

EFFECTS OF GOAL SETTING, E-MAIL FEEDBACK AND
GRAPHIC FEEDBACK ON THE PRODUCTIVITY OF
PUBLIC SCHOOL ATTENDANCE CLERKS

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A package intervention, consisting of daily-adjusted goal setting, e-mail feedback, and graphic feedback, was used in a public school attendance office to increase the efficiency with which 3 attendance clerks documented student attendance. During the intervention phase, the attendance secretary set a daily goal for each attendance clerk. This goal was a percentage of student absences to be coded and entered in the school computer program. After establishing a daily goal, the attendance secretary provided daily feedback, in the form of a written e-mail response and graphed feedback to each clerk. If the subjects had attained their daily goal, the attendance secretary also delivered a praise statement along with the e-mail feedback. Results indicated that the intervention package was ineffective in producing change in the attendance clerks' absence coding behavior.

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TABLE OF CONTENTS

	Page
LIST OF TABLES.....	v
LIST OF ILLUSTRATIONS.....	vi
INTRODUCTION.....	1
Feedback as a Behavior Change Mechanism	
Functions of Feedback	
Feedback Delivery Dimensions	
Feedback Source	
Private versus Public	
Written, Verbal and Graphic Feedback	
Frequency of Feedback Delivery	
Feedback Content	
Goal Difficulty	
Task Complexity	
Goal Intensity	
Goal Specificity	
Goal Acceptance and Goal Source	
Package Intervention	
METHOD.....	14
Subjects	
Setting and Equipment	
Dependent Variable	
Independent Variable	
Daily-adjusted Goal Setting	
Written E-mail Feedback/Praise	
Graphic Feedback	
Experimental Design	
Procedures	
RESULTS.....	22

	Page
DISCUSSION.....	24
Recommendation for Future Studies	
Task Simplification	
Modeling Previous Research	
Motivational Variables	
Component Analysis	
APPENDICES.....	34
REFERENCES.....	42

LIST OF TABLES

	Page
Table 1	
Fabricated Sample of ATT.515D.....	35
Table 2	
Baseline/Intervention Median Comparison among Subjects.....	36
Table 3	
Number of Goal Attainment per Subject per Phase.....	37

LIST OF FIGURES

<u>Figure 1.</u>	Page
Percent of coded absences per day for Subject 1.....	39
<u>Figure 2.</u>	
Percent of coded absences per day for Subject 2.....	40
<u>Figure 3.</u>	
Percent of coded absences per day for Subject 3.....	41

INTRODUCTION

Although there has been considerable behavior analytic research regarding behavior change in public school classrooms, little has been done to address improving other operations within a public school system (Cooper, Thomson, & Baer, 1970; Cossairt, Hall, & Hopkins, 1973; Drabman & Lahey, 1974; Fink & Carnine, 1975; Gillat & Sulzer-Azaroff, 1994; Harris, Bushell, Sherman, & Kane, 1975; Ingham & Greer, 1992; Van Houten, Hill, & Parsons, 1975; Witt, Noell, LaFleur, & Mortenson, 1997). In a review of literature, only two studies conducted by Wilk and Redmon (1990; 1998) address the operation of a non-instructional unit involving support staff within an academic setting. The Wilk and Redmon articles examined the effects of feedback on the performance of admissions staff in a university setting.

Accurate documentation of attendance in a public school system is important for many reasons. First, a public school district receives funding from federal, state and local funding sources based upon the district's average daily attendance (ADA) (Texas Education Agency [TEA], 1998). Each campus within the district is allocated a percentage of federal and state funds based upon their specific campus ADA. For example, in 1998, one specific district in Texas received 1% federal funds, 5% state funds and 94% local funds per student (TEA, 1998). Second, the campus attendance is also used in the TEA's Academic Excellence Indicator System (AEIS). The AEIS, developed in 1991, serves as the "report card" for each of the public school districts in the state of

Texas and is disseminated to all households within a district (TEA, 1999). There are 6 AEIS performance indicators used to determine campus and district ratings. All public school districts in Texas, as well as each campus within a district may receive an exemplary, recognized or low performing rating. Of these 6 AEIS performance indicators, 3 are related to attendance. Specifically, in order for a campus to receive an exemplary rating (the highest rating attainable) the campus attendance cannot be below 94 %, the dropout rate cannot be above 1 % and the graduation (completion) rate must be within a specific range.

Student attendance can affect both the campus dropout rate and graduation rate. For example, if a student has 20 consecutive absences that person is withdrawn from school, identified as a dropout and factored into the district and campus dropout rates. Regarding the graduation rate, it is state law that a student attend 90% of the time their class is offered to receive credit for that particular class (TEA, 1999). If a student has more than 5 absences in any one class, they lose credit for that class regardless of their academic performance. This loss of credit prevents students from completing their required classes for graduation, thus affecting the district and campus graduation rates. If the school is to receive appropriate funding and an acceptable rating from TEA, it is imperative that the attendance office operate as efficiently and accurately as possible documenting student attendance.

Feedback As A Behavior Change Mechanism

The Wilk and Redmon (1990; 1998) articles served as the model for this study. Their intervention package, utilizing supervisory-delivered verbal and graphic feedback,

along with daily-adjusted goal setting, was implemented in a university admissions office. An intervention package similar to theirs was selected as the independent variable in the present study.

Wilk and Redmon (1998) reported that, “the most common OBM (Organizational Behavior Management) interventions consist of performance feedback alone and goal setting combined with performance feedback” (p.47). Generally, feedback has proven to be an effective way to modify individual behavior in a number of settings (Balcazar, Hopkins & Suarez 1985-86; Brown, Willis & Reid, 1981; Erez, 1977; Fox & Sulzer-Azaroff, 1989; Hawkins, Burgio, Langford & Engel, 1992; Ilgen & Moore, 1987; Kim & Hamner, 1976; Komaki, Collins & Penn, 1982; Prue & Fairbank, 1981; Wilk & Redmon, 1990; Wilk & Redmon, 1998). However, Brown et al. (1981) discovered that the definition of “feedback” differed greatly across a number of research articles and that many feedback studies failed to analyze the specific components that create a feedback system. Feedback can be very complex, depending on the number of dimensions that are included in its definition. The source, delivery mechanism, content, recipient and delivery frequency of feedback can vary in a number of ways (Balcazar et al., 1985-86; Prue & Fairbank, 1981). To accurately replicate a study and be able to identify the elements comprising the feedback package, it is important to address and delineate each of the feedback components.

Functions of Feedback

Balcazar et al. (1985-86) stated that feedback may function as an antecedent stimulus or a consequence. They recommended that feedback be paired with a

generalized reinforcer (e.g., money) if it is to improve performance. Other researchers also noted that feedback could serve as an antecedent or as a consequence (Fox & Sulzer-Azaroff, 1989; Ilgen & Moore, 1987; Prue & Fairbank, 1981). These studies agreed that the outcome of the intervention is ultimately a function of the organization's history with feedback interventions.

