The Use of a Timeout Intervention With and Without Escape Extinction for Treatment of Escape-Maintained Noncompliance in a Classroom Setting

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THE USE OF A TIMEOUT INTERVENTION WITH AND WITHOUT ESCAPE
EXTINCTION FOR TREATMENT OF ESCAPE-MAINTAINED NONCOMPLIANCE
IN A CLASSROOM SETTING

by

Joshua Loren Needelman

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 2010
ABSTRACT

THE USE OF A TIMEOUT INTERVENTION WITH AND WITHOUT ESCAPE EXTINCTION FOR TREATMENT OF ESCAPE-MAINTAINED NONCOMPLIANCE IN A CLASSROOM SETTING

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The present study investigated the effectiveness of two time-out (TO) procedures in reducing escape-maintained noncompliance of four children in a classroom setting. Participants were screened to assess that compliance with teacher-presented instructions was low and noncompliance was escape-maintained. Teachers were then trained to use two TO procedures, one without escape extinction (EE) and one with escape extinction following TO release. Two nonconcurrent multiple baseline across participants designs with a crossover element were used to compare levels of compliance across baseline, TO, and TO-EE phases. Increases in compliance were seen from baseline to the first intervention phase, and these increases were maintained in the second intervention phase regardless of the order of the phases. Small increases in compliance or decreases in variability were seen for some participants from the first to second intervention phase. Results indicate that TO with or without escape extinction may be an effective treatment for escape-maintained noncompliance. These results are discussed within the context of previous research on the use of TO with escape-maintained noncompliance.
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A Dissertation
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CHAPTER I
INTRODUCTION

Failure to comply with adult instructions, or noncompliance, is among the most commonly reported problem behaviors in children (Bernal, Klinnert, & Schultz, 1980; Charlop, Parrish, Fenton, & Cataldo, 1987), and noncompliance is also often considered a keystone behavior for reducing other problem behaviors (Ducharme & Popynick, 1993). That is, an intervention that successfully treats noncompliance may also reduce other problem behaviors. Rhode, Jensen, and Reavis (1993) have suggested that compliance levels of 40% or lower in a classroom setting may have a negative impact on a child’s academic progress.

A number of procedures to increase compliance and decrease noncompliance have been studied. These include both antecedent (e.g., effective instruction delivery [EID]; time-in [TI]) and consequent procedures (e.g., contingent praise [CP]; time-out [TO]). There are a number of variations in the manner in which adults provide instructions to children. The use of some of these variations is more likely to yield compliance than others (Ford, Olmi, Edwards, & Tingstrom, 2001; Mandal, Olmi, Edwards, Tingstrom, & Benoit, 2000). These effective instruction delivery components make up EID and include (a) establishing close proximity prior to instruction delivery, (b) acquiring eye contact, (c) praising for eye contact, (d) delivering the instruction in the form of a directive rather than as a question, (e) using descriptive language during instruction delivery (f) allowing 5 to 10 s for initiation of compliance, and (g) praising compliance (Mandal et al.).
Another antecedent procedure used to increase compliance is TI, or verbal or physical praise for appropriate behavior. Mandal et al. (2000) used TI to increase compliance levels in noncompliant children in a clinic setting. Two children (Brian and Janis) exhibited substantially higher levels of compliance above baseline levels by training their parents to use TI alone. Brian’s mean compliance rose from 16.7% in baseline to 75.0% with the use of TI alone, and Janis’s mean compliance rose from 45.0% to 85.0%.

Whereas EID and TI are considered antecedent procedures to address compliance, CP is considered a consequent manipulation. CP can take the form of verbal praise acknowledging compliance or could also include positive touch (e.g., a high five or a pat on the back) contingent on compliance (Everett, Olmi, Edwards, & Tingstrom, 2005). CP differs from EID in that it is a consequent manipulation, but it has often been included as a component of EID in previous investigations (Mandal et al., 2000). In fact, Everett et al. examined the contribution of CP to EID and found substantial gains for two of four participants. Compliance packages including EID with CP and TI have produced increased levels of compliance for previously noncompliant children (Benoit, Edwards, Olmi, Wilczynski, & Mandal, 2001; Mandal et al., 2000). Neef, Shafer, Egel, Cataldo, and Parrish (1983) used praise for compliance to examine differences between requests to initiate or terminate a response, although they did not explicitly label praise for compliance as CP.

In addition to EID, TI, and CP, time-out (TO) is one of the most commonly used and studied consequent behavior management procedures for children’s noncompliance (Solnick, Rincover, & Peterson, 1977). TO is a response-contingent procedure in which
access to positive reinforcement is removed for a period of time (Forehand, 1985). The purpose of TO is to decrease some undesirable behavior, and the TO procedure is implemented after an individual engages in that behavior. Because of the purpose and function of TO, TO is considered a negative punishment procedure for noncompliance. TO has been used to treat noncompliance in a number of different populations including typically developing children (Bean & Roberts, 1981; Hobbs, Forehand, & Murray, 1978), children with developmental delays (Mace & Heller, 1990; Olmi, Sevier, & Nastasi, 1997), children and young adults with mental retardation (Barton, Guess, Garcia, & Baer, 1970; Mace, Page, Ivancic, & O’Bien, 1986), and with oppositional and aggressive children (Roberts, 1988).

The effectiveness of TO is affected by the TI environment (Shriver & Allen, 1996). Ensuring a clear difference between the TO and TI environments should yield a more effective TO procedure. In other words, TO is most effective when a child has plentiful access to reinforcement in the TI environment and no access to reinforcement in the TO environment. Therefore, Shriver and Allen suggested using TO only when the child typically has access to a rich TI environment including special privileges, praise, and preferred edible treats.

Although positive procedures such as EID, TI, and CP have been demonstrated to be successful in increasing compliance, the primary focus of the current investigation is time-out (TO). Therefore, the following review will be primarily limited to a discussion of TO and its supporting literature. This review will include types of TO, procedural variations of TO, and potentially reinforcing properties of TO. The purpose of this study will be to further examine the potential reinforcing properties of TO. Researchers and
practitioners alike (Handen, Parrish, McClung, Kerwin, & Evans, 1992; Harris, 1985; Plummer, Baer, & LeBlanc, 1977; Smith, 1981; Solnick et al., 1977; Taylor & Miller, 1997; Wilson & Lyman, 1982) have long suggested that the use of time-out with behaviors maintained by escape is contraindicated due to the potentially negative reinforcing effects of escape during the time-out period. Recently, researchers have investigated the effectiveness of the use of time-out with and without an escape extinction component (Benshoof, 2009; Everett, Olmi, Edwards, Tingstrom, Sterling-Turner, & Christ, 2007; Needelman, 2008). The purpose of the present study is to further evaluate the effectiveness and acceptability of time-out procedures with and without an escape extinction component to treat escape-maintained noncompliance in a classroom setting.

Types of TO

TO can vary based on the amount of difference between the primary setting and the TO environment. When using a TO procedure, a child may be completely physically removed from ongoing activities or the child may remain in the primary setting but have access to reinforcement restricted (Harris, 1985; Sterling-Turner & Watson, 1999). These types of TO include nonexclusion, exclusion, and isolation (Brantner & Doherty, 1983; Cuenin & Harris, 1986; Harris).

Nonexclusion TO includes removing access to reinforcers while keeping the child within the natural environment (Cuenin & Harris, 1986). In nonexclusion TO, a child’s misbehavior in a classroom may be consequated by placing the child in a pre-specified location within the classroom for TO. The child is still allowed to observe his or her classmates engage in appropriate behavior while in TO.
In exclusion TO the child is removed from the immediate environment, and the ability to view that environment is restricted (Cuenin & Harris, 1986; Harris, 1985; Mace et al., 1986). Thus, the difference between nonexclusion and exclusion TO is that while in exclusion TO the child can view the natural environment, whereas in nonexclusion TO the child cannot see the natural environment. An example of exclusion TO is sending a child to a TO corner where the child is to face the wall rather than the natural environment.

Whereas exclusion TO is more restrictive than nonexclusion TO, isolation TO is the most restrictive TO procedure. In isolation TO the child is completely removed from the natural environment (Harris, 1985) and is placed in a separate location used for TO. A TO room may provide the starkest discrimination between the TI and TO environments. Isolation TO may not be appropriate in all environments due to ethical and legal concerns (Alberto & Troutman, 1999; Sterling-Turner & Watson, 1999; Yell, 1994). Yell suggested that isolation TO is more likely to be abused than exclusion or nonexclusion TO, and the courts have considered isolation timeout to be suspect if used improperly. Because of these ethical and legal concerns regarding the use of isolation timeout, Yell advised making special considerations prior to using an isolation TO, including being aware of local policies regarding TO, obtaining informed consent from parents prior to isolation TO use, and ensuring TO serves a legitimate educational function. Due to these concerns and various laws regarding the use of an isolation room, exclusion and nonexclusion TO are more commonly used than isolation TO in general education settings (see Sterling-Turner & Watson).
Implementation and Procedural Variations of TO

Due to individual differences in TO delivery, the child, and the environment, Shriver and Allen (1996) have argued against a step-by-step guide outlining the various steps necessary for implementing TO. Rather than offering a protocol, Shriver and Allen have developed a heuristic guide indicating characteristics of TO most likely to yield positive results based on a review of the preexisting literature. As previously noted, one strategy for increasing the likelihood that TO will be effective is to enrich the TI environment. Enriching the TI environment will enhance the ability of an individual to discriminate between the TO and TI environments. Shriver and Allen created a TO grid that indicates that a TI environment with high reinforcement opportunities and a TO environment with low reinforcement opportunities should maximize the success of TO. A TI environment with high reinforcement opportunities and a TO environment with high reinforcement opportunities would likely result in insufficient contrast to facilitate behavior change. The same would be true if the TI and TO environments both had low reinforcement opportunities. A TI environment with low reinforcement opportunities and a TO environment with high reinforcement opportunities would likely result in behavior deterioration.

