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The University of Southern Mississippi

THE EFFECTS OF TEACHER PRAISE ON ENGAGEMENT AND WORK COMPLETION OF STUDENTS OF TYPICAL DEVELOPMENT

by

Brandon Joseph Richard

Abstract of a Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

December 2012
ABSTRACT

THE EFFECTS OF TEACHER PRAISE ON ENGAGEMENT AND WORK COMPLETION OF STUDENTS OF TYPICAL DEVELOPMENT

by Brandon Joseph Richard

December 2012

The current study investigated the effects of teacher praise on engagement and work completion of students of typical development. Four students (grades two through four) and their teachers served as participants during the study. Teachers provided specific labeled praise or general praise if students met the engagement criteria while completing math worksheets. A nonconcurrent multiple baseline across participants design with a crossover element served to evaluate the differential effects of specific labeled praise or general praise for one pair of students. A concurrent multiple baseline across participants design with a crossover element was used for the remaining pair. A 10-second whole interval recording system measured student engagement percentages during the study while teacher praise was measured utilizing a 10-second partial interval recording system. Math worksheet permanent products determined the percentage of problems completed and were collected daily. Results indicated that specific labeled praise resulted in higher levels of engagement for all students relative to baseline and general praise conditions. Specific labeled praise resulted in the highest number of problems completed for three students. General praise resulted in the highest number of problems completed for the remaining participant.
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A Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
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ACKNOWLEDGMENTS

The author would first like to thank God for provision of strength, fortitude, and illumination during the entire dissertation process from birth of an idea to the final period. Secondly, I would like to thank my wife for the tremendous support provided as well as the sacrifices so that my Ph.D. could be realized. I would also like to acknowledge my children and how understanding they were and the awesome respite they offered during the much needed breaks. Thank you to Dr. Sterett Mercer, Dr. Brad Dufrene, Dr. Dan Tingstrom, and Dr. Joe Olmi for the invaluable input and direction provided with this project and throughout my graduate training. To the staff, teachers, and students at the schools where data were collected, you have my enduring gratitude. Without your assistance, I would not have been able to finish. And to my parents and grandparents, your nurturing support and unconditional love instilled in me the desire to always do my best.
TABLE OF CONTENTS

ABSTRACT ............................................................................................................................... ii

ACKNOWLEDGMENTS ............................................................................................................. iii

LIST OF TABLES ...................................................................................................................... v

LIST OF ILLUSTRATIONS ..................................................................................................... vi

CHAPTER

I. INTRODUCTION ................................................................................................................... 1
   Review of the Literature
   Limitations of Previous Research
   Purpose of the Present Study
   Hypotheses

II. METHOD ............................................................................................................................. 16
   Participants
   Procedure
   Materials
   Data Collection
   Dependent Variables
   Experimental Design
   Data Analysis and Phase Change Decision Rules
   Procedure
   Reliability

III. RESULTS ........................................................................................................................... 27
    Visual Analysis and Statistical Analysis

IV. DISCUSSION ..................................................................................................................... 39
    Limitations
    Summary

APPENDIXES ......................................................................................................................... 45

REFERENCES ........................................................................................................................... 55
LIST OF TABLES

Table

1. IOA Data for Teacher Praise and Student Engagement Across Treatment Phases .................................................................25

2. Treatment Integrity Data for Teacher Praise Across Treatment Phases ..................................................................................26

3. Multilevel Analyses Examining Differences between Conditions for Engagement......................................................................37
LIST OF ILLUSTRATIONS

Figure

1. Student Engagement and Teacher Praise Percentages Across Phases for Ted and Anne .................................................................29

2. Student Engagement and Teacher Praise Percentages Across Phases for Dave and Don ........................................................................30

3. Problem Completion Percentages Across Phases for Ted and Anne .........................................................................................32

4. Problem Completion Percentages Across Phases for Dave and Don .........................................................................................33
CHAPTER I
INTRODUCTION

Increasing teacher attention is an effective intervention procedure for a multitude of problem behaviors across various student populations (Broden, Bruce, Mitchell, Carter, & Hall, 1970; Feindler, Taylor, & Wilhelm, 1975; Hall, Lund, & Jackson, 1968; Hasazi & Hasazi, 1972; Seymour & Sanson-Fisher, 1975). One type of teacher attention that has a positive effect on student achievement is contingent attention, which means that a student has to do or produce something to gain access to the attention (McVey, 2001). When a teacher verbally acknowledges that a student has performed adequately, achievement improves (Balzer, Doherty, & O’Connor, 1989; Cooper & Lowe, 1977; Crow & Cheney, 1977; Schunk, 1984). As a student is attempting to meet a goal set before them, reinforcement impacts his or her behavior and subsequent performance on specific tasks (Broughton, 1983; Hickey, Imber, & Ruggiero, 1979; Imber, Imber, & Rothstein, 1979).

When a teacher acknowledges a student that is achieving, work focus increases (Austin & Soeda, 2008; Hall et al., 1968; Stillwell, Harris, & Hall, 1972), academic performance improves (Armstrong, McNeil, & Houten, 1988; Hasazi & Hasazi, 1972; Singh, Winton, & Singh, 1985) and inappropriate behavior decreases (Armstrong et al., 1988; Broden, Hall, Dunlap, & Clark, 1970; Johnson, Goetz, Baer, & Etzel, 1973; Shumate & Wills, 2010). Students who receive attention and feedback in a constructive manner have reported higher self-esteem, rated themselves as better learners, and endorsed higher ratings of teachers (Chalk & Bizo, 2004; Kastelen, Nickel, & McLaughlin, 1984; Phillips, 1984). Although praise has generally been found to be
effective, research has not differentiated the effects of specific labeled praise and general praise. To address this gap, the current study utilized different types of teacher praise as an intervention procedure to determine the effects on student engagement and work completion. Specifically, the effects of specific labeled praise and general praise were compared.

As the frequency of contingent praise statements increases, student disruptive behavior decreases, on-task behavior increases, and academic performance improves (Armstrong et al., 1988; Ferguson & Houghton, 1992; Smith, Brethower, & Cabot, 1969; Workman, Watson, & Helton, 1982). When giving praise to students, statements can be general or specific (Brophy, 1981; Lampi, Fenty, & Beaunae, 2005). Although teachers often are encouraged to use specific praise statements to encourage on-task behavior and reduce problem behavior (e.g., Brophy, 1981; Reinke, Lewis-Palmer, & Martin, 2007), studies have primarily focused on the benefits of specific praise rather than differentiating the effects of specific vs. general praise statements in experimental designs.

It should be noted that previous research has included different terminology to discuss specific praise (e.g., behavior-specific, specific, specific verbal). Further, some authors interchanged terms for specific praise (specific verbal vs. specific contingent) within the article (e.g., van der Mars, 1989). Throughout the literature review, different terms for specific praise may be used and will be based on the terms used in the study being reviewed. The current study consistently uses the terms specific labeled praise and general praise. Specific labeled praise was defined as using the student’s name and describing how students met the engagement criteria, which included acknowledging progress on the worksheets. General praise was defined as acknowledging students when
the engagement criteria were met (e.g., “Good job”) but no description of the behavior or performance.

Review of the Literature

Specific Praise

Several studies have examined the effects of increasing teacher use of specific praise. For example, van der Mars (1989) examined the effects of specific verbal praise on decreasing student off-task behavior in a multiple baseline design across participants. Participants included three second grade students in a physical education class. During intervention, the teacher wore a receiver that transmitted prerecorded specific praise statements through an earpiece. The prerecorded statements occurred as a reminder to deliver contingent, specific praise following appropriate student conduct and performance. Recorded cues did not exceed two praise statements per minute.

Results indicated that during baseline, student off-task behavior occurred during 24.2% to 30.1% of observed intervals across participants. Following an increase in the use of specific praise, student off-task behavior decreased to 9.9% to 12.4% of observed intervals. The noted decreases occurred immediately upon introduction of specific praise. Increases in teacher use of specific praise ranged from 156% to 265% across students. According to the investigator, the teacher did not offer general praise statements to the targeted students, which bolsters confidence that specific praise contributed to the noted results.