Feedback Delivery Dimensions

Feedback sources. Many researchers have tried to pinpoint the variables that enable feedback to be most effective in producing behavior change (Balcazar et al., 1985-86; Chhokar & Wallin, 1984; Fox & Sulzar-Azaroff, 1989; Kim & Hamner, 1976; Prue & Fairbank, 1981; Wilk & Redmon, 1990; Wilk & Redmon, 1998). Concerning the source of feedback, it has been documented that supervisory-delivered feedback offers more consistent performance improvements than do other sources (i.e., peer- or self-generated) (Balcazar et al., 1985-86; Gillat & Sulzer-Azaroff, 1994; Hawkins et al., 1992; Kim & Hamner, 1976; Komaki et al., 1982; Wilk & Redmon, 1990). Gillat and Sulzer-Azaroff (1989), Kim and Hamner (1976) and Locke et al. (1981) determined that supervisory feedback was generally more effective, possibly due to the fact that not only do supervisors deliver reinforcers or punishers, but also may control back-up reinforcers. However, Fox and Sulzer-Azaroff (1989) reported that written feedback delivered by a supervisor or non-supervisor was equally effective at producing a behavior change.

Private versus public feedback. Feedback delivery can also vary along other dimensions: private versus public. Balcazar et al.'s (1985-86) review of feedback literature indicated no documented differences between feedback when it was deliver

publicly or privately. Prue and Fairbank (1981), however, reported that private feedback could eliminate the competitive or aversive effects of public feedback. Another aspect to consider is that feedback delivered privately may not remain private if the recipients share close relationships with one another or are in close physical proximity to others. Wilk and Redmon (1990) used private verbal feedback in their study and found their subjects open to sharing information concerning the feedback they received. The authors noted that often the subjects congratulated each other after receiving supervisory feedback.

Written, verbal and graphic feedback. Feedback delivered in writing, verbally or graphically has also produced differing results. Fox and Sulzer-Azaroff (1989) found that written feedback was effective in improving their subjects' performance, while Brown et al. (1981) said verbal feedback reduced subjects' off-task behaviors. Wilk and Redmon (1990; 1998) also found that verbal feedback, when paired with goal-setting, improved employee performance. However, in their 1998 article, Wilk and Redmon found that graphic feedback produced a greater improvement in employee performance than verbal feedback. Balcazar et al.'s (1985-86) review of the feedback literature also supports this finding.

Frequency of feedback delivery. Balcazar et al. (1985-86) also reports that although more researchers provided feedback to their subjects on a daily basis, there appears to be no difference in performance when feedback is delivered daily or weekly. Prue and Fairbank support this finding , but added that latency may be a factor when shaping new behaviors. Chokkar and Wallin (1984) specifically examined the effects of

the frequency of feedback delivery on performance. They found that feedback delivered daily or weekly produced the same effects.

Feedback content. The content of the feedback provided may also impact performance. Feedback that is specific, quantitative, accurate and relevant to the target behavior is most effective in producing behavior change (Balcazar et al., 1985-86, Fox & Sulzer-Azaroff, 1989; Prue & Fairbank, 1981). Kim and Hamner (1976) noted that feedback should be evaluative and descriptive. They stated that goals paired with feedback that possessed these two characteristics were seen by subjects as more reasonable and attainable. Just as there are several dimensions that appear to determine the effectiveness of feedback (as an intervention), there are also components in goal setting that can determine its usefulness as a motivational variable.

Concerning the use of goal setting in organizational behavior management interventions, researchers indicate that while goals were effective in producing a change in an individual's behavior, the goals were more effective if paired with feedback (Balcazar et al., 1985-86; Calpin, Edelstein & Redmon, 1988; Chhokar & Wallin, 1984; Erez, 1977; Fellner & Sulzer-Azaroff, 1984; Fox & Sulzer-Azaroff, 1989; Gillat & Sulzer-Azaroff, 1994; Kim & Hamner, 1976; Komaki et al., 1982; Locke, Shaw, Saari & Latham, 1981; Mento, Steel, & Karren, 1987; Tubbs, 1986; Wilk & Redmon, 1990; Wilk & Redmon, 1998). Applied psychology and behavioral sports literature have identified and researched many parameters that should be considered to ensure that goal setting will be effectively implemented (Burton, 1989; Fellner & Sulzer-Azaroff, 1984; Kim & Hamner, 1976; Locke et al., 1981; Weinberg, Bruya, Garland & Jackson, 1990; Wood et

al., 1987). These parameters include goal difficulty (involving task complexity and intensity), goal specificity, goal acceptance and goal source.

Goal Difficulty

Locke et al. (1981) identified and defined various components of goal setting. They noted that difficulty in meeting a goal may be attributed to task complexity (i.e., skills required to accomplish it) or task intensity (i.e., effort required to perform the task). Often in goal setting literature, the terms “task complexity”, “goal difficulty” and “goal intensity” were used interchangeably; however, some researchers (Anshel et al., 1992; Wood et al., 1987) differentiated between them.

Task complexity. Wood et al. (1987) conducted a meta-analysis examining complex versus simple tasks involved in goal achievement. These authors labeled three possible components involved in complex tasks: “1) *component complexity* - the number of acts and information cues involved, 2) *coordinative complexity* - type and number of relationships among acts and cues, and 3) *dynamic complexity* - changes in acts and cues and the relationships among them” (p. 418). They indicated that task complexity was a factor in goal attainment. The more complex the task, the less likely subjects are to attain their goal. Burton (1989) also documented that the effects of goal setting were influenced by complex tasks, but added that given ample time, subjects were able to achieve a goal comprised of complex tasks because they were able to develop a strategy that allowed them to succeed. Anshel et al.’s (1992) findings supported Burton’s research. In Anshel et al. subjects repeatedly performed both simple and complex tasks; over a period of time the differences in goal achievement between the two levels of complex tasks diminished.

One problem that researchers have failed to address in the literature concerning task complexity is the difficulty in measuring what constitutes a complex task. In the Wood et al. (1987) meta-analysis of task complexity, the researchers themselves rated the complexity of tasks on a ten point scale using the three aspects of complexity they identified - component, coordinative and dynamic complexity. This measure of task complexity appears to be subjective. Presently, there is no metric to measure the complexity or simplicity of a task.

Goal intensity. Locke et al. (1981) stated that a goal may be identified as intense for two primary reasons. First, a goal could require that the subject achieve a certain skill level. Secondly, amount of effort to be expended may make the goal more difficult to attain. Researchers examining goal difficulty suggested that difficult goals do result in an increase in subjects' performance if subjects receive feedback on the relationship between their performance and the goal (Anshel et al., 1992; Erez, 1977; Fellner & Sulzer-Azaroff, 1984; Gillat & Sulzer-Azaroff, 1994; Kim & Hamner, 1976; Locke et al., 1981; Tubbs, 1986). Although research supports the claim that difficult or challenging goals produce increases in individual performance, Calpin et al. (1988) and Locke et al. (1981) warn that if goals are too difficult subjects may abandon them.

Goal Specificity

Other researchers reported that specificity of a goal also impacts success in reaching that goal. Subjects who were given specific goals, as opposed to being told, "Do your best," produced significant changes in their behavior (Burton, 1989; Calpin et al., 1988; Fellner & Sulzer-Azaroff, 1984; Locke et al., 1981). Weinberg et al.'s (1990)

results challenged this finding. They reported that subjects given specific goals did not perform better than did subjects with no goals or “do-your-best” goals. However, Burton stated, “Specific goals enhanced performance more than general goals for low- but not for high-complexity tasks” (p.43). Wood et al. (1987) also supported this claim.