There are a number of variations in the use of TO that have been empirically investigated, although future research should still identify the most important variations in TO that will yield the most favorable results. Some of these TO variations include providing a verbalized reason to the child prior to implementation (Cuenin & Harris, 1986; Wilson & Lyman, 1982), use of a warning (Roberts, 1982; Twyman, Johnson, Buie, & Nelson, 1994), guiding an individual to TO (Wilson & Lyman), methods of
enforcing TO (Roberts, 1988; Roberts & Powers, 1990), duration of TO (Hobbs et al., 1978) and release from TO (Bean & Roberts, 1981; Handen, Parrish, McClung, Kerwin, & Evans, 1992). These variations will be examined in the following sections.

Verbalized Reason for TO

TO can be used with or without providing a verbalized reason to the child explaining why he or she must go to TO (Forehand, 1985). For example, the child could be told, “You did not follow my instruction. Go to TO.” One concern associated with the use of a verbalized reason is that added interaction with the child may reinforce the child’s problem behavior (Harris, 1985). Although this concern may be legitimate, several researchers use verbalized reasons in their TO procedures or recommendations (e.g., Olmi et al., 1997; Shriver & Allen, 1996; Sterling-Turner & Watson, 1999).

Although there is limited research on the effectiveness of the use of a verbalized reason for TO, a verbalized reason could still be used. Because of the concern that access to attention might reinforce the child’s inappropriate behavior, the verbalized reason for TO should be brief, yet clear (Cuenin & Harris, 1986; Wilson & Lyman, 1982).

Warnings

Another procedural variation of TO is providing the child with a warning prior to sending him or her to TO. For example, the child could be told, “You did not follow my instruction. If you do that again, you will have to go to TO.” Because the use of a warning prior to TO implementation may increase the length of time between the problem behavior and the use of TO, the use of a warning prior to TO implementation may decrease the effectiveness of TO (Roberts, Hatzenbuehler, & Bean, 1981). In fact, this delay could reinforce noncompliance and reduce compliance levels. Also, if the child...
routinely complies with the instruction following the warning he or she will not have to go to TO at all and gains in compliance with the initial instruction may not occur.

Roberts (1982) examined whether the use of a warning prior to TO implementation would affect compliance levels. Mother-child dyads attended sessions in a clinic playroom and were assigned randomly to a no-warning, warning, or standard treatment group. TO was implemented by the mother and lasted at least 2 min with 15 s of quiet required for TO release. The TO procedure for each group was identical except for the use of a warning. Children in the no-warning group were placed in TO immediately following noncompliance. Following noncompliance, children in the warning group were given a warning that they would have to go to TO if they did not comply. The standard treatment group was the same as the warning group except children were praised for compliance. There were no clear differences in compliance levels across groups. However, children who were provided a warning had fewer instances of TO. Roberts, therefore, suggested that using a warning would decrease the amount of time spent using TO.

Twyman et al. (1994) used a contingent observation procedure for misbehavior. In a contingent observation procedure, a child is required to watch ongoing activities, but is not allowed to participate. However, if the child continued to misbehave during this TO the child was warned that an exclusionary TO procedure would be used. When a warning was provided prior to the use of exclusionary TO, compliance levels decreased. When no warning was provided, and TO was used immediately following problem behavior compliance levels increased. Contrary to Roberts’ (1982) results, these results argue
against the use of a warning prior to TO. Further research on the use of warnings with TO is necessary to clarify these inconsistencies.

*Guidance to TO*

Often a verbal instruction is sufficient to place a child in TO. Sometimes, however, a child may resist going to TO and physical guidance or placement is necessary (Harris, 1985; Wilson & Lyman, 1982). Although there is a lack of research on the use of physical guidance, physical guidance may function as reinforcement for a child in timeout (Shriver & Allen, 1996). Physical guidance should therefore be used only when necessary (Nelson & Rutherford, 1983).

*Enforcing TO*

Children may attempt to escape TO. Some strategies to prevent escape include holding and using a barrier. Some consequent procedures used to decrease escape include using repeated returns, and spanking (Roberts & Powers, 1990; Sterling-Turner & Watson, 1999). Holding refers to physically restraining the child in TO. Much like the concerns with the use of physical guidance, holding may serve as a model of aggressive behavior and increase the frequency of a child’s aggressive behavior. Thus, holding should be used only as needed. A barrier is some object, such as a screen, that prevents the child from escaping. Repeated returns include physically returning the child to TO contingent upon an escape attempt. When using repeated returns, it is recommended that the intervention agent refrain from speaking to the child or providing the child with other attention (such as eye contact) to avoid inadvertently reinforcing attempts at escape with attention. Finally, in some TO procedures, a child is spanked contingent on an escape attempt (Christophersen, 1988). Although different studies used these different methods
to enforce TO, there is no literature to suggest clear superiority of one method over another, although Roberts and Powers suggested holding may be associated with more escape attempts.

**Duration of TO**

The ideal TO would be brief in duration to decrease the amount of time a child spends in TO. Time spent in TO can also be viewed as time unavailable for instruction or access to the TI environment (Sterling-Turner & Watson, 1999). Also, longer TOs may provide longer temporary escape from a task demand and therefore may negatively reinforce inappropriate behaviors with escape.

Hobbs et al. (1978) examined the effects of varying durations (i.e., 10 s, 1 min, and 4 min) of time contingent TOs to treat noncompliance in preschool children. No behavioral release contingency was used for this TO procedure. The 4-min TO was significantly ($p < .01$) more effective than 1-min or 10-s TO. Specific data were not presented. The lack of a behavioral contingency is potentially problematic as a child could get released from TO while engaging in inappropriate behavior. Engaging in inappropriate behavior may be associated with release from TO which could reinforce inappropriate behavior via negative reinforcement (i.e., escape from the TO environment).

Theoretically, TOs of brief duration would result in a limited amount of lost instructional time and shorter escape from task demands. Therefore, TOs of brief duration would be ideal. Hobbs et al. (1978) demonstrated 4-min TOs were more effective than shorter TOs. Because longer TOs result in the negative outcomes of lost instructional
time and longer escape from task demands, at some point lengthier TO durations, even if slightly more effective, will be less desirable than shorter TO durations.

**Release From TO**

Release from TO can be contingent on the passage of some predetermined amount of time or child behavior. When TO release is contingent on the passage of time, the child remains in TO until that time interval has passed. When TO release is contingent on behavior, the TO ends after the child exhibits appropriate TO behavior. Typically this behavior includes sitting still and quietly (e.g., Ford et al., 2001; Marlow, Tingstrom, Olmi, & Edwards, 1997; Olmi et al., 1997). In some cases a child is released from timeout only after a time interval has passed and the child has exhibited appropriate TO behavior (e.g., Bean & Roberts, 1981; Handen et al., 1992; Roberts, 1982).

The duration of TO is dependent on the release contingency of TO. When TO release is contingent on the passage of time, the duration of TO will equal the TO duration chosen. When TO release is contingent on child behavior, the duration of TO will vary depending on how long it takes for the child to engage in appropriate TO behaviors. Because there is no fixed duration for behavioral release contingencies, such a release contingency may result in shorter TOs. This will allow the child to re-enter the TI environment and gain access to reinforcement and instruction (Olmi et al., 1997; Sterling-Turner & Watson, 1999). The results of studies examining the parameters of release have yielded mixed results.

Bean and Roberts (1981) addressed the lack of a behavioral contingency in the Hobbs et al. (1978) study. Twenty-four mother-child dyads were assigned randomly to a child release, parent release, or control group. Each dyad began with an identical 30-
command baseline phase. In the child release group, the mother warned the child that noncompliance would be followed by TO. TO would last until the child decided he or she was ready to follow directions. When the child decided he or she was ready to follow directions, the child could leave TO. In the parent release group, the child was warned that noncompliance would be followed by TO, and the child would have to stay in TO until told to leave. The TO duration in the parent release group was 2 min and the child had to be quiet for the last 15 s of TO. In the parent release group, the child was spanked twice and returned to TO if the child attempted to escape TO. There was no TO procedure in place for the control group.

Participants in both TO groups had decreased levels of noncompliance compared to the control group, but the parent release group had significantly higher compliance levels than the child release group (Bean & Roberts, 1981). Children in the child release group had significantly more TOs than children in the parent release group, although those TOs were shorter than those in the parent release group. TOs shorter in duration would be expected from the child release group as the child would be likely to want to escape the TO environment quickly.

Bean and Roberts (1981) suggested that TO release should be contingent on both behavior and duration, as was the case in the parent release group. There may have been extraneous variables that accounted for their results. For example, spanking was used only in the parent release group. Child behavior may have changed in attempts to avoid spanking rather than the parent release contingency. Also, only children in the child release group were given a warning prior to the use of TO. Because Twyman et al. (1994) found that the use of a warning prior to TO resulted in decreased compliance levels,
compliance levels in the child release group may actually be lower than indicated by Bean and Roberts.