The Sutherland, Wehby, and Copeland (2000) investigation provides additional evidence of the positive effects of utilizing specific praise. Participants included a special education teacher and nine fifth-grade students with emotional and behavioral
disturbance that received instruction in a self-contained classroom. Investigators utilized an ABAB withdrawal design to determine the effects of behavior-specific praise statements on student on-task behavior. Experimenters recorded student behavior during 15-minute observations utilizing a momentary time sampling procedure with 1-minute intervals. Interobserver agreement (IOA) data were collected for general praise statements, behavior-specific praise statements, and student on-task behavior. According to the results, IOA was adequate.

Prior to intervention, experimenters provided baseline data on the use of behavior-specific praise to the teacher, offered examples of behavior-specific praise, discussed benefits of utilizing behavior-specific praise, and established a criterion agreed upon by the teacher that indicated the number of behavior-specific praise statements to be offered during each experimental session. Investigators also reminded the teacher prior to intervention sessions regarding the goal for praise statements and offered examples of behavior-specific praise to be utilized. Following treatment sessions, teachers received feedback on the use of behavior-specific praise as well as examples of statements issued during the session.

Results indicated that teacher behavior-specific praise statements increased from baseline to treatment and decreased during withdrawal phases. During baseline, student on-task behavior occurred during an average of 48.7% of intervals. During the initial intervention phase, on-task behavior increased to 85.6% of observed intervals with a decrease noted to 62.2% following withdrawal and an increase to 83.3% upon reimplementaion of treatment (Sutherland et al., 2000).
In addition to the previous studies that reported positive results only for students targeted for intervention, Reinke et al. (2007) reported improvements in behavior for both target students and peer comparisons following an increase in the teacher use of behavior-specific praise. Participants in this study included three teachers and six third-grade general education students referred for engaging in disruptive behavior. Investigators also randomly selected same gender peers to serve as a comparison group. In each classroom, observers collected data for two target students and two peer comparisons. Teacher interviews yielded information regarding hypothetical functions of student disruptive behavior. Experimenters utilized 10-minute 10-second partial interval recording procedures to measure teacher and student behavior. Observers coded teacher general or behavior-specific praise delivered following episodes of student engagement. Levels of IOA for student and teacher behavior were adequate.

Prior to intervention, investigators trained teachers to use praise appropriately, distinguish between general and behavior-specific praise, practice provision of behavior-specific praise, and interpret graphical presentations of data prior to conducting visual performance feedback (VPF). During the study, experimenters conducted follow up meetings to address problem areas, provide feedback, and improve skills when teachers exhibited deficiencies. Within the VPF phase, teachers received daily graphical displays of their use of praise up to that point as well as during baseline.

Investigators utilized a multiple baseline design across classrooms to assess the effects of VPF on teacher behavior. Prior to VPF, teachers engaged in minimal and inconsistent use of behavior-specific praise. Following VPF, teacher use of behavior-specific praise increased but was variable and resulted in a downward trend for some
teachers. During baseline, student disruptive behavior ranged from 13.6% to 32.9% for targeted students and 7.2% to 19.8% for peer comparisons. Following introduction of VPF, disruptive behavior reduced to 8.2% to 19.8% for targeted students and 4.5% to 16.7% for peer comparisons (Reinke et al., 2007).

To further elucidate the results of the study, reductions in disruptive behavior are provided for each participant across classrooms. In Classroom 1, disruptive behavior for target student A decreased from 21.2% to 14.2% and 16.8% to 4.5% for the peer comparison. For target student B, disruptive behavior decreased from 26.3% to 17.7% and 19.8% to 16.7% for the peer comparison. In Classroom 2, disruptive behavior for target student C decreased from 27.2% to 19.8% and 7.2% to 4.7% for the peer comparison. For target student D, disruptive behavior decreased from 13.6% to 8.5% and 16.6% to 14.6% for the peer comparison. In Classroom 3, disruptive behavior for target student E decreased from 32.9% to 17.2% and 14.2% to 6% for the peer comparison. For target student F, disruptive behavior decreased from 20.9% to 8.2% and 12.9% to 11.6% for the peer comparison.

Comparison of Specific and General Praise

In contrast to studies that only investigated the effects of specific praise, Chalk and Bizo (2004) compared the effects of specific and general praise on student on-task behavior, academic self-concept, and enjoyment of numbers. Participants included four teachers and their classrooms of fourth-grade students. Half of the teachers were instructed to use specific praise while half utilized general praise. Prior to intervention, teachers received a 45-minute training that included examples and definitions of both
general and specific praise, which the authors reproduced from Harrop and Swinson (2000).

According to Chalk and Bizo (2004), specific praise was provided to individuals and groups, included acknowledgment of social or academic behavior, and consisted of descriptions of students following the rules or utilizing problem solving skills and effort during the lesson. General praise was provided to individuals and groups and included acknowledgment of academic and social behaviors but did not include descriptions of students following the rules or utilizing problem solving skills and effort during math.

Experimenters observed teacher and student behavior on four occasions utilizing the Observing Pupils and Teachers in Classrooms (OPTIC) measure. The OPTIC consists of two sections that assesses both teacher and student behavior through 15-minute recording systems. Investigators utilized the OPTIC to measure student engagement for individuals, groups, and the entire class. Students completed the Myself-As-Learner Scale (MALS), which served to assess self-perception as a learner and problem-solver. Students also rated numeracy lessons on a three-point scale that encompassed how much they liked math. The two latter assessments occurred at baseline and final observation points.

Observers coded student on-task behavior utilizing the OPTIC and divided the class into three groups. Within each group, investigators observed each student for 4-seconds to determine on-task behavior. The authors provided a definition of on-task behavior from Merrett and Wheldall (1986) but did not clearly indicate if that was utilized during the study. In addition, the OPTIC can be used for individuals, groups, or whole classes.
Investigators hypothesized that specific praise would increase on-task behavior more than general praise because of the information provided from additional content. Prior to baseline, the authors conducted a preliminary observation as a screening measure, and student on-task behavior ranged from 66% to 76%. The authors stated that these percentages would not be influenced by ceiling effects. Although the authors did not report specific percentages of on-task behavior during baseline, visual estimates of on-task behavior from graphs appears to range from 83% to 94%. During treatment, specific praise promoted more on-task behavior than general praise. Additionally, academic self-concept significantly increased during the specific praise condition. Student ratings of numeracy enjoyment were not significantly affected.

Limitations of Previous Research

In addition to the dearth of research comparing general and specific praise, the effects of specific vs. general praise on student behavior are difficult to determine in the extant literature for methodological reasons. In prior studies, specific and general praise were not clearly distinguished (e.g., Sutherland et al. 2000), operational definitions of praise were not provided (Broughton, 1983), praise was used as part of a multi-component intervention strategy (Reinke, Lewis-Palmer, & Merrell, 2008), and treatment integrity data often were not reported to document that the intervention was implemented as designed (e.g., Hall et al., 1968).

Specific and General Praise not Clearly Distinguished

Clearly distinguishing specific and general praise is vital when attributing changes in behavior to a particular praise type, but many studies have not made this distinction.
Sutherland et al. (2000) concluded that student behavior improved following an increase in teacher use of behavior-specific praise. However, general praise also increased during intervention. Despite that, the authors indicated that changes in student behavior occurred following an increase in behavior-specific praise without discussing the potential impact of general praise. Attributing the change in student behavior solely to behavior-specific praise is problematic due to the fact that general praise was also provided and not clearly distinguished from behavior-specific praise. Reinke et al. (2007) also reported decreases in disruptive behavior for target students and peer comparisons subsequent to an increase in behavior-specific praise. Teachers also provided general praise during intervention, which was not discussed as a possible reason for the changes noted.