Goal Acceptance and Goal Source

There has also been research examining the effects of self-generated goals versus supervisory-imposed goals and the acceptance of these goals (Anshel et al., 1992; Calpin et al., 1988; Erez, 1977; Fellner & Sulzer-Azaroff, 1984; Locke et al., 1981). Their research has reported conflicting findings. Calpin et al. (1988) suggested that supervisor-established goals may be effective due to the worker’s reinforcement or punishment history paired with supervisor-delivered goals. In Anshel et al.’s (1992) study, 91% of the subjects participating accepted their externally imposed (supervisory) goals and increased their performance. Erez (1977) and Locke et al. (1981) addressed self-set and participatively set goals, respectively. Both researchers noted that if the subject is involved in establishing the goals, there is a greater probability the goals will be accepted and successfully attained. Therefore, what procedure may be most effective in facilitating goal acceptance is unclear. Supervisory-imposed or self-generated goals are equally effective in gaining worker acceptance and producing a change in behavior.

Package Interventions

Several research articles cited in this study used package interventions as their independent variable (Brown et al., 1981; Calpin et al., 1988; Chhokar & Wallin, 1984; Gillat & Sulzer-Azaroff, 1994; Kim & Hamner, 1976; Wilk & Redmon, 1990; Wilk &

Redmon, 1998). Chhokar and Wallin (1984) used a package intervention that included employee training, graphic feedback and goal setting to improve employee safety performance. Specifically, they were examining the effects of the frequency of feedback on employee performance, comparing weekly graphic feedback to graphic feedback delivered once every 2 weeks. These researchers found that the employees were successful at reaching their goal only after graphic feedback was provided along with training and goal setting, regardless of how often it was delivered. These authors noted a 14% improvement in employee performance after implementing the three-component package, as opposed to training and goal-setting alone.

Gillat and Sulzer-Azaroff (1994) used a package feedback intervention as their independent variable in an academic setting. Their package consisted of goal-setting, supervisory verbal feedback and supervisory verbal and nonverbal praise. These authors trained school principals to deliver this package intervention. Once trained, these principals were responsible for entering the classroom and implementing the multiple-component intervention with both teachers and students. The second experiment in this study involved the teacher implementing the package with students. In both experiments, implementation of the package increased teachers' classroom performance and students' reading behavior.

Kim and Hamner (1976) were interested in studying whether behavior change resulting from a goal-setting intervention could be further enhanced by adding feedback and/or praise. Subjects were given weekly goals and weekly feedback. Although they found goal setting improved behavior, the greatest improvements in employee behavior

occurred when subjects received a supervisor-determined goal, accompanied by supervisory verbal feedback and praise.

Calpin et al. (1988) examined the effects of self-monitoring feedback and goal setting with staff in a mental health facility. Their initial intervention involved subjects utilizing weekly self-monitoring as their method of feedback. The second intervention added goal setting to the self-monitoring component. Their findings supported a multiple component approach in that a package consisting of feedback and goal setting produced a greater behavior change than did self-monitoring alone. However, they noted that when added to the self-monitoring feedback component, goal setting produced only a slight increase over self-monitoring alone.

Brown et al. (1981) looked at the differences between supervisory verbal feedback and supervisory verbal feedback plus (supervisor) praise. The feedback was delivered immediately after a time sample interval. The researchers found that while the verbal feedback decreased subjects' off-task behaviors, there was no increase in their performance. When praise was added to the feedback package, off-task behavior decreased and performance increased.

Wilk and Redmon (1990) used a package intervention involving daily-adjusted goal setting and supervisory verbal feedback (praise). This intervention was implemented with 3 subjects in a multiple baseline design. The dependent variable was the total number of tasks completed/day and recorded by the subject. A weekly reliability check was conducted on the self-recorded data.

Daily-adjusted goal setting involved the supervisor meeting with the subject in the morning and presenting a specific goal for the day. This goal was determined by the supervisor, based on the subject's previous day's performance and the needs of the office. If the subject met the daily goal, the goal remained the same the following day. The supervisor increased the goal after it had been met for 2 consecutive days. This delay in raising a subject's attained goal was established to prevent the supervisor from unintentionally punishing the subject's goal-meeting behavior. Feedback in this package was provided by the supervisor and consisted of praise if the subject met the goal or was "close" to meeting the goal from the following day; however prompting and guidance occurred if the subject failed to meet the goal. This feedback was provided twice daily-morning and afternoon.

Wilk and Redmon found that each subject's behavior significantly increased when the feedback package was implemented. They did note two possible confounds. First, the subject's self-recorded data also served as self-generated feedback and could have inflated their performance. The researchers noted that this alone could have produced an increase in their behavior. Secondly, the subjects' close proximity to each other plus their social interactions could have served to create a competitive environment, thus accounting for an increase in performance.

In Wilk and Redmon's 1998 article, the initial intervention was the same as described above - daily-adjusted goal setting paired with supervisory-delivered verbal feedback/praise. However, the authors added supervisory-delivered graphic feedback in their final intervention phase. Adding the graphic feedback produced even greater results

than did the goal setting/feedback/praise package. However, again the self-recording of data and the close proximity of the subjects could have functioned as a confound. Also noted in this study, was the need for future research to assess the effects of feedback on both complex and simple tasks.

Based on the literature presented above, this study will implement a supervisor delivered package intervention consisting of computer-generated daily-adjusted goal setting, and e-mail feedback/praise statements, plus daily graphed feedback. The purpose of this study is to examine the effects of this multiple component feedback package on the absence coding behavior of three public high school attendance office clerks. Goal setting has been reported to be most effective when paired with feedback. Within the feedback literature, graphic supervisory feedback has produced the greatest results. Therefore, it is feasible to hypothesize that a package consisting of these components could be effective in producing a significant change in subjects' behavior.

METHOD

Subjects

The subjects were 3 full-time, female, public high school attendance clerks. All had been employed on the campus for over 1 year (Subject 1 for 4 years, Subject 2, 1.3 years, Subject 3, 3 years). Attendance clerks were supervised by a campus attendance secretary. This attendance secretary had been in her position for 5 years and prior to this position had been employed as a campus attendance clerk for 3 months.

Setting and Equipment

The attendance office, located in the main corridor of the school, was a large room with four open windows facing onto the main corridor. A large roll-up door covered the four windows during non-school hours (before 8:00 a.m. and after 4:00 p.m.). One attendance clerk was stationed at each window, with the fourth window serving as the Tardy Center. Each clerk had her own computer, telephone and general office supplies. Other equipment used by the attendance clerks included an automated call home system (Phonemaster®) and a Scantron® reader. Their supervisor (the attendance secretary) worked at a desk in the attendance office and was positioned so that she could monitor the clerks and serve as a backup clerk, if necessary.

Dependent Variable

The percent of coded computer data entries for students absent an entire day or any part of the day was the dependent variable. Data were presented in percent form due

to the variation in number of students absent each day. Students with absences coded truant (TR), unexcused absence (UA) or absent (A) were counted as unacceptable because these absence codes indicate that the student was unaccounted for during that absence. During each class period, classroom teachers took daily attendance on a computer Scantron® form and these Scantron® forms were used to produce a report (ATT.515D) that documented student attendance. For each absence indicated on the report, an attendance clerk entered a code in the computer indicating the reason for that student's absence. For example, if a student was leaving second period for a doctor's visit, the student went to the attendance office and signed out. That student's absence was then coded ID (Ill Doctor). When the student returned with a doctor's note the absence code was changed to DN (Doctor's Note). If a student were home ill the entire day and the parent had contacted the school to inform the attendance staff of the absence, the attendance clerk would code the absence PC (parent call) for that particular day. Coding is critical because reimbursement for the ADA is based on these codes. There are 37 absence codes recognized by TEA, and according to TEA policy, the only *excused* or *allowed* off-campus absences are absences covered by a doctor's note (DN), absences due to religious holidays (RH), and/or student field trips (FT). Excused/allowed absences are not factored into the ADA percentage.