Potential Reinforcing Qualities of TO

TO is typically referred to as a positive punishment procedure because the purpose of TO is to reduce some problem behavior (Brantner & Doherty, 1983). However, to be considered a punishment procedure, TO actually needs to decrease the future probability that a person will engage in a problem behavior (Harris, 1985). Some have suggested that rather than functioning as a punishment procedure, TO may actually occasionally function as a negative reinforcer if the child is able to escape or avoid aversive stimuli and problem behaviors increase in the future (Handen et al., 1992; Harris, 1985; Plummer, Baer, & LeBlanc, 1977; Smith, 1981; Solnick et al., 1977; Taylor & Miller, 1997; Wilson & Lyman, 1982).

Solnick et al. (1977) investigated the potentially reinforcing qualities of TO for a 6-year-old girl (Laurie) diagnosed with autism who exhibited tantrum behavior. The first intervention attempted with Laurie was a TO procedure contingent on problem behavior, in which all potential tangible reinforcers were removed, and Laurie was left alone. Sessions were conducted in a classroom setting, and TO was implemented by the teacher. Solnick et al. noticed that Laurie engaged in self-stimulatory behavior while in TO, and her rate of problem behavior actually increased. Next, Solnick et al. restrained parts of Laurie’s body that were not used in self-stimulatory behavior for 10 s while in TO. Still, when Laurie was restrained, but allowed to engage in self-stimulatory behavior, her problem behaviors increased. Next, Laurie was restrained but not allowed to engage in self-stimulation. When this component was added to the intervention, her problem
behaviors decreased. Thus, it was concluded that the initial TO procedure reinforced Laurie’s behavior by giving her the opportunity to engage in self-stimulatory behavior.

Smith (1981) also examined the potential reinforcing components of TO. Smith theorized that placing a child in isolation TO provides the child with escape from a stressful environment, a place to express anger, and reduced stimulation from the environment. It is possible that gaining access to these variables in TO may serve as a reinforcer for problem behavior. Smith’s participants were 4 children with disabilities (i.e., autism and mental retardation) from a developmental disability center whose staff implemented all procedures. The participants were between 8 and 13-years old. Although not all participants engaged in the same problem behaviors, problem behaviors consisted of self-injurious behavior, screaming, temper tantrums, and destructive behavior. No more than three problem behaviors were selected per child.

Intervention consisted of isolation room TO. When the child engaged in a problem behavior, he or she was briefly told that they had engaged in the behavior and was then instructed to go to TO. The child was allowed to return when he or she was ready to work. Data were collected throughout the day and in all settings within the naturally occurring environment. Although dependent variables included the number of instances of problem behavior, the number of minutes spent in TO, the number of TOs, and checks (which were awarded for appropriate behavior), not all dependent variables were used for each participant. For example, data were provided for number of TOs for three participants and number of minutes spent in TO for the other participant. Only one child had the check system in place to reward appropriate behavior. Results showed an initial increase in behavior followed by a gradual decrease.
Smith (1981) argued that isolation TO provided for escape from aversive stimuli, and Smith also anecdotally indicated that the students did not appear to care about going to TO. Sometimes the children would engage in the problem behavior only once to obtain placement in TO, but then no longer exhibited the problem behavior. Smith suggested that perhaps the students engaged in the behavior to get to the TO room where they could express their anger in more appropriate ways. Also, the data may suggest that TO actually functioned as an extinction procedure and the initial increase in problem behavior was an extinction burst.

Taylor and Miller (1997) explored potentially reinforcing qualities of TO and were interested in finding a more functionally appropriate intervention by examining treatment implementation and treatment selection. Treatment implementation involved an analysis of treatment integrity, or the degree to which intervention agents implemented the treatment as was intended. Analysis of treatment selection involved determining if the treatment was appropriate for the function of the behavior. In the first experiment the authors attempted to increase treatment integrity. In the second experiment the authors conducted a functional assessment. In the third and final experiment a different, functionally appropriate intervention was selected. The participants consisted of four children (Tate, Reily, Tucker, and Casey) with developmental disabilities ages 9 to 12 years who exhibited problem behaviors including grabbing, hitting, yelling, crying, self-injurious behavior, and out of seat. The experiments were conducted in the students’ classrooms.

The intervention used in Experiment 1 involved the combination of TO and differential reinforcement. The classroom staff were instructed how to send the child to
TO and how to use differential reinforcement by praising appropriate behaviors (Taylor & Miller, 1997). Treatment integrity improved to levels near 100% across interventionists, and problem behaviors decreased for Tucker and Casey, but increased for Tate and Reily.

Taylor and Miller (1997) next conducted a functional analysis (FA). Three conditions were utilized in an alternating treatments design: social attention, demand, and toy play. In the social attention condition, the student was instructed to play with toys while the instructor did some work. Contingent on the occurrence of a problem behavior, the instructor provided attention in the form of touch and verbalized concern and disapproval for 30 s. In the demand condition, the student was given instructions or commands that were followed by modeling and physical guidance as necessary. Contingent on the occurrence of problem behavior, the instructor removed the task demand for 30 s and provided the student with a break. In the toy play condition, the student was allowed to play with toys and attention was provided in the form of a smile and praise for appropriate behavior every 30 s. All problem behaviors were ignored.

The results of the FA showed a clear function of problem behavior for all students. Tucker and Casey’s problem behaviors were maintained by social attention, whereas Tate and Reily’s problem behaviors were maintained by escape from task demands. It was then theorized that these results explained why TO was ineffective for Tate and Reily. TO provided Tate and Reily with escape, and because their problem behaviors were maintained by escape, TO was an inappropriate intervention for Tate and Reily.
In the final experiment, Taylor and Miller (1997) either had Tate and Reily work through their problem behaviors, or TO was implemented. During the TO condition, Tate and Reily received a 30 s TO contingent on problem behavior. During the working through condition the student was verbally instructed not to engage in problem behavior and to complete his or her work task. In this condition, verbal and manual prompting were used for 30 s contingent on problem behavior. Both Tate and Reily engaged in more problem behaviors in the TO condition than in the working through condition. Taylor and Miller theorized this was the case because Tate and Reily were provided with escape from task demands when in TO, but they were not provided with escape during the working through condition.

The research discussed above suggests that TO may be an inappropriate intervention for some problem behaviors as it may serve as a negative reinforcer. That is, the use of TO may allow a child to escape from an aversive stimulus and increase the future likelihood that the child will engage in a problem behavior. These studies suggest TO should be used with caution if a child’s problem behavior is maintained by escape from an aversive stimulus.

Use of TO and Escape Extinction at The University of Southern Mississippi

Research at The University of Southern Mississippi (USM) has included a combined temporal and behavioral contingent release TO period with other compliance training components (i.e., Ford et al., 2001; Marlow et al., 1997; Olmi et al., 1997). Because these compliance training components (e.g., EID, TI, and CP) are often used in combination with TO, the individual effects of TO on compliance are not yet known.
More recent research by Everett et al. (2007), Needelman (2008), and Benshoof (2009) utilized TO with CP and no positively based antecedent procedures.

Olmi et al. (1997) evaluated the use of TI and TO as a treatment for noncompliance and inappropriate behaviors with a 4-year-old boy (Jeremy) and an 8-year-old girl (Jenny). Jeremy and Jenny were referred to a clinic for noncompliance and tantrum behavior. Jeremy attended a preschool language program where he was engaging in problem behaviors, and Jenny was receiving services for problem behaviors at home. Jeremy had speech and language difficulties, and Jenny was diagnosed with a moderate mental disability and cerebral palsy. TI consisted of positive touch and verbal praise contingent on compliance, and TO was implemented for noncompliance with an instruction. Initially, TO was implemented by a school psychologist and then by a school psychology graduate student. The child was placed in a spot two to three feet away from the activity with as little physical guidance as necessary. A brief description of the problem behavior and verbal instruction was provided (e.g., “You did not follow my instruction. TO.”). The interventionist did not provide the child with eye contact, physical contact, or verbal interaction when the child was in TO. The child was released from TO contingent on appropriate TO behavior (i.e., quiet hands, feet, and mouth) for 3-5 s. After the child engaged in appropriate TO behavior the interventionist said, “You are quiet, out of TO.” After being released from TO, the instruction that led to placement in TO was re-presented. CP was provided for compliance to the re-presentation of the instruction and TO was re-instituted for noncompliance. The first intervention phase for Jeremy consisted of both TI for appropriate behavior and TO for noncompliance. The initial intervention phase for Jenny consisted of TI alone, followed by both TI and TO.
Within two sessions of TI and TO, Jeremy’s compliance levels were consistently above 90%. Jenny threw a mean of 8.2 objects per 2-min interval in a treatment withdrawal phase and throwing rates decreased to 4.4 objects per 2-min interval with TI alone. When TO was added to TI, throwing rates decreased further to 1.4 objects per 2 min interval. The combination of TO and TI were effective for both Jenny and Jeremy (Olmi et al., 1997).