**Operational Definitions not Provided**

Many studies have failed to provide adequate operational definitions of praise, further complicating determination of the impact of praise given that detailed operational behaviors are necessary for reliability of measurement (Cooper, Heron, & Heward, 2007). For example, praise was minimally defined in the Broughton (1983) study examining the effects of teacher attention on student academic performance and on-task behavior. During the investigation, experimenters coded whether teacher attention was positive or negative; however, training consisted of providing praise, which was described as using the student’s name when acknowledging academic performance.

Additionally, an operational definition of praise was not provided in the Workman et al. (1982) study of the effects of teacher praise on student on-task behavior. During training, investigators instructed teachers to increase and to self-monitor use of praise.
However, during the praise conditions, investigators informed teachers to verbally praise targeted students who were on-task “as often as possible” (Workman et al., 1982, p. 561). Incomplete information regarding the definition of praise was provided in the Stillwell et al. (1972) investigation of the utility of praise in increasing on-task behavior of a fourth-grade child with academic difficulties. Despite positive results, no description of the frequency, schedule, or type of praise was provided. In addition, the authors specified no training procedures for teachers regarding the use of praise, its frequency, or contingency.

In Hasazi and Hasazi’s (1972) study on the effects of increasing teacher attention on digit reversal behavior of a single student when completing math problems, the teacher provided verbal acknowledgment, smiles, and pats on the back, but a clear definition of praise was not provided. Similar concerns were present in two studies investigating the effects of contingent praise on student on-task behavior (Broden et al., 1970a; Broden et al., 1970b). In these studies, teachers were instructed to provide attention (verbal comments regarding student progress, acknowledgment for hand raising, and praise for on-task behavior) contingent on student on-task behavior, but, again, praise was not specifically defined.

According to Chalk and Bizo (2004), praise was delivered to individuals and groups, included acknowledgment of social or academic behavior, and consisted of descriptions of students following the rules or utilizing problem solving skills and effort during a lesson. However, the table where the authors reported the praise definitions originated did not include a description of praise. Further, the authors failed to operationally define or provide examples of praise to be utilized during treatment.
Praise as Part of a Multi-component Treatment Package

In addition to limited differentiation of general vs. specific praise and unclear operational definitions, the extant literature on praise is complicated by inclusion of praise conditions as part of multi-component intervention packages. For example, Reinke et al. (2008) investigated the effects of a classroom consultation model and visual performance feedback on teacher praise designed to decrease disruptive classroom behavior. Prior to intervention, experimenters conducted interviews to assess the classroom environment, ascertain rules and expectations presently used, and determine strengths and weaknesses of the teachers. Subsequent to these activities, the experimenter and each teacher devised a set of management strategies to be implemented in the classroom, all of which included praise.

Results indicated that behavior-specific and general praise increased during each intervention phase, while student disruptive behavior decreased. It should be noted that teacher praise was combined with a variety of other strategies that may have influenced the results. Therefore, it cannot be stated with confidence that behavior-specific praise was solely responsible for improvement in student behavior.

Sutherland et al. (2000) reported that increases in behavior-specific praise resulted in higher percentages of on-task behavior for students. However, general praise statements also increased during intervention and likely contributed to the noted effects. The concurrent delivery of behavior-specific and general praise impacts confidence in the results.
Treatment Integrity Concerns

In a number of reviewed studies, teachers received instructions to change aspects of their behavior (i.e., provide more praise) to improve student performance. However, most studies provided minimal description of teacher adherence to designed procedures. For example, the Rathvon (1990) investigation comparing the effects of teacher encouragement on student off-task behavior and academic performance did not specify whether teachers consistently provided encouragement as designed. Results indicated student on-task behavior and academic performance gains were greater in the treatment condition where teachers delivered encouragement closer to the students. However, conclusions regarding results must be tempered given that the experimenter did not specify how often teachers utilized proximal encouragement during the proximal condition and distal encouragement during the distal condition. Further, data were not provided regarding the use of proximal or distal encouragement in the wrong condition (e.g., proximal in the distal condition).

Treatment integrity data were not provided in the van der Mars (1989) study that investigated the effects of specific praise on off-task behavior of students in a physical education class. Specifically, no data were presented regarding the delivery of specific praise or if other types of praise occurred. Additionally, no information was offered if the teacher provided specific praise as instructed or planned.

In the case of Reinke et al. (2007), rate and use of behavior-specific praise remained inconsistent following training and feedback, which complicates determination of the true effects of teacher praise and impacts treatment integrity. Although the authors reported changes in student behavior following increased use of behavior-specific praise,
they may have been larger if intervention integrity were higher. Sutherland et al. (2000) also failed to provide treatment integrity data regarding the content and frequency of each praise type delivered.

Treatment integrity data were also not provided in the Broden et al. (1970b) study designed to reduce disruptive behavior and increase appropriate study behavior. Similar to the previous examples, experimenters did not discuss integrity data regarding teacher provision of attention. With no treatment integrity data reported or specified, it is unclear whether teachers provided attention appropriately and the results are questionable.

Chalk and Bizo (2004) reported that teachers increased the use of praise depending on the condition (specific or general) they were assigned. However, teachers in the specific praise condition provided general praise while teachers in the general praise condition utilized specific praise. For example, teachers in the specific praise condition only provided that type of praise during 54% of the instances, which means that 46% of the praise statements were general. Based on these findings, it is difficult to attribute improvement in student on-task behavior solely to increases in the use of specific praise and substantially impacts treatment integrity. In addition, the authors did not provide treatment integrity data for teacher praise, so there is no guarantee that teachers provided praise statements for each condition as instructed.

Last, the Hall et al. (1968) study examining the effects of contingent teacher attention on study behavior failed to specify teacher adherence to treatment design. Experimenters recorded teacher verbalizations as well as proximity to students during observations. The observer signaled when teachers should attend to students with a small square of colored paper. Results indicated that reinforcement of study behavior increased
student study behavior. During the study, experimenters did not specify data pertaining to teacher provision of attention following prompts, contingent on student study behavior, or utilization of designated content. If treatment integrity data are not collected with regard to teacher implementation of the intervention, attributing treatment effects to what a teacher has done is difficult because there is limited support or evidence that teachers provided treatment as designed (e.g., Gresham & Gansle, 1993). If that is the case, additional factors influencing treatment results must be considered because teacher behavior may not be responsible for the noted effects (Gresham & Gansle, 1993).

Purpose of the Present Study

Overall, findings from previous research indicated that increasing teacher praise or attention improves student behavior and/or academic performance. Increasing teacher attention is a time and cost efficient intervention procedure that can be easily communicated to teachers. Despite results suggesting that teacher praise is effective, the evidence is unclear because of methodological problems (e.g., Chalk & Bizo, 2004; Reinke et al., 2007). Specifically, previous research included unclear distinctions of general and specific praise (e.g., Sutherland et al. 2000), limited operational definitions of teacher praise (e.g., Workman et al., 1982), the use of praise in multi-component treatment packages (Reinke et al., 2008), and minimal reporting of treatment integrity data (e.g., Hall et al., 1968). Further, the extant studies only evaluated the effectiveness of specific and general praise in within-group comparisons and did not conduct between-group analyses utilizing both types of praise.

The current study addressed the limitations of prior investigations by clearly distinguishing general and specific praise. Additionally, specific labeled praise and
general praise were compared to determine relative effects on engagement and work completion for typically developing students. Specific labeled praise and general praise were used alone and not paired with any other intervention procedures. Explicit training to teachers was provided through education, performance feedback, an integrity checklist, modeling, and prompting. Treatment integrity data were collected to determine if teachers implemented both praise types as instructed and designed, which increased confidence in observed treatment effects. Each student experienced both types of teacher praise during treatment.

**Hypotheses**

In the present investigation, the following hypotheses are offered:

**H₁.** Increasing the provision of general praise (GP) was hypothesized to result in higher levels of engagement and work completion as compared to baseline.