If a student leaves the campus without signing out, the clerk is alerted to that student's absence through the attendance report (ATT.510) generated by the attendance Scantron® form (completed by the teacher). The clerk is then responsible for contacting parents, teachers or the student, to explain the absence. If a teacher has marked a student

absent and there is no documentation (e.g., field trip list, teacher note, doctor note, etc.) or parent phone call to explain that absence, the student's absence is coded TR (truant) or UA (unexcused absence) or A (absent).

Anytime a student has an absence coded TR, UA or A the attendance clerk attempts to provide an acceptable code (i.e., DN, RH, FT) in one of several ways: 1) contacting the student's parents personally by telephone or 2) if unable to reach a parent, using an automated telephone system (Phone Master®) that dialed the student's home phone number and left an automated message informing the parent of the absence and requested an explanation, 3) contacting the teacher to ensure there was no error on the Scantron® form, or 4) checking teachers' notes sent to the office reporting that the student was with another teacher. Accurately coding absences is a very complex task and requires considerable time and effort because if 1) or 2) do not explain the absence, then 3) and/or 4) are implemented.

Independent Variable

A feedback package consisting of computer-delivered daily-adjusted goal setting, written e-mail containing feedback/praise and hand-graphed feedback delivered by the attendance secretary to the attendance clerks comprised the independent variable. I reported each attendance clerk's goal, the percentage of absences and the new or same goal to the attendance secretary each afternoon and the attendance secretary transmitted these data to the clerks the following day.

Daily-adjusted goal setting. Goals set as a percentage were based on average percent of computer entries completed/clerk during the initial baseline phase. For

example, an attendance clerk made a computer entry for each student marked absent on the Scantron® by a teacher. This goal was computed based on number of computer entries required and actual number completed (not including unacceptable codes: TR's, UA's or A's). When average number of computer entries during baseline had been calculated, 10 % was added to the average and served as the initial intervention goal. Goals were delivered via e-mail each morning. The daily goal was to be increased by 2% after a clerk had met her goal for 4 consecutive days.

Written e-mail feedback/praise. The supervisor provided a written e-mail message each morning stating the previous day's goal, the percent of coded absences achieved and provided the new or same goal for that day. If the clerk met or exceeded her daily goal, the attendance secretary praised the work performance of the clerk via e-mail. The attendance secretary selected praise statements from a worksheet titled, "One Hundred Ways To Praise." Praise included such statements as, "You did a terrific job." "Great work.", or "Good job keeping up with all your work yesterday." The written e-mail was delivered each morning by the attendance secretary. A typical e-mail message would read, "Your goal yesterday was 67%. Yesterday your computer entries were at 72.5%. That's great! Today your goal is 67%."

If the clerk failed to meet her stated goal, the attendance secretary e-mailed the clerk with the stated goal for that day, the actual percentage achieved and restated the same goal from the previous day. No qualifying statement was made concerning the clerk's performance (no praise). The e-mail system provided documentation as to when the supervisor delivered the feedback and when the clerk received it; e-mail feedback

appeared to be most feasible in this work setting due to the shared office space and close proximity of the clerks' workstations.

Graphic feedback. Graphic feedback consisted of two plots/day, the percent of computer entries completed and the daily-adjusted goal plotted on graph paper. Workdays were identified on the x-axis and the percent of computer entries completed and daily goal were plotted on the y-axis. The attendance secretary gave each clerk a graphic presentation of her task performance every morning during the intervention conditions. During the initial baseline phase of the study, I met with the attendance secretary one morning to explain how each clerk's daily goal was calculated, how and when to deliver the goal, e-mail and graphic feedback. I explained to her that I would be calculating the daily goal, percent achieved, scripting the e-mail message and plotting the graphic data; however, she would be responsible for the delivery of the information to the clerks each morning.

Experimental Design

This study utilized an A-B-A-B reversal design (Barlow & Hersen, 1984). Data comprising the dependent variable were generated from a computer report (ATT .515D) identifying the students absent for the day or any part of the day and the absence code entered for that absence. Each baseline and intervention phase was implemented over an 11-day period and the study lasted for 44 days.

Procedures

Each day the attendance secretary printed the daily student attendance report (ATT.515D) from Aristotle ®, the campus computer program. I used this report to tally

the number of student absences/clerk. On this campus, the student population was divided alphabetically between the three attendance clerks. Subject 1 was responsible for monitoring and documenting the attendance of students whose last names began with A - G; Subject 2, H - N; Subject 3, O - Z. Once the number of absences/clerk was determined, only those absences coded TR, UA or A were counted as unacceptable. These numbers, the number of absences/clerk and the number of unacceptable absences, were used to calculate the dependent variable: percent of coded absences/clerk (calculated by the total number of students marked absent and coded TR, UA or A divided by number of students absent/clerk $\times 100 = \% \text{ absences not coded} - 100 = \% \text{ absences coded}$) (see Table 1). This percentage was calculated each day.

During the first day of the intervention phase, the 3 subjects received their goal via e-mail from the attendance secretary when they logged onto their e-mail accounts. Campus policy stated that e-mail be checked each morning and afternoon. After checking their e-mail and receiving their daily goal, the attendance clerks began their work: 1) answering phones to receive information concerning student absences, 2) checking voice mail for information concerning absences that were phoned in after hours, 3) accepting notes from students, 4) verifying teachers' notes/e-mail messages, 5) entering computer codes for each of these contacts, 6) taking messages for students, 7) making homework requests for absent students, 8) issuing admit and dismissal forms to students arriving and departing during the day, 9) entering student identification numbers into the Phone Master® system for absence notification, and 10) mailing out 90% loss-of-credit letters.

Many of the clerks' daily computer entries were recorded in the morning, and generally these were comprised of absences not recorded from the previous day. The clerks reported that being allowed to enter data from the previous day's absences was helpful for two reasons: 1) they had fewer demands on their time in the morning, and 2) they had an opportunity to receive information necessary to accurately code those absences from the previous day (i.e., doctor's note, parent phone call, or teacher's note). To include this following day's work in calculating percentage of entries, the computer report (ATT.515D) used to generate the percent figures was run after 12:00 p.m. on the day after the absence occurred. For example, Monday's attendance report was printed on Tuesday at 12:00 p.m. Thus, the clerk had from Monday morning when the teachers' Scantron® reports were entered through Tuesday noon to record absences from Monday. Because this daily report determined 99% of the school district's funding generated by the ADA, if the clerks had not completed their work by the (next day's) noon deadline one of several scenarios was enacted: 1) the supervisor completed the entries before the end of the month (when ADA data was sent to the principal); or b) the attendance clerks continued to work on the previous day's data until the end of that week. Any data not recorded by Friday remained unrecorded, unless a student brought in a doctor's note or parent note. Notes are routinely brought throughout the year to clear up unexcused absences. Essentially, the clerks' weekly data were never accurate nor completed. Lag time for delivering the feedback (i.e., goal, actual percent achieved, praise statements and the daily plotted graph) was 2 days. Attendance clerks were given feedback concerning Monday's absences on Wednesday morning.

Each day during the study, the ATT.515D report was printed at 12:00 p.m. and the percent of absences coded were calculated per clerk. I wrote the results in an e-mail, graphed both the goal and percent achieved on graph paper and provided these results to the attendance secretary. The attendance secretary then delivered the e-mail feedback and if appropriate, praise message via computer and personally presented the individual graphs to the respective clerks the next morning.