Marlow et al. (1997) examined the effects of TI (with EID and CP) and the combination of TI and TO for treatment of noncompliance for three children with speech/language disorders in a classroom setting. All participants had initial compliance levels of less than 40%. All participants then received a TI only phase in which teachers were trained to use the components of TI. Next, TO was added to TI for a TI/TO phase. In this TO procedure the instruction that led to TO was re-presented following TO release (i.e., escape extinction). The use of TI resulted in increased compliance levels for all three participants and the addition of TO resulted in further increases in compliance.

Ford et al. (2001) also examined the use of TO in combination with other interventions (e.g., EID and TI) for noncompliance with four elementary school students. All participants began with EID before adding TI. After EID and TI were in place, TO was added. All participants had increased compliance levels in the EID phase compared to baseline and these levels further increased with the addition of TI. Only limited conclusions can be drawn from this study regarding TO due to high levels of compliance prior to the introduction of TO. In addition, TO was used inconsistently, infrequently, and not across all participants.
Everett et al. (2007) acknowledged that previous research has suggested that TO is effective for problem behaviors maintained by positive reinforcement, but also that it has been suggested that TO may be inappropriate for problem behaviors maintained by negative reinforcement. However, researchers at USM (e.g., Ford et al., 2001; Marlow et al., 1997; Olmi et al., 1997) have included an escape extinction component with their TO procedures. In escape extinction, the child is re-presented the instruction that resulted in TO following TO release. For example, if a child is told to pick up blocks and does not comply, the child must go to TO. After release from TO, the instruction is repeated to the child. That is, the child is again told to pick up blocks. Praise is provided for compliance, and TO is used contingent on noncompliance. Escape extinction cannot be used with “don’t” requests because it would require the child to re-engage in behavior that the child was instructed to stop or not engage. Everett et al. suggested that perhaps re-presenting the instruction in escape extinction may extinguish escape-maintained problem behavior.

With the use of escape extinction, TO may be effective in treating escape-maintained noncompliance. Everett et al. compared the use of TO with and without escape extinction of “do” commands for escape-maintained noncompliance.

Participants were four children referred to a clinic because of noncompliance. The participants were two 4-year-old Caucasian boys (Isaac and Nick), and a 5-year-old Caucasian boy (Zeke) and girl (Tina). An abbreviated functional analysis was used to ensure that the participants’ noncompliance was maintained by escape.

After baseline, parents were trained to implement TO without escape extinction. Praise was delivered for compliance, and TO was implemented for noncompliance.

Following the presentation of an instruction, children were given 5 s to initiate
compliance. If the child did not initiate compliance, a brief verbal reason was given for TO. When in TO, the child was ignored, and if the child attempted to escape TO repeated returns were used. During this phase the child re-entered the natural environment without having to comply with the initial instruction. The first instruction given following TO release was different than the command that resulted in TO. In this way, during the TO phase, the child was able to escape instructions (Everett et al., 2007).

Everett et al. (2007) next implemented a phase that included TO with escape extinction (TO-EE). This phase was identical to the TO phase except that following TO release the instruction that resulted in TO was re-presented. If the child complied, praise was delivered and a new instruction was presented. If the child did not comply, the child was sent back to TO. This cycle continued until the child complied with the initial instruction. Compliance percentages were reported for compliance with the first presentation of an instruction.

Following an abbreviated functional analysis to confirm that noncompliance was escape-maintained, a nonconcurrent multiple baseline across participants design was used. The order of the phases was baseline, TO, and TO-EE (Everett et al., 2007). During baseline, median compliance percentages were 20% for both Isaac and Nick and 15% for Zeke and Tina. During the TO phase, compliance increased to 40%, 45%, 60%, and 90% for Isaac, Nick, Zeke, and Tina, respectively. During the TO-EE phase, compliance increased to 70% for both Isaac and Nick and to 90% for Zeke. Tina’s compliance remained at 90% in the TO-EE phase.

If TO could function as a negative reinforcer it would most likely reinforce problem behaviors maintained by escape. If this were the case, TO should be ineffective
for escape-maintained noncompliance. However, Everett et al. (2007) demonstrated that if an escape extinction component is used with TO in which the child still must complete the instruction that resulted in TO, then TO can be an effective intervention for noncompliance for children with escape-maintained noncompliance.

Whereas Everett et al. (2007) conducted their study in a clinic setting, Needelman (2008) attempted to replicate Everett et al.’s study in a classroom setting with 3 participants (Hillary, Nelson, and Lonnie). As in Everett et al., an abbreviated functional analysis was used to demonstrate that noncompliance was likely escape-maintained. Also, the order of phases was baseline, TO, and TO-EE for all participants. During baseline, median compliance was 35% for Hillary, 30% for Nelson, and 40% for Lonnie. During the TO phase, median compliance levels for all participants increased. During TO, median compliance was 80% for Hillary and 90% for both Nelson and Lonnie. During the TO-EE phase, median compliance for Hillary was 80%, 100% for Nelson, and 90% for Lonnie. For all participants there were increases in compliance levels between baseline and the TO phase but minimal changes between the TO and TO-EE phases.

Although from baseline to the TO phase Everett et al. (2007) found some compliance gains, Needelman (2008) found much greater compliance gains in the TO phase. As a result, ceiling effects may have prevented Needelman from finding additional gains from the TO to the TO-EE phase; compliance levels in the TO phase were high enough such that further gains were difficult to obtain. However, there were low levels of treatment integrity by the teachers in Needelman’s study. These low levels of integrity may have eliminated the differences between the phases. If a teacher did not implement
the escape extinction component of the TO-EE phase with integrity, then the TO and TO-EE phases would be identical.

Benshoof (2009) noted that a common limitation to the studies by Everett et al. (2007) and Needelman (2008) was that order effects may have influenced the results in both investigations. That is, both studies examined the use of TO with and without escape extinction using the same order of phases: baseline, TO, TO-EE. Benshoof evaluated differences in the effectiveness of TO and TO-EE, independent of the order of phases.

Like Everett et al. (2007), Benshoof’s (2009) study was conducted in a clinic setting with participants with escape maintained noncompliance with parent delivered instructions. Two participants in Benshoof’s study had the same order of phases as Everett et al. and Needelman (2008) and the order of phases for the other two participants was baseline, TO-EE, TO. According to Benshoof, both TO and TO-EE were effective procedures for increasing compliance with parent instructions. In addition, high levels of compliance to parent delivered instructions were observed upon implementation of TO or TO-EE following baseline. These high levels of compliance were maintained after participants transitioned to the second intervention phase. Thus, the results of the Benshoof study suggested that TO with or without escape extinction is likely an effective intervention to address escape maintained noncompliance with parent delivered instructions in a clinic setting.

Acceptability

Treatment acceptability refers to the opinions of lay persons about treatment procedures. When assessing treatment acceptability, several treatment components can be
evaluated, such as whether the treatment is appropriate, fair, reasonable, and intrusive (Kazdin, 1980a). Treatment acceptability is evaluated for a number of reasons. Several treatments or interventions for a problem behavior may be available, so choosing a treatment that is most acceptable to the relevant parties is a reasonable consideration. Also, many institutional review boards may evaluate the opinions of lay persons when considering whether treatment procedures are acceptable. Acquiring treatment acceptability data is more important when considering treatments to suppress behavior, particularly when the person engaging in the behavior to be suppressed is a child (Kazdin).

Kazdin (1980a) evaluated undergraduate students’ acceptability of treatments designed to suppress behavior. Acceptability of four treatments was evaluated. These treatments included reinforcement of an incompatible behavior, TO, drug therapy, and electric shock. Reinforcement of an incompatible behavior was rated the most acceptable intervention, followed by TO and then drug therapy and electric shock. This study was then replicated by Kazdin, and the severity of problem behavior described was varied. As the severity of problem behavior increased, all treatments were rated as more acceptable. However, the different types of treatment continued to account for a larger portion of variance than problem behavior severity.

Kazdin (1980b) also specifically looked at the acceptability of different TO procedures to address disruptive child behaviors. Undergraduate students rated three TO treatments and one reinforcement based treatment of disruptive child behavior. These treatments included isolation TO, contingent observation, withdrawal of attention, and reinforcement of an incompatible behavior. Reinforcement of an incompatible behavior
was rated as the most acceptable treatment, followed by contingent observation, withdrawal of attention, and isolation TO (Kazdin). Less exclusionary forms of TO were rated as more acceptable.

Kazdin (1980b) was then interested in examining whether acceptability of isolation TO could be altered by adding details that did not affect the primary components of the TO. In addition to re-evaluating reinforcement of an incompatible behavior and isolation, Kazdin evaluated isolation used as a back-up procedure if withdrawal of attention was ineffective, and the use of isolation after the procedure was described to the child and the child’s parents and all relevant parties signed a contract indicating agreement to the procedure. Reinforcement of an incompatible behavior continued to be rated as the most acceptable treatment, but it was followed by isolation with the contractual agreement, and then isolation as a back-up procedure to withdrawal of attention. Isolation alone was rated the least acceptable of the four interventions.