**H₂.** Increasing the provision of specific labeled praise (SLP) would result in higher levels of engagement and work completion as compared to baseline and GP.

This was important to investigate because teachers could be provided with information that would more positively impact student success and performance in the classroom. Further, specific praise may be more effective for students because it clearly communicates expectations as well as the behavior being reinforced. Students are also provided with information about what specific strategy or technique is being acknowledged (Brophy, 1983; Brophy, 1981; Chalk & Bizo, 2004). However, minimal research has been conducted specifically comparing the effects of GP and SLP.
CHAPTER II

METHOD

Participants

Participants included four elementary-aged students and their teachers recruited from two schools in two southeastern states. Participant 1, Ted, was an eight-year-old African American male in the second grade. Participant 2, Anne, was a seven-year-old African American female in the second grade. Participant 3, Dave, was an eight-year-old African American male in the third grade. Participant 4, Don, was a 12-year-old African American male in the fourth grade. Ted’s teacher was an African American female; Anne, Dave, and Don’s teachers were all Caucasian females.

Teachers referred students who exhibited low levels of engagement and work completion in mathematics. At the time of the study, none of the participants met criteria for a hearing impairment, autism spectrum disorder, receptive language disorder, or Special Education exceptionality. Based on the screening criteria described below, four students were excluded and did not progress to treatment phases.

Procedure

Institutional Review Board (IRB) approval (Appendix A) was obtained prior to commencement of the study. Due to the time lapse between data collection periods for the participants described below, two Institutional Review Board approval forms are included in the appendices. Following IRB approval, principals at prospective schools were contacted concerning the study and to acquire permission to recruit teacher participation in the study. Subsequent to administrative approval, teachers were contacted by the primary investigator to schedule meetings in which the purpose of the
study was explained. During the meeting, teachers were asked about students who were typically developing and exhibited low levels of engagement. Informed consent was obtained from each student’s parent (Appendix B) and teacher (Appendix C) following identification of students and teachers agreeing to participate in the study. Subsequent to gaining informed consent, times and places to collect data were established.

Setting

All observations took place in the students’ classrooms. At the time of the observations, students completed math worksheets provided by the investigator. Each classroom included one teacher and approximately 20 students. During baseline and treatment sessions, the investigator observed from the back of the classroom. Thirty-one percent of observations included the presence of an additional observer to evaluate IOA.

Materials

One-Way Radio

A bug-in-the-ear device was utilized during treatment phases to prompt the teacher when to provide praise. This device operated as a one-way radio transmitter and consisted of a microphone and receiver. The primary investigator used the microphone to prompt teachers when to deliver praise. Teachers wore the receiver in their ear and were able to hear prompts as they were conducting class. A bug-in-the-ear device served to limit intrusiveness and disruption to students and teachers in the classroom.

Math Worksheets

Math worksheets (Appendix D & E) were completed by the students during math class. Problems included on the worksheet were agreed upon by the teacher and were
commensurate with the current grade level placement of each student. Teachers also reviewed the worksheets and determined that selected students would be able to complete the problems and possessed the necessary requisite skills. In order to control for task difficulty, worksheets were similar across the study and taken from AIMSweb M-CBM Computation Progress Monitoring probes (PsycCorp/Pearson, 2004). This served to reduce possible confounds that could result from worksheets including new or different material.

Data Collection

*Observation Forms*

Individual data collection and procedural integrity forms (Appendix F) were utilized throughout the study to measure student engagement and teacher praise during all phases. The forms included 60 10-second intervals necessary to accommodate the 10-minute observations. Columns were available for observers to endorse student engagement, SLP and GP as each occurred. Separate columns for target students and non-target students were available so that SLP and GP could be measured separately for target and non-target students.

**Dependent Variables**

*Student Engagement*

The primary dependent variable for the current study was student engagement, which was defined in terms similar to those used by Hawken and Horner (2003). A student was considered academically engaged if they were exhibiting any of the following behaviors during observation periods: (a) keeping their eyes on the teacher during instruction as well as work materials, (b) working with peers when requested, (c)
working on assigned independent tasks, (d) participating in activities approved by the teacher following work, or (e) discussing academic tasks with the teacher. Observations of student engagement were 10-minutes in duration and occurred at least two times per week.

During the 10-minute observation, a 10-second whole interval recording procedure was utilized to measure the percentage of observed intervals that a student was engaged. Intervals were endorsed if a student engaged in any of the behaviors discussed above for the entire 10-seconds of an interval. If students looked away for 1-second or less during an interval, the engagement criteria were still met and that interval was endorsed. A total of 60 intervals could be endorsed with this recording procedure, so engagement would be 80% if 48 intervals were endorsed during an observation.

Problem Completion

A secondary dependent variable was the percentage of problems completed on the math worksheets during the observation periods. Students only completed problems on the worksheet while the investigator was present to conduct the 10-minute observation. The primary investigator began the observation when the teacher prompted the student to begin completing the worksheet. Once the 10-minutes elapsed and the investigator got up to leave the room, the teacher picked up the worksheet from the student. This was discussed and approved by the teacher prior to commencement of the study so that the number of problems completed on the worksheet remained constant. The percentage of problems completed was calculated based on the number completed during the 10-minute observation and divided by the total number of problems on the worksheet. Performance
on worksheets completed during observation periods was secured during the following observation and graphed accordingly.

**Experimental Design**

For the first pair of students, a nonconcurrent multiple baseline across participants design with a crossover element was utilized to determine the differential effectiveness of SLP and GP on student engagement and work completion (Hayes, Barlow, & Nelson-Gray, 1999). Data were collected for Ted during the spring of 2011. For the second student, data were collected during the spring of 2012. A concurrent multiple baseline across participants design with a crossover element was utilized to collect data for the second pair of students. Following baseline data collection and determination of inclusion in the study, treatment sessions commenced. The first pair of students (Ted and Anne) progressed through the following treatment sequence: (a) baseline (i.e., BL), (b) GP, and (c) SLP. For the second pair of students (Dave and Don), the treatment sequence included the following order: (a) BL, (b) SLP, and (c) GP.

**Data Analysis and Phase Change Decision Rules**

Visual analysis of the data (i.e., inspection of level, trend, and variability) was used to indicate which intervention phase was more effective in increasing engagement and work completion. Student engagement percentages were used as the primary dependent variable to make phase change decisions. The phases of a multiple baseline design include baseline and intervention. During baseline, the teachers conducted class as usual, which indicated the level of student performance and engagement prior to implementation of treatment. The intervention phases included SLP and GP, and each pair of students received a different order of treatment to control for order effects. When
students receive a different order of treatment phases, it may more clearly indicate what treatment was most effective. With regard to experiencing a different order of treatment conditions, one pair of students proceeded from baseline to SLP followed by GP. The next pair proceeded from baseline to GP followed by SLP.

The number of baseline data points was determined by specific criteria. In order to proceed from baseline to the first treatment condition, data had to be stable with at least three points collected or a decreasing trend noted. Given the nature of a multiple baseline design, the baseline phase was shorter for one student in the pair and longer for the other student, which is known as a staggered phase change. Following treatment implementation, if data were stable, at least three data points were collected, and a treatment effect was noted, the next phase in treatment was instituted. This sequence occurred for each pair of students.

Procedure

Screening/Baseline

Following identification of students by teachers, observations were completed as a screening procedure to determine if students were exhibiting low levels of on-task behavior. The screening observations also served as BL data points for the study. During BL, data on the occurrence of student and teacher behavior were collected. Specifically, observations were conducted to determine the percentage of observed intervals student on-task behavior and teacher praise occurred. The percentage of observed intervals teachers issued praise statements was calculated to determine how often praise was being utilized in the classroom. Further, the percentage of math problems completed on provided worksheets was calculated at this time. Following
collection and analysis of baseline data, decisions were made concerning inclusion criteria. If average student engagement occurred during 60% or less of observed intervals during the 10-minute observations and teachers praised less than one time per minute across BL, that student-teacher pair was included in the study. Meeting times and places to provide training were established following determination of inclusion in the study.