When an attendance clerk was out for the day, or any part of the day, the attendance secretary was responsible for conducting the clerk's work. An e-mail message was not delivered to the clerk regarding the day she was out. The feedback she received following her absence was for the last workday preceding her absence.

I kept the hand-plotted graphs, printouts of e-mail feedback and checklist of the "One Hundred Ways to Praise" sheet in a separate folder for each of the 3 clerks. As a praise statement was used, the researcher placed a check mark next to that statement to indicate the particular phrase had been used with a particular clerk. This prevented repetitions of specific praise statements. The folders were kept in the researcher's office and delivered to the attendance secretary each morning. Attendance clerks were shown only the graphs from their folders; they were not permitted to see the praise checklists or the printed e-mail feedback.

RESULTS

The clerks' percent of computer coding varied greatly during the course of this study. During the baseline phases, the percent of coded absences for subject 1 varied from 25.8% to 71%; subject 2, 33.7% to 74.6%; and subject 3, 31.8% to 77.9%. In the intervention phases, percent of coded computer absences for subject 1 ranged from 37.5% to 81%; subject 2, 51.3% to 77.2%; and subject 3, 49.3% to 81.4% (see Figures 1, 2, and 3). The median for each clerk in each phase was 54.4%, 66.2%, 60.8% and 59.2% for subject 1 in baseline 1, intervention 1, baseline 2 and intervention 2, respectively. The median data for subject 2 in each phase was 63.3%, 65.3%, 64.3% and 65.7%, respectively. Subject 3's median data for each phase was 58.3%, 60.5%, 61.4% and 63.5% (see Table 2). In comparing the three subjects baseline 1 data with intervention 1, it appears that there has been some effect. The median of the percent of coded absences for subject 1 increased by 11.8% between baseline 1 and intervention 1. Subjects 2 and 3's median shows a slight increase of 2.0% and 2.2%, respectively. The median decreased for subjects 1 and 2 during return to baseline and reintroduction of the intervention produce another increase in the median. Subject 3's median percent coded absences increased steadily over all four phases of the study.

The clerks' initial goals were 65.6 %, 65.9% and 67% for subjects 1, 2 and 3, respectively. During the course of the study, the clerks' goals were never raised from this initial setting. For a goal to be increased, the clerk must have met or exceeded her goal 4

consecutive days. Only 2 of the 3 exceeded their goal for 3 consecutive days. Subject 1 exceeded her goal three times in the initial intervention phase. Subject 2 exceeded her goal three consecutive times in the second baseline. Overall, subject 1 exceeded her goal eight times total during the study, two times in baseline and six times during intervention. Subject 2 exceeded her goal a total of 15 times throughout the study, 5 times in baseline and 10 times during intervention. Subject 3 exceeded her goal 12 times during the study, 6 times during baseline and 6 times during intervention (see Table 3).

Absenteeism during the study did not seem to be excessive. Subjects 1 and 2 missed 1 day of work throughout this study, while subject 3 missed 2 days. Subject 1 missed a day during the last intervention phase, subject 2, second baseline and subject 3, both intervention phases. No data is plotted on days when a subject was out. The attendance secretary performed their work for that day. The clerks were provided feedback for their last day's work when they returned.

DISCUSSION

The package intervention, consisting of daily-adjusted goal setting, computer generated written e-mail feedback/praise, and hand-graphed data, did not improve the computer coding performance of these 3 public high school attendance clerks to a meaningful degree. This study did not support Wilk and Redmon's (1998) contention that a multiple component feedback package including goal setting would be effective in increasing support staff's performance in an academic setting. In analyzing the data, it appears that the clerks' responses (i.e., total percentage attained) were not correlated with the number of absences/day. On days when a greater number of students were absent (i.e., 100 or more/clerk), the percent of coded absences was neither extremely high nor low. However, the day that the highest number of absences were coded for all 3 subjects (day 19) 167 band students were on a field trip performing in a state competition, and many other students were out of school that day watching the band perform.

The high or low percentages and the days of the week were compared. It was conceivable that the end of the week or an upcoming school holiday could have produced a change in the clerks' behavior; however, this was not the case. A few of the outlying data points appear to be consistent between the 3 clerks. Days 5, 18 and 30 showed a decrease in coding across all 3 subjects, while days 11 and 19 showed an increase in coding across all subjects. The explanation for some of the similar response patterns can be attributed to the Phonemaster® system, activated on day 5. On day 5, the clerks had to

verify and update student phone numbers in the computer system to ensure that the Phonemaster® system to operated correctly. On day 18, one of the attendance clerks was out for the day, but on other days (days 33, 41 and 43) when a clerk was out, coding rates were not affected. On day 30, there was a fire in the building at 11:00 a.m. Everyone was evacuated and not allowed to return until the following day. The 2 days that document a high percentage of coding for all 3 clerks are days when students were on field trips. There were a large number of student absences with the FT-code that did not have to be researched. Although there are a few consistencies in the high and low percentages, the majority of the clerks' codes appear to be highly variable in both baseline and intervention.

One reason for failure to modify clerk performance may be goal difficulty. Specifically, the goals set for the clerks may have been too intense. The literature states goals must be both specific and challenging to be effective in producing a behavior change (Anshel et al., 1992; Erez, 1977; Fellner & Sulzer-Azaroff, 1984; Gillat & Sulzer-Azaroff, 1994; Kim and Hamner, 1976; Locke et al., 1981; Tubbs, 1986). However, if a goal is too challenging (i.e., subjects lack the skill or energy to attain it) the subject may lose sight of the goal and stop working toward it (Anshel et al., 1992; Calpin et al., 1988; Locke et al., 1981; Wood et al., 1987). While these clerks repeatedly demonstrated they possessed the skill level necessary to accomplish their tasks, there was no way to measure energy level required to execute the job. Each clerk had to spend a considerable amount of time and energy tracking down and contacting teachers, parents and/or the student to explain the absences. The level of energy necessary for meeting their goals fluctuated

daily depending on the types of absences and the work required to explain them. For example, the day of the band field trip, there were more students out than on any other day throughout the 44-day study. Because most of the coding involved FT (field trip), there was less energy expended identifying and locating someone who could explain the students' absences. The students' names were listed on a field trip form and this information was coded into the computer. Throughout the intervention phase, these subjects verbalized that the goals were "too hard" and that the work they would be required to do to gather the information for all unaccounted students (i.e., contacting parents, students and teachers) would be too time consuming.

Although it is possible that subjects failed to repeatedly meet their goal because the goals were too difficult, the possibility also exists that the subject's goals were not challenging enough. Researchers have documented that goals must be specific and difficult to produce an increase in subject performance (Anshel et al., 1992; Erez, 1977; Fellner & Sulzer-Azaroff, 1984; Gillat & Sulzer-Azaroff, 1994; Kim & Hamner, 1976; Locke et al., 1981; Tubbs, 1986). Perhaps if goals were set at a level that had not been met by subjects during baseline, the motivation to attain the goal would have been present. The question arises, how difficult must a goal be before it becomes too difficult?