It should also be noted that there are some concerns or questions about the necessity of treatment acceptability measures. Witt and Elliott (1985) suggested that acceptable treatments are more likely to be implemented, and when they are implemented, they are more likely to be implemented with integrity. Although this makes intuitive sense, as noted by Watson, Sterling, and McDade (1997), there is little empirical research supporting this suggestion. Watson et al. also suggest treatment acceptability, or consumer satisfaction, should never be taken as a primary measure of treatment effectiveness. Instead the behavior the treatment is designed to address should be the primary dependent measure.
Purpose of the Present Study

Previous research has suggested that TO might serve as a negative reinforcer for some behaviors (Plummer et al., 1977; Solnick et al., 1977; Smith, 1981; Taylor & Miller, 1997). That is, TO may provide children with escape-maintained problem behaviors with an opportunity to escape from adult instructions. If given the opportunity to escape from aversive stimuli by going to TO, it is possible that the use of a TO procedure may result in an increased frequency of problem behavior. Although the idea that TO might reinforce escape-maintained problem behaviors makes sense, the use of procedures designed to reduce escape (i.e., escape extinction) may mitigate these effects.

At USM, TO is typically used with other compliance training procedures such as CP, EID, and TI (Ford et al., 2001; Marlow et al., 1997; Olmi et al., 1997). The TO procedure at USM also includes escape extinction, in which the child is re-presented with the instruction that led to TO following TO release. The effects of TO with and without escape extinction were first examined by Everett et al. (2007), then by Needelman (2008) and Benshoof (2009).

All three studies (Benshoof, 2009; Everett et al., 2007; Needelman, 2008) demonstrated that TO can be effective with escape-maintained behavior, despite conventional wisdom that would suggest otherwise. Both Benshoof and Everett et al. demonstrated that TO with escape extinction for escape-maintained noncompliance using parents and their children in a clinic setting may be an appropriate and effective intervention. Needelman demonstrated that TO with escape extinction may be effective for escape-maintained noncompliance in a classroom setting. However, both Everett et al. and Needelman examined the use of TO with and without escape extinction in the same
order of phases: baseline, TO, TO-EE. Benshoof is the only study thus far that has attempted to control for the order of phases. More research is needed to further evaluate whether the effects found with TO with escape extinction in Everett et al. and Needelman’s studies require that TO without escape extinction be implemented prior to the inclusion of escape extinction. In other words, are order effects at all responsible for the effectiveness of TO with escape extinction? Benshoof’s results thus far suggest that TO-EE following baseline is equally as effective as when following a phase of TO that does not include escape extinction. More research is needed to further evaluate the effects of order, particularly in a classroom setting, as Benshoof’s study was conducted in a clinic setting. Therefore, the purpose of the current study was to extend the findings of Everett et al., Needelman, and Benshoof by examining if the use of TO with escape extinction immediately following baseline will yield similar results in a classroom setting.

Research Questions

In the present investigation, the following research questions will be evaluated:

1. Are there any differences in percent compliance between TO with or without escape extinction regardless of the order of the phases?
2. For children whose noncompliance is escape-maintained in a classroom setting, is TO with escape extinction as effective when following a baseline phase as when following a TO without escape extinction phase?
3. Are increases in compliance percentages in a TO phase with escape extinction phase immediately following baseline maintained in a TO without escape extinction phase?
4. Do teacher ratings of treatment acceptability vary between TO with and without escape extinction?
CHAPTER II

METHODS

Participants

The participants were four children referred by their teacher for services regarding noncompliance. All participants attended school in a small city in the southeastern United States. Participant 1, Ken, was a 7-year-old African American boy in first grade. Participants 2, 3, and 4 (Matt, Eric, and Keith) were all 8-year-old African American boys in second grade. Eric’s teacher was an African American female; Ken, Matt, and Keith’s teachers were Caucasian females. None of the participants had any previous diagnoses or medical problems at the time of the study. None of the participants were ruled eligible for Special Education services.

Informed consent was obtained from each child’s parent (Appendix A) as well as from each teacher (Appendix B). Prior to inclusion in the study, each child was observed in the classroom to confirm that noncompliance with first-time teacher instructions was a problem and that this noncompliance was maintained by escape. The function of noncompliance was evaluated via teacher interview and an abbreviated functional analysis (described below). To be included in the study each child participant had to have an initial compliance level equal to or less than 40% of first-time teacher instructions (Rhode et al., 1993), and their noncompliance had to be escape-maintained. A university institutional review board (IRB) approved procedures to safeguard the welfare of participants (Appendix C).
Setting

All sessions took place in the participant’s classroom. The classrooms varied but were typical for the age and developmental level of the children. All classrooms had a teacher and an assistant and approximately 20 other children. However, Keith’s classroom had an extra teacher because the class was co-taught. Observations were conducted during large group, didactic, direct instruction or during activities including handwriting or art-related activities. The abbreviated FA sessions were conducted in a part of the room isolated from the other students with the child and teacher present. The experimenter was on the other side of the room providing feedback to the teacher via a two-way radio device.

Materials

The Functional Assessment Informant Record for Teachers (FAIR-T; Appendix D) interview instrument (Edwards, 2002) was developed in the School Psychology Program at USM. The FAIR-T is designed to provide information regarding problem behaviors, factors that predict the occurrence of the problem behaviors, and factors that may maintain the problem behaviors. Edwards suggested that the FAIR-T can be used to develop hypotheses regarding the function of problem behaviors and these hypotheses could be further evaluated via other means, including direct observation or functional analysis procedures. The FAIR-T has been used to identify possible functions of a target behavior, although research beyond peer or adult attention functions remains limited (Doggett, Edwards, Moore, Tingstrom & Wilczynski, 2001). The FAIR-T was used to conduct a semi-structured interview with teachers (see Procedure section).
The Treatment Acceptability Rating Form-Revised (TARF-R) was used to measure teacher’s reported acceptability of the TO procedures. Reimers, Wacker, Cooper, and DeRaad (1992) developed the TARF-R to allow intervention agents to provide feedback of their opinions of an intervention. The TARF-R was developed as a modification of the Treatment Evaluation Inventory (Kazdin, 1980a) to assess variables including perceived effectiveness of an intervention. The internal consistency of the TARF-R was measured using Cronbach’s alpha coefficient across measures and time. The Cronbach’s alpha coefficients ranged from .89 to .95 with a mean of .92 (Reimers et al.). The TARF-R includes a 17-question Likert-type scale that measures treatment acceptability, and three questions that measure the severity of the problem behavior and how well the intervention agent understands the treatment. Possible scores on the TARF-R range from 17 to 119, and higher scores indicate higher acceptability. Scores from 85-119 indicate high acceptability, scores from 52-84 indicate average acceptability, and scores from 17-51 indicate low acceptability. The 17 items on the TARF-R appear to load on a single dimension of acceptability (Reimers et al.). The TARF-R was initially developed for use with parents, but for the present study it was adapted for use with teachers by minor wording changes (e.g., switching the phrase “your child” to “the child” or “your student” and “family routine” to “classroom routine”). These alterations may change the psychometric properties of the instrument.

A two-way radio device was used for instruction from the experimenter during all abbreviated FA and intervention sessions. The radio included an earpiece for the teacher to receive instructions and feedback from the experimenter. Although the device could function as a two-way radio, the teachers’ device was used not used to communicate to
the experimenter. Thus, although the device was actually a two-way radio, it functioned as a one-way radio.

Data Collection

Observation Forms

Individual data collection and integrity observation forms were created for each phase of the study (Appendix E). These forms were used to code adult and child behavior. These forms were also completed by multiple observers to collect interobserver agreement data.

Dependent Measure

In all phases the dependent measure was child initiation compliance. Initiation compliance was defined as the child’s initiation of the task within 5 s after the delivery of an instruction. Initiation of compliance must lead to compliance with the instruction to be coded as compliance. Teachers were coached to provide instructions that could be reasonably completed in 10 to 15 s. Failure to initiate compliance within 5 s was coded as noncompliance. The dependent variable was the percentage of requests complied with during an observation.

Design

Two nonconcurrent multiple baseline across participants designs with a crossover element were used to compare levels of compliance across baseline, TO, and TO-EE phases (Hayes, Barlow, & Nelson-Gray, 1999). After a student was deemed to be appropriate for the study via the screening and abbreviated FA, the teacher-student dyad entered the first phase. For two of the participant dyads (Ken and Keith), the sequence of phases was: (a) baseline, (b) TO without escape extinction (i.e., TO), and (c) TO with
escape extinction (i.e., TO-EE). For the other two participant dyads (Matt and Eric), the sequence of phases was: (a) baseline, (b) TO-EE, and (c) TO. The first intervention phase for each student was implemented when baseline data (i.e., percent compliance) were stable or when there was a decreasing trend. To protect against participant attrition and to prevent participants having treatment withheld for extended periods of time, observations were conducted nonconcurrently, and phase changes were staggered.

Procedure

The procedures for the current study were adapted from those of Everett (2006) and modified for the elementary school setting as was conducted in Needelman (2008).

Instruments

A two-way radio device was used to prompt teachers to provide instructions across all phases. The two-way radio device was also used to prompt the teachers to consequate compliance with praise and noncompliance with the appropriate TO procedures during the intervention phases.