*Teacher Training*

Prior to each treatment phase, teachers received training regarding which type of praise to initially provide. The primary investigator provided operational definitions of GP and SLP statements, offered examples, modeled appropriate use of these concepts, instructed teachers to practice with the investigator present, and left handouts (Appendix G) that included all information discussed during the training. Further, teachers practiced with the bug-in-the-ear device prior to the start of each treatment phase. Teachers received corrective feedback during training and following treatment phases if praise statements did not meet the one per minute criterion or if an incorrect type of praise occurred in a specific phase (e.g., GP statement during SLP phase). Corrective feedback occurred during meetings with the teacher to discuss incorrect use of praise and instances where praise delivered did not meet the one per minute criterion. During this time, information from the handouts was revisited and teachers practiced delivery of praise. In addition to the meetings, teachers received reminder e-mails concerning the correct use of praise as well as prompts prior to observations to deliver GP or SLP depending on the treatment phase.
**Experimental Phases**

Following teacher training, intervention phases occurred. During treatment phases, the primary investigator entered the classroom and reminded the teacher about the purpose of the study and provided them with the receiver for the bug-in-the-ear device. Teachers were also reminded what intervention phase was being conducted and the type of praise to issue in that condition. During this time, students worked on math worksheets provided to and agreed upon by the teacher. The primary investigator and fellow observers (when necessary) were seated in a location where distractions to students were minimal. Data collection on student engagement and teacher use of praise was conducted during this time. Teacher praise was measured utilizing a 10-second partial interval recording procedure. For example, if a teacher issued a praise statement at any point during the 10-second interval, the observers endorsed that interval.

*Specific labeled praise.* During this phase, teachers provided SLP statements to students as they worked on the math worksheets and met the engagement criteria. Teachers provided praise as often as they could in an effort to maintain the natural flow of the classroom and increase generalizability. Teachers received prompts via the bug-in-the-ear device to provide SLP statements if the students were engaged and one minute had lapsed from the previous praise statement. Teachers delivered the statement verbatim to the prompt provided by the investigator. SLP included using the student’s name, describing what the students were doing (“Thank you for working on your math problems and staying on task”), notification of progress (“Wow, you did three problems already – Good job!”), and public acknowledgment for following rules (“I am proud of [target student] for doing his or her worksheet so well”).
General praise. During this phase, teachers provided GP to students as they worked on the math worksheets. All components of providing praise statements as well as the prompting procedures present in the previous phase carried over to this phase. Further, the engagement criteria remained the same during this condition. GP, instead of SLP, was provided to students. For example, teachers provided statements such as “Good job,” “You did it,” or “Great” without offering guidance on what part of their performance was good.

Reliability

Multiple observers coded the data so that IOA could be calculated. Graduate students and school staff were trained to 90% agreement on occurrences of student engagement, teacher praise, and the recording method. IOA data were calculated for student engagement, teacher praise, and math worksheet problem completion percentages by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100.

IOA data were collected for 31% of baseline and treatment conditions for student engagement and teacher praise. IOA data were also collected for the percentage of problems completed by students on 100% of the math worksheets. IOA data averaged 94% (88 – 100) across all sessions for student engagement. IOA data averaged 97% (90 – 100) for teacher praise across the study. Math problem completion percentage IOA data was 100%. Please refer to Table 1 for a more detailed description of IOA data for teacher and student behavior.
Procedural and Treatment Integrity

Treatment integrity data were collected during each session to determine if teacher praise was implemented appropriately as defined for each phase. The investigator recorded every occurrence of teacher praise during each treatment phase. If teachers provided SLP during a GP phase, utilized GP during a SLP phase, or provided praise in a manner contrary to the operational definitions, that constituted a violation of treatment integrity. Following such occurrences, teachers were informed and instructed to only provide one type of praise during each treatment phase.

During each intervention session, teacher SLP as well as GP was recorded. A frequency count of each praise statement as well as the percentage of observed intervals

<table>
<thead>
<tr>
<th></th>
<th>SLP</th>
<th>GP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher 1</td>
<td>SLP</td>
<td>99 (98 – 100)</td>
</tr>
<tr>
<td>Student 1</td>
<td>ENG</td>
<td>98 (98)</td>
</tr>
<tr>
<td>Teacher 2</td>
<td>SLP</td>
<td>97 (90 – 100)</td>
</tr>
<tr>
<td>Student 2</td>
<td>ENG</td>
<td>92 (88 – 95)</td>
</tr>
<tr>
<td>Teacher 3</td>
<td>SLP</td>
<td>96 (91 – 100)</td>
</tr>
<tr>
<td>Student 3</td>
<td>ENG</td>
<td>93 (88 – 97)</td>
</tr>
<tr>
<td>Teacher 4</td>
<td>SLP</td>
<td>--</td>
</tr>
<tr>
<td>Student 4</td>
<td>ENG</td>
<td>--</td>
</tr>
</tbody>
</table>
that each type of praise occurred was recorded. Teacher integrity data for the GP phase during treatment sessions averaged 99% (91 – 100). Teacher integrity data for the SLP phase during treatment averaged 95% (72 – 100). Please refer to Table 2 for a more detailed description of treatment integrity data.

Table 2

*Treatment Integrity Data for Teacher Praise Across Treatment Phases*

<table>
<thead>
<tr>
<th>Teacher</th>
<th>SLP</th>
<th>GP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher 1</td>
<td>87 (72 – 95)</td>
<td>100</td>
</tr>
<tr>
<td>Teacher 2</td>
<td>96 (86 – 100)</td>
<td>99 (95 – 100)</td>
</tr>
<tr>
<td>Teacher 3</td>
<td>95 (88 – 100)</td>
<td>99 (93 – 100)</td>
</tr>
<tr>
<td>Teacher 4</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
CHAPTER III

RESULTS

Visual Analysis and Statistical Analysis

*Visual Analysis*

Figures 1 and 2 include the percentages of student engagement and teacher praise for each pair across phases. Figure 1 contains the data for Ted and Anne who received the BL, GP, and SLP sequence of treatment. Figure 2 provides the data for Dave and Don. This pair received the following sequence of treatment: BL, SLP, and GP.

For Ted, mean engagement was 45% during BL, 75% during GP, and 97% during SLP. Within BL, engagement levels decreased with a stable downward trend. Upon implementation of increased GP statements, level and trend of engagement data increased immediately. Engagement levels varied slightly as observations progressed with a downward trend noted until the final data point of GP, which was a substantial increase in level and trend from the previous point. Following the change from GP to SLP, an immediate increase in engagement level occurred with minimal variability among the data points. Further, no engagement data overlapped across BL and treatment phases for Ted.

Mean engagement for Anne was 43% during BL, 53% during GP, and 89% for SLP. Engagement levels were highly variable during BL with an overall decreasing trend, which prompted introduction of treatment. During the first session of GP, Anne did not exhibit any engagement but instead tucked and untucked her shirt and fixed her uniform. This data point represented a substantial decrease in level and trend from the last BL datum; however, subsequent data points increased in level and trend with reduced
Figure 1. Student Engagement and Teacher Praise Percentages Across Phases for Ted and Anne.
Figure 2. Student Engagement and Teacher Praise Percentages Across Phases for Dave and Don.
variability relative to BL. Overlapping data points did occur between BL and GP, but overall engagement averages for GP exceeded that seen in BL. As she moved into SLP, a substantial increase in level and trend occurred with less variability when compared to BL and GP. Mean engagement during SLP was higher than BL and GP. Further, no data points during SLP overlapped with BL or GP.

For Dave, mean engagement levels were 60% for BL, 96% for SLP, and 82% for GP. Dave experienced substantial variability during BL with relatively high engagement levels on two occasions. However, a decreasing trend across the data prompted the phase change. Upon implementation of SLP, level and trend of engagement increased dramatically and remained stable. Following SLP, Dave moved into GP and exhibited an immediate decrease in level and trend. Increased variability occurred during this phase but less than BL. Further, Dave’s lowest point of GP matched the highest point of BL, while the highest point of GP approached the lowest point of SLP. These occurrences suggest Dave possessed the ability to exhibit engagement but higher levels occurred as praise increased and were highest when specific statements were introduced. An overlapping data point did occur between the highest point of BL and the lowest point of GP.