Job task complexity could have inhibited the effectiveness of this package intervention. Glenn (lecture on 28 March 2000) defined complexity as being characterized by many different and functionally related parts. Wood et al. (1987) identified three levels of task complexity: component complexity, coordinative complexity and dynamic complexity. The description of the attendance clerks' daily

responsibilities indicate that their everyday tasks were characterized by both component complexity (i.e., they were required to perform a number of tasks and process a great amount of information) and coordinative complexity (i.e., the relationships among these tasks and information varied). The attendance clerks were required to perform long chains of behavior, and the behaviors comprising these chains varied daily. For example, the number of student absences fluctuated throughout the day as did various reasons for those absences. Therefore, the work required to explain the absences differed day to day and from absence to absence. Other aspects of the attendance clerks' job also changed daily. There may be a large number of messages to deliver and parent phone calls to answer due to a weather change or a seasonal situation (i.e., students leaving early due to icy road conditions, Valentine gifts being delivered to school or student class projects delivered) or loss-of-credit letters mailed out based upon a student's number of unexcused absences. The behavior required to address particular aspects of the attendance clerks' job was dependent on a number of factors other than motivational variables.

We can only speculate that task complexity may have been a factor in the subjects failure to meet goal. Presently, there are no metrics available which allow us to discriminate simple from complex tasks. The literature that addresses the issue of task complexity used subjective measures, such as subjective rating scales, to identify simple versus complex tasks (Anshel et al., 1992; Burton, 1989; Locke et al., 1981; Wood et al., 1987).

Another possible reason for the failure of the feedback package to produce a change in the behavior of the attendance clerks could be attributed to the failure of the attendance secretary's praise to function as a reinforcer. Although Fox and Sulzer-Azaroff (1989) noted in their research that written feedback was effective in producing an increase in employee behavior regardless of its source (internal/self-generated, supervisory or peer), Locke et al. (1981), Gillat and Sulzer-Azaroff (1989) and Kim and Hamner (1976) found that supervisory feedback was most effective if there were back-up consequences. However in this study, the attendance secretary's feedback/praise was not paired with any tangible positive or negative outcomes and, therefore, probably functioned as a neutral stimulus. Prue and Fairbank (1981) suggested that the rank of the supervisor could account for greater or fewer changes in subjects' behavior. For example, feedback delivered by the principal (versus feedback delivered by the attendance secretary) might have produced a beneficial change in the attendance clerks' behavior, perhaps, because the school principal has direct control over reinforcers and/or punishers that could be paired with this feedback. Gillat and Sulzer-Azaroff's (1994) research also support this claim.

Praise delivered to the attendance clerks may not have served as a reinforcer regardless of the delivery source. Several authors mention that tangible rewards could serve to enhance the effectiveness of the feedback system (Balcazar et al., 1985-86; Fellner & Sulzer-Azaroff, 1984; Fox & Sulzer-Azaroff, 1989; Locke et al., 1981). Fellner and Sulzer-Azaroff (1984) stated that for feedback to be effective, it must have been "paired with a reinforcing stimulus sufficiently in the past" (p.42). In the present

study, there were no resources (e.g., increased pay or time off work) available to pair with the attendance supervisor's praise. Had back-up reinforcers been available, praise or feedback alone might have produced a change in the clerks' behavior.

Although providing a reinforcing stimulus might have increased the probability of goal-attaining behavior, it is possible that coding accuracy could have been compromised. The clerks may have begun to code more student absences, regardless of coding accuracy (i.e., the clerks may have entered "fake" or "false" codes to address students' unexplained absences). A reliability measure might need to be included in future research to control for this problem if reinforcing consequences are made contingent on coding outcomes.

Three variables in this study that differed from the Wilk and Redmon research involve increase in goals, frequency of feedback and manner in which the goals and feedback were delivered. First, Wilk and Redmond (1990; 1998) increased subjects' goals after they had been met 2 consecutive days. In this study, subjects had to meet their goal 4 consecutive days before it would be raised. The subjects never met their goal over 4 consecutive days. Therefore, since the initial goal never changed and the subjects performance fluctuated close to the established goal, it is possible that the subjects believed their performance was acceptable. Secondly, subjects in the Wilk and Redmon articles were provided feedback consisting of praise or prompts two additional times throughout their workday. In the Procedures section of this paper, there was a 2 day lag in feedback delivery to the clerks. Although, researchers cited in this study have noted that frequency of feedback does not appear to impact performance, this large a time difference in feedback delivery may have produced a difference in subjects' performances

(Balcazar et al., 1985-86; Chokkar & Wallin, 1884; Prue & Fairbank, 1981). Finally, Wilk and Redmon presented their goals and feedback to subjects verbally via supervisor. Although, research on feedback indicates that verbal and written feedback are effective at producing change, verbally stated goals may have produced a greater change in subject behavior than written e-mail goals (Balcazar et al., 1985-86; Brown et al., 1981; Fox & Sulzer-Azaroff, 1989). The form in which goals are delivered may need to be researched more thoroughly.

After reviewing the operations of the attendance office over time, it was apparent that the work (coding of absences) was eventually completed by the attendance secretary. She completed the coding prior to the principal receiving the monthly ADA report. There were never any contingencies placed on the attendance clerks' coding behavior. Apparently, the attendance secretary cannot arrange reinforcing or punishing contingencies for clerks' behavior. The bottom line measurement important to the school district is that student attendance be recorded at 94% or above for the year; however, there are no checks to verify how this percentage is achieved.

Recommendations for Future Studies

Task simplification. Although the intervention in this study did not change any behavior, research provides some direction for future studies. Future research could examine the effects of simplifying the tasks while leaving the intervention components the same. For example, in this particular study, specific job responsibilities could have been assigned to individual clerks, assigning one subject to code student absences, another to make the contacts "explaining" student absences and a third to answer the

phone and handle students signing in and out of school. Another solution might be to address the issue of task complexity by delegating some of the clerks' responsibilities to others individuals within the school, such as student office aides or school volunteers. These other individuals could be trained to answer the phone, enter student identification numbers into the Phonemaster® and/or complete admit and dismissal forms (as students sign in and out of school). This would provide additional time for the attendance clerks to research unexplained absences and accurately code them.

In the Wilk and Redmon (1990; 1998) articles a number of different tasks served as the dependent variable; however, all the tasks were related to the behaviors necessary for university student admissions. Perhaps, if the component tasks that comprised the chain of behavior necessary for coding students' absences were identified and measured, the problem of task complexity in this study could be addressed. The dependent variable could consist of a number of component behaviors required for accurate and timely absence coding.

Modeling previous research. There are other variables that could have more closely resembled the research conducted by Wilk and Redmon (1990; 1998). Specifically, goals could have been raised after clerks had met them 2 consecutive times; feedback could have been delivered by the attendance secretary twice during the course of the day; and goals could have been stated verbally, rather than in written e-mail form. This would have produced a closer replication of the Wilk and Redmon studies, possibly producing similar results.

Motivational variables. Future research could also address what might serve to reinforce the attendance clerks' behavior, as well as what source of feedback could produce the greatest behavior change. A study that utilizes various tangible consequences (e.g., longer lunch period, fewer work hours or periodic shifts to and from other, less onerous tasks) or different sources of feedback (e.g., attendance supervisor, assistant principal, principal) could provide valuable information concerning behavior change in an attendance office. Gillat and Sulzer-Azaroff (1994) provided two sources of feedback (principal and teacher-delivered) in their study and found both to be effective in improving student reading behavior.

Component analysis. Finally, although package interventions have been proven to be effective in a number of the research articles presented in this study, a greater understanding of the effects of the intervention package may be found by including a component analysis of the variables that create the package (Brown et al., 1981; Calpin et al., 1988; Chhokar & Wallin, 1984; Gillat & Sulzer-Azaroff, 1994; Kim & Hamner, 1976; Wilk & Redmon, 1990; Wilk & Redmon, 1998). For example, Brown et al. (1981), Calpin et al. (1988) Chhokar and Wallin (1984) and Wilk and Redmon (1998) added components to their package intervention across time. In Wilk and Redmon (1998) the initial intervention included only two components (daily-adjusted goal setting and verbal feedback) and then the graphic feedback was added. It would be possible to implement the same procedure in this environment and build the package, adding a single component each time and varying the order in which the package was built among subjects.