Screening

Prior to inclusion in the study a screening session was conducted. In the screening session, teachers presented 20 “do” instructions to the students in the teachers’ typical manner over a period of approximately 10 min. That is, all instructions required the student to engage in some specific behavior; instructions to stop behaviors were not included in data collection. To be considered for inclusion in the study students had to comply with 8 or fewer (i.e., 40% or less) of first-time issued teacher instructions.
**Functional Assessment**

After the participant complied with 40% or fewer of the first time issued teacher instructions during screening, a functional assessment was conducted. The purpose of the functional assessment was to determine if students met the second criterion. The second criterion required that noncompliance be escape-maintained. The functional assessment consisted of a descriptive interview (i.e., FAIR-T; Appendix D) and an abbreviated confirmatory FA. In order to advance to the baseline phase of the study, the results of the functional assessment had to suggest that the function of the noncompliance was escape; if any other function was found to maintain the noncompliance, or if function was unclear, the student was not eligible to participate in the study and was serviced by a USM school psychology graduate student outside the context of the study.

*FAIR-T.* The first step in the functional assessment was the use of the semi-structured interview tool, the FAIR-T. If the teacher endorsed an escape-maintained item on the FAIR-T, then that child moved on to the abbreviated FA. If items were endorsed that indicated some other function on the FAIR-T, the child still moved on to the abbreviated FA provided an escape-maintained item was endorsed as well. After it was hypothesized that the student’s noncompliance was likely escape-maintained, the teachers were trained to conduct the abbreviated FA conditions to test the hypothesis.

*Teacher training for abbreviated FA.* Teacher training methods for the abbreviated FA were adapted from Everett (2006). The teacher was next trained to conduct the abbreviated teacher attention and abbreviated escape conditions. During the training sessions the teachers practiced the procedures and exhibited proficiency and integrity with each condition. To be judged proficient, the teachers had to successfully
engage in all behaviors described in the written instructions indicating key components of
each FA condition (Appendix F). These handouts indicating key components of each FA
condition were provided to the teacher. During teacher training the teachers participated
in role-playing situations in which the experimenter role-played as the student. During
teacher training the experimenter monitored the teachers’ progress and provided
corrective feedback as needed. All teachers practiced FA conditions with 100% integrity
prior to conducting FA conditions with the student. During the actual FA conditions the
teacher was provided corrective feedback during sessions via a two-way radio device and
in person following sessions when needed. The only conditions that were examined in the
abbreviated sessions were teacher attention and escape conditions because those are
amongst the most common maintaining variables for children in classroom settings
(Ervin et al., 2001; McKerchar & Thompson, 2004).

*Abbreviated attention condition.* The attention condition was designed to examine
whether the student’s noncompliance was likely maintained by access to teacher
attention. The experimenter coded the teacher’s presentation of “do” instructions and re-
presentations of the same instruction. Approximately every 30 s the teacher delivered a
“do” instruction, which was prompted by the experimenter when necessary. Compliance
was ignored and noncompliance was followed by two re-presentations of the instruction.
After the two re-presentations of the same instruction a new instruction was issued. All
FA sessions consisted of 10 instructions, and data were collected using a 10-s partial
interval procedure.

*Abbreviated escape condition.* The escape condition was designed to examine
whether the student’s noncompliance was likely maintained by escape from the
presentation of instructions. The experimenter coded the teacher’s presentation of “do”
instructions and ignoring (i.e., withholding all attention). Approximately every 30-s the
teacher delivered a “do” instruction, which was prompted by the experimenter when
necessary. Compliance was ignored for 10-s prior to issuing another
instruction/command. Noncompliance was ignored, and the teacher turned her back to the
child to emphasize escape from the command or instruction.

Baseline

Students were eligible to participate in the baseline phase (and all subsequent
phases) if the results of the functional assessment suggested that the student’s
noncompliance was likely maintained by negative reinforcement in the form of escape
from task demands. The purpose of baseline was to determine the student’s initial level of
initiation compliance prior to intervention. During this and all subsequent observations,
an event recording procedure was used to record the percentage of compliance with
teacher instructions as well as praise and the components of the TO procedure. Each
session consisted of 10 instructions, which were presented at a rate of approximately one
instruction per minute.

The teacher was instructed to deliver “do” instructions that could be initiated
within 5 s, completed within approximately 10 to 15 s, and did not require the student to
leave the classroom. The teachers, rather than the experimenter, chose the instructions to
be used so instructions could more logically fit with relevant instructional material when
possible. Compliance levels were computed by dividing the number of instances of
student compliance by the number of instructions and multiplying by 100.
The teachers were not instructed on how to consequate compliance or noncompliance, but observations included an analysis of the percentage of instances compliance was followed by CP and the percentage of instances of noncompliance that were followed by any component of TO. Percentage of the use of CP was calculated by dividing the number of instances of CP by the number of instances of compliance and multiplying by 100. The percentage of components of TO used was calculated by dividing the number of instances of the specific component of TO by the number of instances of noncompliance and multiplying by 100.

*TO and TO-EE Teacher Training*

After baseline, teachers were trained to implement either the TO procedure or the TO-EE procedure (depending on which phase followed baseline for that participant dyad) in the same manner in which they were trained to implement the abbreviated FA sessions. This included practice, corrective feedback, and the presentation of written instructions. (Appendix F). Procedural integrity of 100% was achieved prior to beginning the TO or TO-EE phases and was measured using the observation forms (Appendix E). First, the teachers were trained to provide specific, detailed praise contingent on compliance (CP). After training in the use of praise, teachers were trained to implement all of the components of TO. These components included: (a) a 5-s latency following presentation of an instruction, (b) a brief verbal reason for TO, (c) prompting the student to go to TO, (d) ignoring (i.e., not speaking to the child or attending to the child via physical contact or eye contact) the student when in TO, (e) repeated returns to TO as necessary, (f) contingent release from TO, and (g) escape extinction prior to the TO-EE phase. The
observation forms (Appendix E) were used to monitor that teachers completed all items at 100% integrity during teacher training.

After the first intervention phase and prior to the second intervention phase, teachers were trained next to use the TO procedure. Participants that had the TO phase after baseline were trained on TO-EE after the TO phase. Participants that had the TO-EE phase after baseline were trained on TO after the TO-EE phase. Procedural integrity of 100% for all adult behaviors was achieved prior to beginning the next intervention phase.

*Experimental Phases*

During both the TO and TO-EE intervention phases, teachers gave 10 “do” instructions to the student at a rate of approximately one per minute. As during baseline, the teachers rather than the experimenter chose the instructions to be used.

*TO.* Following the presentation of a “do” instruction, the teacher responded to compliance with praise and noncompliance with TO. TO included: (a) a 5-s period following the presentation of the instruction to initiate compliance, (b) labeling of the behavior necessitating TO, (c) verbally or, if necessary, physically guiding the student to TO, (d) ignoring the student while the student was in TO, (e) repeatedly physically returning the student to TO contingent on a student’s attempt to escape from TO, and (f) releasing the student from TO following 3-5 s of quiet (including hands, feet, and mouth) while in TO.

The observation form was used to assess the teacher’s integrity with the procedure. After release from TO, the teacher was instructed to wait 30-s and then deliver a different “do” instruction from the one that resulted in the TO procedure. The teacher
then provided praise for compliance or reinstituted TO for noncompliance. Compliance and all adult behaviors were calculated in the same manner as described previously.

**TO-EE.** The TO-EE phase included all components of the TO phases plus an escape extinction component. Immediately following release from TO, the teacher was instructed to re-present the same instruction that resulted in the TO procedure. Although all instructions presented to a child were recorded and there was no limit on the number of times an instruction might be repeated, compliance percentages were only calculated based on the first presentation of the instruction. That is, initiation compliance was only coded for novel instructions. All adult behaviors, including contingent praise and all TO behaviors, were coded for all novel and repeated instructions. All percentages were calculated as previously described.

**Reliability**

Graduate students in the School Psychology Program at USM were trained in observing and recording student and teacher behaviors of interest in this study. Graduate students were judged proficient when they reached 90% agreement with the experimenter on occurrences and nonoccurrences of compliance, CP, teacher FA behaviors, and teacher TO and TO-EE behaviors. Agreements between observers for both student and teacher behaviors during the FA conditions were defined as instances in which both observers coded the same behavior within one 10-s interval. Agreements between observers for compliance were defined as instances in which both observers coded compliance to an instruction. Agreements between observers for CP and the specific TO components were defined as instances in which both observers coded praise for compliance and each specific TO component following noncompliance. Any
disagreement was defined as when one observer records a behavior that the other
observer does not record. Interobserver agreement (IOA) was calculated by dividing the
number of agreements by the number of agreements and disagreements and multiplying
that value by 100.

IOA data were collected for 45% of sessions. IOA averaged 98.7% across all
measured variables. Individual variables and their mean percentages obtained included:
(a) 100% for compliance and (b) 98% for adult behaviors (range = 90-100%).

The FAIR-T interview was also assessed for reliability. Two school psychology
graduate students that had been trained to use the FAIR-T evaluated the interview. Both
readers agreed on the hypothesized function of noncompliance. If the readers did not
agree on the hypothesized function of noncompliance a third reader would have evaluated
the FAIR-T to determine the hypothesized function. However, both readers agreed on the
hypothesized escape function of noncompliance for all four participants.

Procedural and Treatment Integrity

Procedural and treatment integrity (Gresham, 1989) were assessed by the
experimenter during each treatment observation. When necessary, corrective feedback to
teachers was provided during sessions via the two-way radio device during sessions, in
person following sessions, and prior to the following session. Treatment integrity data
were collected for CP following compliance and for each specific TO component.
Procedural and treatment integrity were calculated in the same manner as described
during baseline; it was expected that the teachers implement the procedures correctly for
at least 80% of instances. For example, to be judged proficient, the teacher had to allow a
5-s latency for initiation of compliance for at least 8 of the 10 instructions delivered per
session. Table 1 depicts the mean baseline occurrences and component integrity percentages for praise and TO components for each teacher-child dyad across all phases. Items are designated as “n/a” if teachers had no opportunity to engage in the behavior.