Mean engagement levels for Don were 51% for BL, 90% for SLP, and 79% during GP. Don displayed some variability during BL with a decreasing trend that prompted the phase change. As he moved to the SLP phase, Don experienced a substantial increase in engagement level with minimal variability. Don’s engagement level decreased marginally following a change to GP and remained stable during this phase. The highest point of GP approached the lowest point of SLP, which
suggests that GP is effective in improving engagement but less so than SLP. In Don’s case, no data points overlapped across phases.

Figures 3 and 4 represent problem completion percentages on the math worksheets across phases for each participant. Ted completed an average of 41% of the problems during BL, increased to an average of 55% of problems completed during GP, and further increased to 64% completion during SLP. Despite the overlapping data points between GP and SLP, the average number of problems completed increased during SLP. Additionally, there was one missing data point, and this occurred because the teacher could not locate the completed worksheet.

Completion percentage data for Ted most closely matched hypotheses regarding engagement and work completion. During BL, completion percentage decreased as engagement decreased, while the same pattern emerged during GP. However, the percentage of problems completed during SLP varied as engagement remained stable. Although completion percentage varied during SLP, this phase resulted in the highest average number of problems completed across phases.

Anne completed an average of 32% of the problems during BL, 21% during GP, and 46% during SLP. The number of problems completed during BL decreased as engagement decreased and were substantially variable. During GP, minimal variability occurred with an increasing trend apparent; however, the average number of problems completed during this phase was lower than BL. This may have been due to her lack of engagement and refusal to complete problems during one observation. Further, she attempted to complete problems with more digits, which likely affected the total completed. Following the GP phase, Anne substantially increased the average number of
Figure 3. Problem Completion Percentages Across Phases for Ted and Anne.
Figure 4. Problem Completion Percentages Across Phases for Dave and Don.
problems completed on the worksheets. She experienced a decrease in problem completion during the final two points of the SLP phase, which was due to her attempting the problems with more digits once again.

Overall, Anne completed more problems, on average, during SLP than BL and GP. However, substantial variability was apparent with a decreasing trend noted during SLP. Additionally, there were data points in SLP that were lower than BL points. As stated earlier, Anne attempted problems with more digits during GP and SLP, which may have influenced lower completion percentages.

Dave completed an average of 43% of the math problems during BL, 47% during SLP, and 32% during GP. During BL, Dave exhibited great variability in problem completion percentage with a noted increasing trend. During SLP, problem completion percentages decreased in level but were stable with no apparent trend. All points during SLP were below the highest point of BL. Despite that, the average number of problems completed during SLP was higher than that of BL. Problem completion percentage during GP was lower than SLP and BL and data points varied greatly with a noted decreasing trend. Further, a majority of data points during GP overlapped with both BL and SLP.

Overall, Dave completed more problems during SLP when compared to BL and GP but fewer problems in GP compared to BL. Trends such as this may have been due to two missing data points, which occurred because the teacher could not locate the worksheets. Additionally, observations occurred toward the end of the school year, which may have affected his performance. Lastly, Dave’s teacher provided him with fourth-grade worksheets to complete and indicated that he was capable of performing
adequately with these problems. Although he showed that he could complete a high number of problems with fourth-grade material, continued exposure to problems one grade level higher than his current placement may have negatively impacted his results over time. Otherwise, there were no other known factors that contributed to his performance.

Don completed an average of 23% of the math problems during BL, 33% during SLP, and 39% during GP. During BL, Don completed very few problems but performance was stable throughout the phase. Following implementation of SLP, a slight increase in level occurred with a substantial increasing trend and minimal variability. Moving from SLP to GP resulted in an immediate decrease in level, which increased dramatically and stabilized for the duration of the observations with no apparent trend.

Collectively, Don, completed more problems during SLP than BL, which was expected. However, the continued increase in problems completed during GP was not. This may have occurred because of continued practice with the worksheets. During treatment, only two data points overlapped with BL.

Statistical Analysis

Multilevel modeling. Multilevel modeling of multiple baseline data (Van den Noortgate & Onghena, 2003) was used to determine effects of intervention phases as compared to each other as well as compared to baseline. For the current study, levels of engagement in the phases of SLP and GP were compared. Data such as these were dependent on each other because an individual was repeatedly observed over an extended period of time, and this serial dependence was modeled by specifying an autoregressive
error structure in the analyses (Ferron, Bell, Hess, Rendina-Gobioff, & Hibbard, 2009). Ultimately, these analyses determined the magnitude of differences between phases across participants and provided estimates of statistical significance for these differences.

Estimates of fixed effects were calculated, which provide the average percentage of engagement during BL, the difference between BL and the GP phase, and the difference between the GP and SLP phases. Results indicated that participants exhibited engagement an average of 50.45% of observed intervals during BL, an average of 71.25% during GP, and an average of 93% during SLP. Differences in engagement levels from BL to GP were statistically significant ($p = .012$), and the difference between engagements levels for GP and SLP was also statistically significant ($p = .000$).

The variability of intervention means for GP was computed by taking the square root of the variance component for the BL vs. GP variable. Following this calculation, the standard deviation (SD) for the intervention means was only 1.8%, which suggests that the intervention effects across participants for this phase was similar. A 95% confidence interval was computed by multiplying the SD (1.8) by 1.96 and adding that to and subtracting it from the intervention phase mean for GP (20.8). From this calculation, it can be stated, with 95% confidence, that individuals similar to the participants in this study who receive this type of intervention may be expected to achieve gains in engagement levels by 17.28% to 24.32% (See Table 3.).

According to the SPSS output, the variability of intervention means for the SLP phase was near zero and was most likely influenced by the limited sample size. This suggests that participants experienced similar changes in improvement when moving from GP to SLP. An analysis of SLP intervention means by participant was computed
since improvement from GP could not be calculated. The range of individual intervention means for SLP was 89% to 97% with a mean of 93%.

Table 3

*Multilevel Analyses Examining Differences between Conditions for Engagement*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Estimate</th>
<th>SE</th>
</tr>
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<tr>
<td>ENG</td>
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<tr>
<td><strong>Fixed Effects</strong></td>
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<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>50.45</td>
<td>4.89</td>
</tr>
<tr>
<td>Baseline vs. <em>Specific or General</em></td>
<td>20.8*</td>
<td>4.93</td>
</tr>
<tr>
<td><em>Specific vs. General</em></td>
<td>21.7**</td>
<td>4.87</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Covariance Parameters</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
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</tr>
<tr>
<td>Baseline vs. <em>Specific or General</em></td>
<td>3.15</td>
</tr>
<tr>
<td><em>Specific vs. General</em></td>
<td>--</td>
</tr>
<tr>
<td>AC-1</td>
<td>.13</td>
</tr>
<tr>
<td>Residual</td>
<td>184**</td>
</tr>
</tbody>
</table>

*Note.* *p* < .05, **p** < .001.

Multilevel modeling also can measure first order autocorrelation of residuals. This value expresses the degree to which participants’ repeated measures were correlated. The first-order autocorrelation coefficient (AR1 rho) estimate was .12156 and not
statistically significant \( (p = .432) \) and is of small magnitude. Effect size can also be calculated by dividing the difference between baseline and intervention means by the square root of the residual variance. The effect size for the GP phase was 1.53, which indicated that engagement levels increased by 1.53 SDs from BL to GP. When moving from GP to SLP, the effect size was 1.6, which indicated that engagement levels increased by 1.6 SDs during that phase. The effect size for students going from BL to SLP was 3.13, which indicated that engagement levels increased by 3.13 SDs relative to BL. From the standpoint of single-case research, the effect sizes from BL to GP and GP to SLP represent small changes. The effect size when moving from BL to SLP would be considered a medium change (Levin, Lall, & Kratochwill, 2011).
CHAPTER IV
DISCUSSION

The present study compared the effects of SLP and GP on engagement and work completion of students of typical development. Four students and their teachers participated in the study. Students completed math worksheets during the study while teachers provided either SLP or GP depending on the treatment phase. While students completed the worksheets, engagement levels and teacher praise were measured. Further, the percentage of problems completed on the worksheets was also calculated.

