minute sessions per week)
 - _____ Teacher plans the primary setting in which BT sessions will occur
 - _____ Teacher plans a secondary setting in which BT time sessions may occur
 - _____ Teacher lists six possible activities/materials to be available to the student during BT sessions
- _____ Consultant asks teacher if he/she has any questions or comments about BT
- _____ Arrange a time to meet for Session 3

Session 3

- _____ Consultant asks teacher if he/she has any questions or comments about BT
- _____ BT role-play: teacher is teacher; consultant is student
- _____ Consultant compares teacher behavior to BT criteria checklist
- _____ If teacher meets criteria, consultant instructs teacher to begin sessions with target student **OR** If teacher fails to meet criteria on the first trial:
 - _____ Consultant provides feedback to teacher on her behavior
 - _____ BT role-play: teacher is teacher; consultant is student

- _____ Consultant compares teacher behavior to BT criteria checklist
- _____ If teacher meets criteria, consultant instructs teacher to begin sessions with target student **OR** If teacher does not meet criteria:
 - _____ Consultant provides feedback to teacher on her behavior
 - _____ Arrange a date, time, and location to meet for Session 4

Session 4
(if necessary)

- _____ Consultant asks teacher if he/she has any questions or comments about BT
- _____ BT role-play: teacher is teacher; consultant is student
- _____ Consultant compares teacher behavior to BT criteria checklist
- _____ If teacher meets criteria, consultant instructs teacher to begin sessions with target student **OR** If teacher fails to meet criteria on the first trial:
 - _____ Consultant provides feedback to teacher on her behavior
 - _____ BT role-play: teacher is teacher; consultant is student
 - _____ Consultant compares teacher behavior to BT criteria checklist
 - _____ If teacher meets criteria, consultant instructs teacher to begin sessions with target student **OR** If teacher does not meet criteria:
 - _____ Consultant provides feedback to teacher on her behavior
 - _____ Arrange a date, time, and location to meet for Session 5