Treatment Acceptability

Following completion of the intervention phases the teacher was asked to complete an adapted version of the TARF-R (Reimers et al., 1992). This form was used to assess the teacher’s reported acceptability and understanding of TO and TO-EE. On the TARF-R, to evaluate acceptability of TO, Ken’s teacher had a score of 106, Matt’s teacher had a score of 68, Eric’s teacher had a score of 74, and Keith’s teacher had a score of 97. On the TARF-R, to evaluate acceptability of TO-EE, Ken’s teacher had a score of 117, Matt’s teacher had a score of 73, Eric’s teacher had a score of 76, and Keith’s teacher had a score of 100. Ken and Keith’s teachers’ ratings for both interventions indicated high acceptability. Matt and Eric’s teachers’ ratings for both interventions indicated average acceptability. All teachers indicated that TO-EE was more effective and fit better into their classroom. A paired samples t-test was used to evaluate potential differences between scores on the TARF-R for TO versus TO-EE. The results were not significant ($p = .08$). However, power was 0.80 and power should be at least 2.13 for adequate sensitivity to detect significant differences for a paired samples t-test with a sample size of 4.
Table 1

*Mean Baseline and Component Integrity Percentages across Phases*

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Phase</th>
<th>Baseline</th>
<th>TO</th>
<th>TO-EE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ken’s teacher</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-s latency</td>
<td></td>
<td>45</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Praise</td>
<td></td>
<td>0</td>
<td>93</td>
<td>100</td>
</tr>
<tr>
<td>Verbal reason</td>
<td></td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Prompting procedure</td>
<td></td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Ignoring</td>
<td></td>
<td>0</td>
<td>67</td>
<td>100</td>
</tr>
<tr>
<td>Repeated returns</td>
<td></td>
<td>0</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>TO release</td>
<td></td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Escape extinction</td>
<td></td>
<td>0</td>
<td></td>
<td>100</td>
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</table>

Keith’s teacher

| 5-s latency |             | 55       | 93 | 94   |
| Praise      |             | 20       | 95 | 95   |
| Verbal reason |           | 0        | 100| 100  |
| Prompting procedure | | 0        | 100| 100  |
| Ignoring    |             | 0        | 83 | 100  |
| Repeated returns |       | 0        | n/a| n/a  |
| TO release  |             | 0        | 100| 100  |
| Escape extinction | | 0        |     | 100  |
Table 1 (continued).

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<td>Prompting procedure</td>
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<tr>
<td><strong>Eric’s teacher</strong></td>
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<tr>
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Data Analysis

Visual Analysis

The results of the abbreviated FA conditions was graphed and analyzed via visual inspection for level (Kazdin, 1982). Compliance percentages across all phases of baseline and intervention were graphed and analyzed via visual inspection (Kazdin). Within-subject comparisons were conducted with each participant to analyze the effects of TO and TO-EE. Median compliance levels within phases were used to approximate levels of compliance per phase for each participant.

Statistical Analysis

Multilevel modeling was used to calculate average intervention effects and determine their statistical significance compared to each other and compared to baseline (Ferron, Bell, Hess, Rendina-Gobioff, & Hibbard, 2009; Van den Noortgate & Onghena, 2003). Multilevel modeling is used when data are hierarchically structured (Van den Noortgate & Onghena). The analyses are dependent of each other because they are repeated observations of the same participant. Thus, the rules of many statistical procedures are violated. Multilevel modeling allows for heterogeneity in intervention effects across cases and serial dependence of scores within cases to be addressed.

Clinical Outcome Indices

Data were also analyzed to demonstrate the level of impact of the results using odds ratios of improvement (Parker & Hagan-Burke, 2007). Parker and Hagan-Burke define improvement as “change beyond the level of the baseline phase” (p. 640). The Odds Ratio compares baseline data to data during an intervention phase. The odds of improvement during an intervention phase are calculated by dividing the total number of
intervention data points that do not overlap with baseline data over the number of points that do overlap with baseline data. The baseline odds of improvement are calculated by dividing the number of baseline points that do overlap with intervention data with the number of data points that do not overlap. The odds of improvement from an intervention phase are then divided by the odds of improvement from the baseline phase. This value would indicate the odds or likelihood of improvement in intervention over baseline. The odds ratios of improvement for each intervention phase are reported for each participant and across all participants.
CHAPTER III

RESULTS

Visual Analysis and Statistical Analysis

Visual Analysis

Figure 1 shows compliance and noncompliance percentages for the four participants across the abbreviated FA conditions. All 4 participants had higher noncompliance percentages during the escape conditions than during the attention condition. That is, all participants were more noncompliant when teachers ignored noncompliance than when the teachers repeated their instructions. No further functional analysis conditions were conducted. However, the differences between escape and attention conditions for Matt and Ken were minimal. The results of the abbreviated functional analyses combined with the results of the FAIR-T suggested the participants’ noncompliant behavior was partially maintained by escape.

Figures 2 and 3 show compliance percentages for the four participants across all phases, separated by dyads. Figure 2 contains the graphs for Ken and Keith, the participants who had the TO phase prior to the TO-EE phase. Figure 3 contains the graphs of Eric and Matt, the participants who had the TO-EE phase prior to the TO phase.

During baseline, median compliance was 30% for Ken, Keith, and Eric and 40% for Matt. During the TO phase, median compliance was 90% for Ken and 70% for Keith. During the TO-EE phase, median compliance was 90% for Ken and 95% for Keith. During the TO-EE phase, median compliance was 90% for Matt and 80% for Eric. During the TO phase, Matt complied with all instructions and median compliance was 95% for Eric.
Figure 1. Abbreviated FA Noncompliance Percentages for All Participants.
Figure 2. Compliance Percentages for Ken and Keith across Phases.
For all participants there was a change in level between baseline and the first intervention phase, indicating an increase in compliance. Changes in level between the
first intervention phase and second intervention phase were minimal. There was only an apparent increase in level between the TO and TO-EE phases for Keith and Eric, with higher compliance levels in the second intervention phase. Decreases in variability were observed in the second intervention phase for Matt and Eric.

Statistical Analysis

Multilevel modeling. Multilevel modeling was used to calculate average intervention effects and their statistical significance (Ferron et al., 2009; Van der Noortgate & Onghena, 2003). Multilevel modeling procedures allow for statistical inference despite heterogeneity in intervention effects across cases and serial dependence of scores within cases.

Estimates of fixed effects were calculated, which provide the average percentage of commands complied during baseline, the difference between baseline and the TO phase, and the difference between the TO and TO-EE phases. The average compliance percentage in baseline was 31.88%, the average compliance percentage in the TO phase was 88.13%, and the average compliance percentage in the TO-EE phase was 89.37%. The difference between compliance levels in baseline and TO was statistically significant ($p = .001$), but the difference in compliance levels between the TO and TO-EE phases was not statistically significant. These effects were allowed to vary across participants in the models. Based on the observed data, one could expect that 68% of the time children’s levels of compliance would improve by 47.15 to 65.35% of commands with the addition of time-out procedures and that 68% of the time application of TO-EE would result in a change in compliance of -12.81 to 15.31% as compared to TO.
Multilevel modeling also can measure first order autocorrelation of residuals. This value expresses the degree to which participants’ repeated measures are correlated. The first order autocorrelation coefficient was -.03, which was not statistically significant.

Effect size can also be calculated by dividing the difference between baseline and intervention means by the square root of the residual variance. This yields a standardized mean difference effect size similar to Cohen’s (1988) $d$. This effect size value was 5.73 indicating compliance levels increased by 5.73 standard deviations across TO phases compared to baseline. Standardized mean difference effect sizes for AB contrasts judged to be effective are commonly between 2 and 3 $SD$ (Parker & Brossart, 2003; Parker et al., 2005).

**Odds ratio.** The purpose of the odds ratio is to compare ratios of improvement in the baseline and intervention phases (Parker & Hagan-Burke, 2007). However, no intervention data points overlapped with baseline data points for any participants. Thus, calculating the odds ratio for the intervention phase would involve dividing by zero. Thus, odds ratios of improvement cannot be calculated. However, the large standardized mean difference and the lack of overlapping data suggest a large effect.
CHAPTER IV
DISCUSSION

Previous research has shown TO to be an effective intervention to decrease a variety of problem behaviors, such as noncompliance with adult instructions (e.g., Bean & Roberts, 1981; Handen et al., 1992; Mace & Heller, 1990; Roberts, 1982). Despite a lack of research supporting the notion, researchers have generally suggested that TO be used to treat behaviors maintained by positive reinforcement but not negative reinforcement (e.g., escape-maintained behaviors) (Shriver & Allen, 1996, Sterling-Turner & Watson, 1999). Although this position may seem reasonable, it lacks empirical support.