Presently, there is considerable behavior analytic research focusing on improving student and teacher performance; however, the operation of school support staff and administration appear to have been overlooked (Cooper, Thomson, & Baer, 1970; Cossairt, Hall, & Hopkins, 1973; Drabman & Lahey, 1974; Fink & Carnine, 1975; Gillat & Sulzer-Azaroff, 1994; Harris, Bushell, Sherman, & Kane, 1975; Ingham & Greer, 1992; Van Houten, Hill, & Parsons, 1975; Witt, Noell, LaFleur, & Mortenson, 1997). In attempting to increase the effectiveness of administrative functions in the public school system, it is important that all aspects of administrative operations be examined and researched.

APPENDIX A

TABLES

Table 1

Fabricated Sample of ATT.515D

Ref: ATT.515D

Date: 1/11/00

Time: 11:59:13

Student Absences from 1/12/00 to 1/12/00

Absence Types: (Au) (Ae)

Student #	Student Name	CI	Homeroom		Daily								Date			
			Teacher	Homeroom Number	01	02	03	04	05	06	07	08		Reason		
000000	Phillips, Jane	11	Smith, Jane	B302	A	A	A	A							PC	1/12/00
333333	Reeves, Alice	12	Davis, Amy	C106				A							UA	1/12/00
999999	Smith, Joe	09	Kent, Clark	Gym	A	A									TR	1/12/00
777777	Taylor, Robin	09	Nelson, Jim	A104	A	A	A	A							FT	1/12/00
444444	White, Mary	10	Nelson, Jim	A104	A	A	A	A							A	1/12/00

Note. Dependent variable calculated using the following formula: Unacceptable absence codes (UA,TR, A) divided by total number of students absent/clerk x 100 = % absences with unacceptable codes/clerk - 100 = % coded absences/clerk (3 divided by 5 = 0.6 x 100 = 60% - 100 = 40% coded absences). Au = Absence unexcused; Ae = Absence excused; CI = Grade Classification; 01 = Class period; A = Absence; PC = Parent Call; UA = Unexcused Absence; TR = Truant; FT = Fieldtrip.

Table 2

Baseline/Intervention Median Comparison among Subjects

	<u>Baseline 1</u>	<u>Intervention 1</u>	<u>Baseline 2</u>	<u>Intervention 2</u>
S1	54.5%	66.2%	60.8%	59.2%
S2	63.3%	65.3%	64.3%	65.7%
S3	58.3%	60.5%	61.4%	63.5%

Table 3

Number of Goal Attainment per Subject per Phase

	<u>Baseline 1</u>	<u>Intervention 1</u>	<u>Baseline 2</u>	<u>Intervention 2</u>
S1	1	6	1	0
S2	2	5	3	5
S3	3	3	3	3

APPENDIX B

FIGURES

Figure 1. Percent of coded absences per day for subject 1.

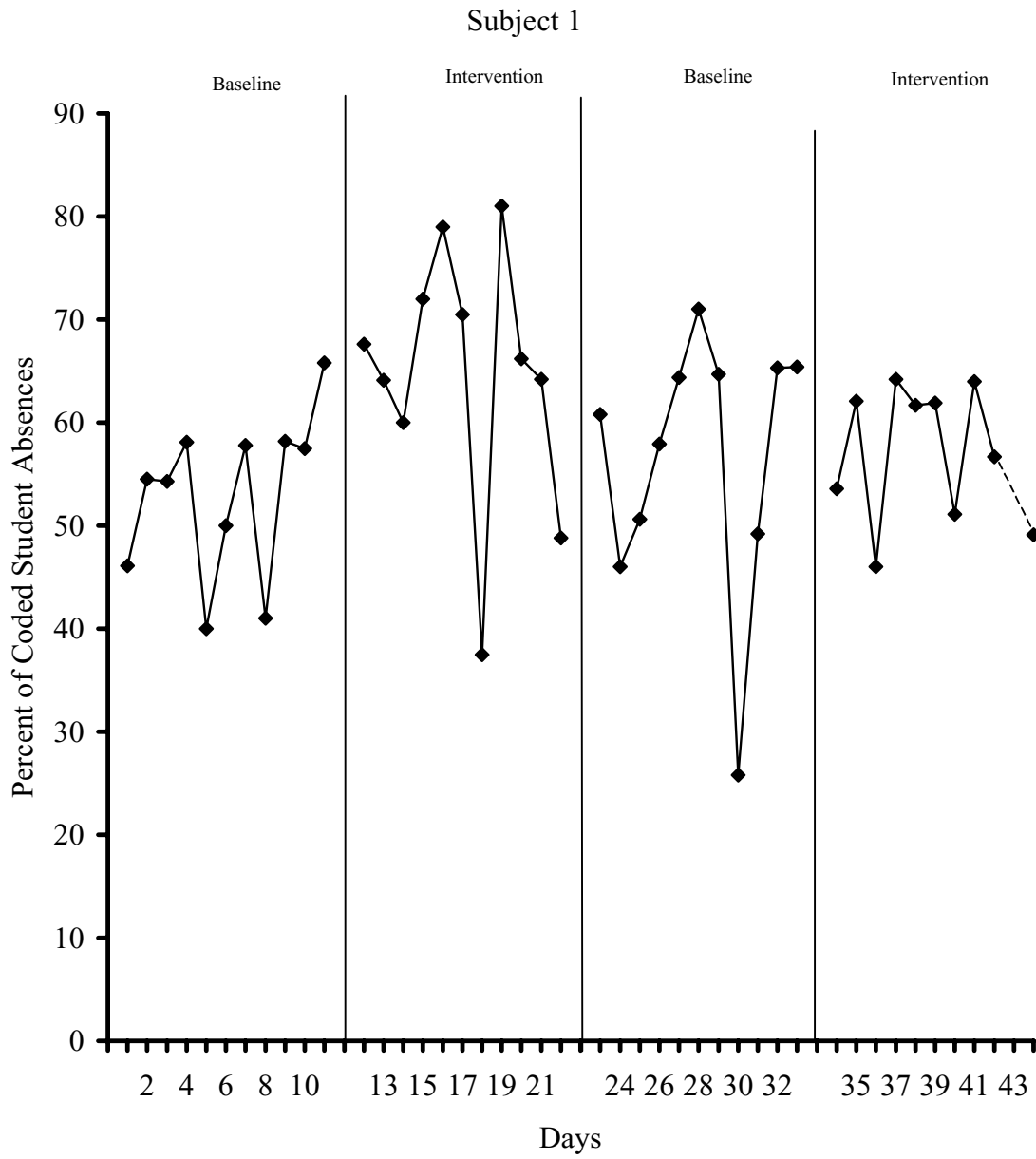


Figure 2. Percent of coded absences per day for subject 2.