Results indicated that engagement levels for participants in the BL/GP/SLP sequence increased from BL to GP and further increased from GP to SLP. Students in the BL/SLP/GP increased from BL to SLP and experienced decreases from SLP to GP. When students experience a different sequence of treatment phases during a multiple baseline design, it is called a crossover element and serves to control for order effects. The crossover element supports the differential effectiveness of SLP over GP as participants displayed higher levels of engagement whether SLP preceded or followed GP. Further, this provides evidence that participant engagement levels did not solely increase based on the time spent in treatment phases.

Even when BL engagement levels appeared to be high and overlapping data points existed, variability decreased when students moved from BL to treatment. Although some data points in the GP phase approached those achieved in the SLP phase, overall averages were higher and variability reduced in the SLP phase when compared to the GP phase.
These results support the hypotheses that engagement levels would increase from BL following an increase in the use of teacher praise. Further, engagement levels were hypothesized to be higher when teachers employed SLP as compared to GP. Based on the findings, hypotheses were met regarding engagement for all participants.

Work completion percentages varied greatly across participants and did not mirror the changes noted with engagement. Hypotheses regarding work completion were only met for one of the participants. Work completion percentages increased from BL to GP and further increased from GP to SLP. Two participants completed more problems during SLP than BL but decreased in the number of problems completed during GP below that seen in SLP and BL. The last participant completed more problems in SLP than BL but continued to increase and completed more problems when moving from SLP to GP, which was not expected.

Since hypotheses were not met for a majority of the participants regarding work completion, the following explanations for the results obtained are provided. First, participants could engage in behavior that met the engagement criteria without having to complete the math problems, which may have affected the number of problems completed. Next, some participants attempted problems with more digits and likely impacted the number completed. Problems with more digits require more time and effort to complete, which resulted in increased engagement but negatively impacted the number of problems completed. Lastly, observations took place toward the end of the academic year and participants may have been engaged but did not put forth the effort necessary to complete more problems.
Limitations

Although the current study achieved positive results, several limitations should be discussed. The current study focused on only four students and should be replicated with additional students in the future so that results from this sample can more easily generalize to the population. Further, participants represented a small range of grade levels, and additional research should include more grade levels. In the current study, only second, third, and fourth grade students participated. Related to the previous point, future research should investigate the effects of praise for students in grades higher and lower than those utilized in the current study. Collectively, the limitations in this section speak to the need to conduct further research to improve generalization.

Students completed worksheets provided by the investigator that were agreed upon by each teacher and provided additional practice on skills similar to what was covered during the school year. Since student engagement was measured only while students completed the worksheets, future investigations should focus on measuring engagement while students complete typical classroom activities that vary on a daily basis. The current study utilized AIMSweb Math probes (PsycCorp/Pearson, 2004) that remained similar across the study. This served to decrease the possibility of changes in academic tasks affecting engagement. However, this increase in internal validity may have weakened the generalizability of the results because not every teacher or classroom will utilize the probes from the current study.

Reported results pertained to the effects of SLP and GP on student engagement. However, students included in the study were not in the classroom alone. Teachers did praise non-target students throughout the study. This effect could have served as a factor
in increasing engagement and work completion of target students. Despite this possibility, the methodology of the current study served to enhance the naturalistic flow of the classroom by allowing teachers to praise as often as they could and not providing restrictions on use of praise.

There were also occurrences where a teacher encouraged one participant to become engaged if they were not on-task. Encouragement was not coded as it did not meet the praise criteria. However, the student typically responded with increased engagement following these instances. Although this occurred minimally, it may have affected engagement levels for this participant. Encouragement only occurred in the initial stages of treatment and discontinued following corrective feedback sessions.

Teacher proximity was not measured or controlled for during the study and may have affected student engagement. As a result, the unique contributions of SLP and GP may be confounded by potential variations in teacher proximity across conditions. Therefore, future research should ensure that teacher proximity across conditions is consistent so that the unique contributions of SLP and GP can be evaluated, which will result in a better comparison of the relative effectiveness of SLP and GP.

During the current study, history was a possible threat to internal validity for one dyad since data were collected for one student in the spring of 2011 and data for the other student was collected in the spring of 2012. This threat to internal validity represents another limitation due to the time span between collection of data.

In the current study, maintenance of teacher praise following termination of the project was not measured. Since the ultimate goal is for teachers to continue praising students following termination of the research protocol (or the consultation interaction in
applied practice), research measuring teacher provision of praise statements delivered in maintenance or follow-up phases should be investigated. Additionally, conducting research on how to ensure teachers maintain provision of praise following consultative withdrawal is vital.

IOA data were not collected for one of the participants (Don) due to staff availability and scheduling conflicts. This may weaken the results of the study since an independent observer was not available during the time data were collected for the last participant. However, given the high IOA coefficients obtained for all other participants’ phases, greater confidence in the obtained results is possible. Problem completion percentages may have been higher for Dave if worksheets provided were at his current grade level. However, the teacher agreed that the fourth-grade worksheets were appropriate. Despite that, the higher level probes may have negatively impacted his performance.

Summary

Results achieved during the current study provide teachers with evidence that a time and cost-efficient intervention procedure can be effective in improving student behavior. Praise can be implemented across change agents, student populations, and settings. Further, evidence is offered for the use of SLP as compared to GP and should be utilized to provide additional information and guidance to students.

Future research should focus on the differential effects of teacher praise with students of different grade and age levels. Additional investigations could also determine the differential effects of teacher praise for students with emotional disturbance, behavior and academic concerns, and compliance difficulty. Measuring student engagement levels
during typical class activities may serve to increase the generalization rather than only collecting data as students completed math worksheets. Although a criterion was set for teacher praise in the current study, investigating the effects of the number of praise statements provided to students could offer important information regarding engagement levels and problem completion.

Results from the current study provide evidence that increases in teacher praise improved student engagement levels. Further, differential effects across praise types were achieved with SLP producing higher engagement compared to GP. Although work completion percentages varied greatly across participants, a majority completed more problems during treatment phases when compared to BL. Collectively, changes can be attributed to the type of praise provided in the treatment phases, which was achieved by maintaining high levels of integrity.
Appendix A

IRB Committee Form

The University of Southern Mississippi
Institutional Review Board

Human Subjects Protection Review Committee
Notice of Committee Action

The project has been reviewed by The University of Southern Mississippi Human Subjects Protection Review Committee in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

Protocol Number: C10102702
Project Title: The Effects of Teacher Praise on Engagement and Work Completion of Students of Typical Development
Proposed Project Dates: 05/06/2011 to 12/09/2011
Project Type: Previously Approved Project
Principal Investigators: Brandon J. Richard
College/Division: College of Education & Psychology
Department: School Psychology
Funding Agency: N/A
HSPRC Committee Action: Expedited Review Approval
Period of Approval: 05/09/2011 to 05/08/2012

Lawrence A. Hosman, Ph.D.
HSPRC Chair

5-10-2011
Date
NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 21, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
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If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: C10102702
PROJECT TITLE: The Effects of Teacher Praise on Engagement and Work Completion of Students of Typical Development
PROJECT TYPE: Change to a Previously Approved Project
RESEARCHER(S): Brandon J. Richard
COLLEGE/DIVISION: College of Education & Psychology
DEPARTMENT: School Psychology
FUNDING AGENCY: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF PROJECT APPROVAL: 04/11/2012 to 04/10/2013

Lawrence A. Hosman, Ph.D.
Institutional Review Board Chair
Title Of Study:
The effects of teacher praise on engagement and work completion of students of typical development.