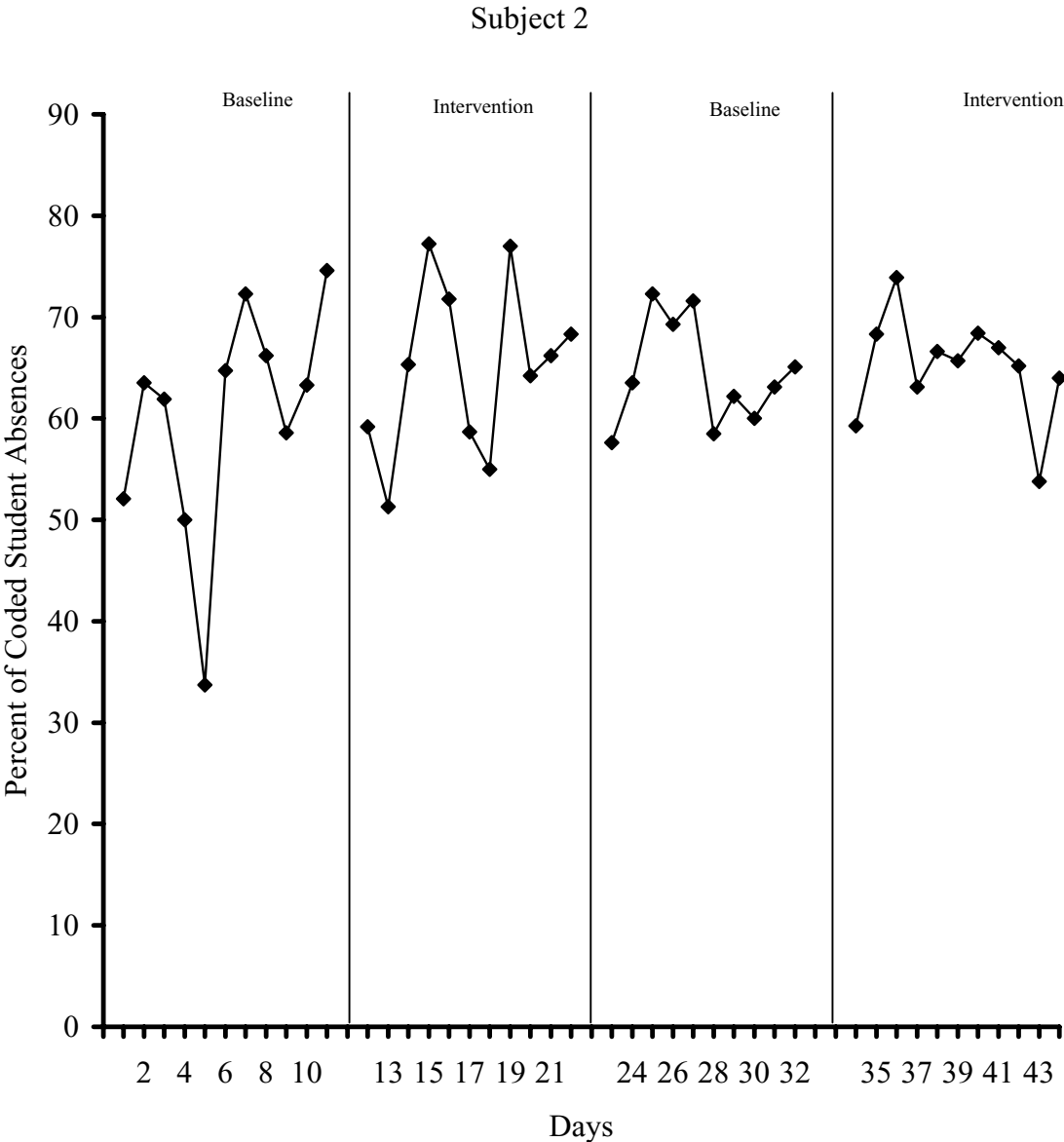
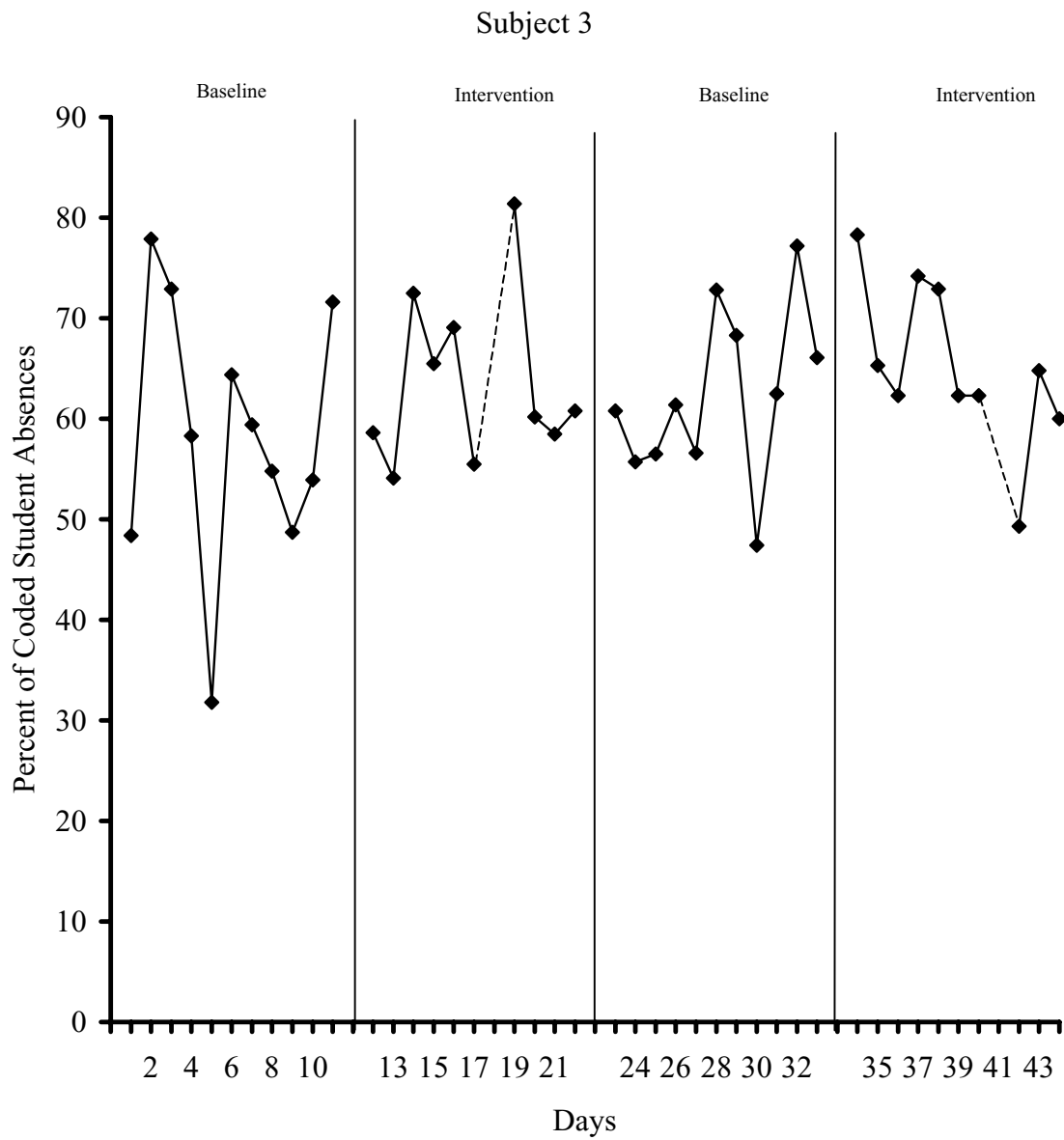


Figure 3. Percent of coded absences per day for subject 3.



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