Purpose:
You are being asked to allow your child to participate in a study that is studying the effects of teacher praise on student academic engagement and work completion. This study will compare the effects of specific labeled praise and general praise when a student is engaged. The goal is to determine under what type of teacher praise condition a student will exhibit more engagement and work completion. This study is important because it may provide teachers with another intervention to increase engagement and work completion of their students.

Participants:
Your child must be of elementary school age (2nd through 6th grade) to take part in this study. In addition, your child must be engaged 50% or less of instruction time during a screening session. Your child cannot meet criteria for any receptive language disorder, autism spectrum diagnosis, or exhibit any kind of hearing impairment. Further, the student must not meet criteria for any special education classification. If your child does not meet criteria a school psychologist-in-training at USM may still provide your child’s teacher with assistance in the classroom or your child may be referred to the school’s Teacher Support Team.

Procedure:
If you agree to have your child participate in this study and if your child is selected for the study, your child’s teacher will be asked to conduct class with him/her in the same manner that he or she does on a regular basis. If your child is academically engaged less than 50% of the observed intervals the next step would be to move into treatment with either specific labeled praise or general praise. This will be done to assess the effects of these interventions on academic engagement and work completion of your child. The investigator and a trained graduate student will observe your child’s behavior and his/her teacher’s behavior to see if there is a difference in your child’s engagement and work completion based on the procedures used.

Benefits/Risks to Participant:
Your participation in the study will help the teacher increase your child’s level of engagement and work completion in the classroom. A possible risk is disruption of class
instruction from observers being present as well as instructions being issued through the communication device.

**Voluntary Nature of the Study/Confidentiality:**
Your participation in this study is entirely voluntary and you may refuse to complete the study at any point during the experiment, or refuse to answer any questions with which you are uncomfortable. In addition, all information obtained during the study will be kept confidential. All information that may identify your child will be withheld. Your child’s name and other identifying information will not be used in the research papers, any submission to a professional journal for publication, or presentation. The only circumstances in which we would release information about you or your child would be if your child tells us he/she is a harm to self or others, if your child is abused, if the release of information is court ordered, or if there is a medical emergency in which release of information is important for someone’s safety.

**Contacts and Questions:**
At any time you may withdraw from the study or ask any questions you may have regarding this study. Questions concerning the research should be directed to Brandon Richard or Dr. Brad Dufrene at (601) 266-5256 or via email at Brandon.richard@eagles.usm.edu or brad.dufrene@usm.edu. This project has been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406-0001, (601) 266-6820. A copy of this form will be given to the participant.

**Participant’s Consent:**
I have had the purposes and procedures of this study explained to me and have had the opportunity to ask questions. My questions have been answered to my satisfaction, and I am voluntarily signing this form for my child to participate in this research study. My signature shows my willingness to allow my child to participate in this study under the conditions stated.

---

This Section to be Completed by Parents

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<th>Parent or Legal Guardian’s signature</th>
<th>Date</th>
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<tbody>
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Title Of Study:  
The effects of teacher praise on engagement and work completion of students of typical development.

Purpose:  
You are being asked to participate in a study that is studying the effects of teacher praise on student academic engagement and work completion. This study will compare the effects of specific labeled praise and general praise when a student is engaged. The goal is to determine under what type of teacher praise condition a student will exhibit more engagement and work completion. This study is important because it may provide teachers with another intervention to increase engagement and work completion of their students.

Participants:  
Your student must be of elementary school age (2nd through 6th grade) to take part in this study. In addition, your student must be engaged 50% or less of instruction time during a screening session. Your student cannot meet criteria for any receptive language disorder, autism spectrum diagnosis, or exhibit any kind of hearing impairment. Further, the student must not meet criteria for any special education classification. If your student does not meet criteria a school psychologist-in-training at USM may still provide you with assistance for other ways to address your student’s problem behavior in the classroom.

Procedure:  
If you agree to be in this study and if your student is selected for the study, you will be asked to conduct class in your usual manner. If your student is academically engaged less than 50% of the instruction time that is observed the next step would be to move into treatment with either specific labeled praise or general praise. This will be done to assess the effects of these interventions on academic engagement and work completion of your student. The investigator and a trained graduate student will observe your student’s behavior as well as your behavior to see if there is a difference in engagement and work completion based on the procedures used. Also, a one-way radio device will be utilized to provide instructions to you when necessary. You will have opportunities to practice with the one-way radio device prior to use in the classroom. There will also be training procedures concerning provision of specific and general praise.
Benefits/Risks to Participant:
Your participation in the study will help you increase your student’s level of academic engagement in the classroom. A possible risk is disruption of class instruction from observers being present as well as instructions being issued through the communication device.

Voluntary Nature of the Study/Confidentiality:
Your participation in this study is entirely voluntary and you may refuse to complete the study at any point during the experiment, or refuse to answer any questions with which you are uncomfortable. In addition, all information obtained during the study will be kept confidential. All information that may identify you will be withheld. Your name and other identifying information will not be used in the research papers, any submission to a professional journal for publication, or presentation. The only circumstances in which we would release information about you or your student would be if your student tells us he/she is a harm to self or others, if your student is abused, if the release of information is court ordered, or if there is a medical emergency in which release of information is important for someone’s safety.

Contacts and Questions:
At any time you may withdraw from the study or ask any questions you may have regarding this study. Questions concerning the research should be directed to Brandon Richard or Dr. Brad Dufrene at (601) 266-5256 or via email at Brandon.richard@eagles.usm.edu or brad.dufrene@usm.edu. This project has been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406-0001, (601) 266-6820. A copy of this form will be given to the participant.

Participant’s Consent:
I have had the purposes and procedures of this study explained to me and have had the opportunity to ask questions. My questions have been answered to my satisfaction, and I am voluntarily signing this form for me to participate in this research study. My signature shows my willingness to allow me to participate in this study under the conditions stated.

This Section to be Completed by Teacher

Name of Teacher

Date

Primary Investigator

Date
## APPENDIX D

### MATH WORKSHEETS

AIMSweb® M-CBM Computation Progress Monitor #1 - Grade 2

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Page 1 of 2

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APPENDIX E

MATH WORKSHEETS

AIMSweb® M-CBM Computation Progress Monitor #1 - Grade 4

Student Name: ___________________ Grade: _______ Teacher Name: ___________________

4 8 6 7 5 5
- 2 - 0 - 4 - 0 - 5 - 3

0 508 690 5 3 865
x 4 + 32 + 40 5\sqrt{5} 4\sqrt{36} - 63

3 251 54 278
+ 6 + 188 - 53 + 843 2\sqrt{18} x 4

6 545 15 84 83 2\sqrt{18}
+ 4 - 7 - 42 x 1

1 369 991 916 8 4 45
- 205 + 281 - 3 + 6 x 0

883 314 8 1\sqrt{9} 3
- 840 2\sqrt{24} + 82 + 9 1\sqrt{9} + 6

Page 1 of 2

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APPENDIX F

DATA COLLECTION OBSERVATION FORM/PROCEDURAL INTEGRITY

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Notes:

SLP = Specific labeled praise
GP = General praise
Specific Labeled Praise

- Specific labeled praise should be provided when the criteria for academic engagement is exhibited
  
  o For example:
    
    ▪ Use the student’s name when providing praise
    
    ▪ Include descriptions of what the students are doing (“Thank you for being on task and doing your math problems”)
    
    ▪ Notification of progress (“Wow, you did three problems already – Good job!”)
    
    ▪ And public acknowledgment for following rules (“I am proud of [target student] for doing his or her worksheet so well”).

- Specific labeled praise should be provided when prompted by the investigator

General Praise

- General praise should be provided when the criteria for academic engagement is exhibited
  
  o For example:
    
    ▪ “Good job”, “You did it” or “Great” without providing guidance on what part of their performance was good
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