Additional procedures can be used in an effort to avoid potentially reinforcing aspects of TO. Researchers at USM include an escape extinction component in TO procedures to prevent a child from escaping a command while going to TO (Ford et al., 2001; Marlow et al., 1997; Olmi et al., 1997). In escape extinction, the command that lead to TO is repeated following TO release. Everett et al. (2007), Needelman (2008), and Benshoof (2009) used TO with escape extinction to treat escape-maintained compliance. Although low treatment integrity clouded the results of Needelman’s study, the results of the Everett et al. and Benshoof studies provided promising initial results supporting the use of TO with escape extinction to treat escape-maintained noncompliance with parent delivered instructions.

The current study differs from Everett et al.’s (2007) study in two key ways. First, Everett’s study was conducted in a clinic setting with parents acting as the intervention agents, whereas the current study was conducted in classroom settings with teachers.
acting as intervention agents. Second, in Everett et al.’s study, the order of phases for all participants was the same: baseline, TO, and TO-EE. In the current study, the order of phases for two participants was identical to Everett et al., but the order of intervention phases for the other two participants was reversed. That is, two participants experienced the TO-EE phase immediately following baseline with the TO phase following the TO-EE phase. Although the results of Everett et al.’s study suggested TO-EE to be more effective than TO, the results of the current study indicated minimal differences between the TO and TO-EE phases, as analyzed by visual analysis and statistical analysis by multilevel modeling. There was a noticeable change in level for Keith between TO and TO-EE and there was a reduction in variability for Matt and Eric. However, findings were not consistent across participants and increases in level or decreases in variability occurred during the second intervention phase. That is, order effects were likely. Three of the teachers had increased percentages of successful ignoring during the second intervention phase. This might have contributed to increases in level and decreases in variability. Also, unlike Needelman’s (2008) study, treatment integrity was high for all teachers in the current study. Median compliance percentages in the baseline phase ranged from 30% to 40%. Median compliance percentages in the TO phase ranged from 70% to 100%. Median compliance percentages in the TO-EE phase ranged from 80% to 95%. These results fail to support the commonly held belief that TO should not be used to treat target behaviors maintained by negative reinforcement. Further discussion will be organized in relation to the original research questions.
Research Question 1

The initial research question asked whether differences in compliance levels between TO with or without escape extinction would be observed regardless of the order of the phases. Across all four participants statistical analysis by multilevel modeling does not support differences in compliance levels between the TO and TO-EE phases. There also were no apparent differences via visual analysis between TO and TO-EE phases for Ken, Matt, and Eric. These results are similar to the results of the Benshoof (2009) study in that similar increases in compliance were seen in both TO and TO-EE phases. Keith, however, had higher compliance in the TO-EE phase than during TO. There are no overlapping data points between the TO and TO-EE phases for Keith. Although the increase in compliance levels from baseline to the TO phases was greater than the increase in compliance levels from TO to TO-EE for Keith, this may be due to ceiling effects. That is, a similar increase from the TO phase to the TO-EE phase as from baseline to TO would have been impossible because compliance was already high in the TO phase. The results from Keith are most consistent with the results of Everett et al.’s (2007) study. Increases in compliance levels were observed from baseline to TO, but further increases in compliance levels were observed when an escape extinction component was added to TO. Ultimately, however, only one of four participants had slightly higher levels of compliance during TO-EE than during TO.

Research Question 2

The second research question asked whether TO with escape extinction is as effective following a baseline phase as when following a TO without escape extinction phase. In other words, will participants respond with similarly increased compliance
percentages to first-time teacher presented “do” instructions if TO with escape extinction is implemented immediately following a baseline phase as when following a TO without escape extinction phase? In an effort to answer this research question, the four participants were split into two 2-participant dyads. In one dyad, the order of phases for the participants was baseline, TO, and TO-EE. In the other dyad, the order of the phases was baseline, TO-EE, and TO. During the baseline phase, teachers did not respond to noncompliance with any TO procedure. During the TO phase, TO was contingent on noncompliance, and the participant was released from TO following appropriate TO behavior. After approximately 30 s, the participant was presented with an instruction different from the one that lead to TO. Theoretically, such a procedure may provide participants with escape-maintained noncompliance the opportunity to escape from instructions and thus may reinforce this undesirable behavior. In the TO-EE phase, the instruction that led to TO was re-delivered immediately following TO release. Theoretically, this escape extinction procedure may prevent the participant from experiencing their escape from the instruction.

In the current study, Ken and Keith experienced a TO phase prior to the TO-EE phase, and Matt and Eric experienced the TO-EE phase immediately following baseline. Compliance percentages reached high levels in all TO-EE phases, regardless of order of phases. The range of compliance percentages for Eric (60% to 100%) was greater than the range of compliance percentages for all other participants. Although Eric did have the lowest single datum in a TO-EE phase of all participants, TO-EE was effective for Eric as there were no overlapping data points between baseline and the TO-EE phase, and the median compliance percentage for Eric during this phase was 80%. This is still higher
than his baseline median compliance percentage of 30%. Also, he had 100% compliance during the last session of this phase. There does not appear to be evidence to suggest a TO phase is necessary prior to a TO-EE phase to attain maximum benefits of a TO-EE phase.

Research Question 3

The third research question asked whether increased compliance levels in a TO with escape extinction phase immediately following baseline would be maintained in a TO without escape extinction phase. This research question is addressed via analysis of the data of Matt and Eric. Matt and Eric experienced the TO with escape extinction immediately following baseline and TO without escape extinction following the TO-EE phase. Matt had 100% compliance in the TO phase following the TO-EE phase. Thus, Matt did not experience a TO without escape extinction. The median compliance percentage in the TO-EE phase for Matt was 90%. The median compliance percentage actually increased slightly for Matt from 90% to 100% from TO-EE to TO. Thus, for Matt it is apparent that compliance gains made in the TO-EE phase were not lost once the escape extinction component was discontinued from the TO procedure. Eric also experienced an increase in compliance from TO-EE to TO (80% to 95%). Thus, it appears for both Matt and Eric, positive effects of TO-EE were maintained once the escape extinction component was discontinued from the TO procedure.

Research Question 4

The fourth research question asked whether teacher ratings of treatment acceptability vary between TO with and without escape extinction. Treatment acceptability refers to the opinions of lay persons about treatment procedures.
treatment acceptability includes evaluating several components of a treatment, such as whether a treatment is fair, reasonable, and intrusive (Kazdin, 1980a). Kazdin suggested that evaluating treatment acceptability is more important when the goal of a treatment is to suppress a behavior. Kazdin (1980b) examined undergraduate students’ ratings of treatment acceptability of TO procedures and found TO procedures to be rated as more acceptable when they were less exclusionary.

The TARF-R (Reimers et al., 1992) was used to measure the teachers’ reported acceptability of the TO procedures. Teachers were asked to complete the TARF-R following the completion of each intervention phase. Ken and Keith’s teachers indicated high acceptability of both TO interventions, and Matt and Eric’s teachers indicated moderate acceptability of both TO interventions. A paired samples t-test was conducted to assess for possible differences in acceptability between TO with and without escape extinction. Although all teachers rated TO with escape extinction to be somewhat more acceptable than TO without escape extinction, this difference was not statistically significant. However, this finding could be explained by inadequate power.

It should be noted that the TARF-R was initially developed for use with parents. Therefore, minor wording changes were created for the purposes of this study. For example, the phrase “your child” was changed to “your student.” Although it is anticipated that these minor changes would not appreciably affect the results, this should be noted when considering these findings.

Limitations

The results of the present study suggest that TO with or without escape extinction may be an effective procedure that can be used to treat a student’s escape-maintained
noncompliance with teacher instructions. However, several limitations to the study exist. One key limitation is that functions of behavior are not mutually exclusive. Although the results of the abbreviated FA suggest that noncompliance was partially maintained by escape, noncompliance was still partly maintained by attention. Also, the abbreviated FA only compared teacher attention and escape. Although these two conditions are the two most common maintaining variables for children in classroom settings (Ervin et al., 2001; McKerchar & Thompson, 2004), it is possible that some other variable also maintained their noncompliant behavior. The abbreviated FA procedures in the current study were improved over those procedures used by Everett et al. (2007) and Needelman (2008) by including a second, confirmatory escape condition. However, this abbreviated functional analysis procedure was still condensed, and thus it may not have identified the function of the behavior as accurately as an extended functional analysis.

Ceiling effects may have prevented more pronounced differences between intervention phases. Minimal differences were seen between intervention phases. However, significant differences were seen between intervention phases and baseline. The increases in compliance between baseline and the first intervention phase may have made it difficult to demonstrate further increases in compliance between the first and second intervention phases.

Another limitation is the manner in which data collection for Ken terminated. Data collection for Ken was conducted towards the end of the school year, and Ken’s teacher missed the last several days of school for personal reasons. Although the four data points collected in the final intervention phase for Ken were at or above 80%, it appears there was a slight decreasing trend. If more data were collected in this phase, it
would have been possible to determine whether the trend in compliance was actually decreasing or whether compliance levels would have stabilized at or above 80%.

Summary

The purpose of the present study was to examine the effects of a TO procedure with and without escape extinction on escape-maintained noncompliance of teacher instructions of 4 children in a classroom setting. The results of Everett et al. (2007) and Benshoof (2009) suggested that the common assumptions and recommendation that TO should not be used with behaviors maintained by negative reinforcement should be reconsidered. Needelman (2008) sought to further examine the use of TO for escape-maintained noncompliance, but several limitations made interpretation of results difficult. Several improvements were made in the current study to allow clearer interpretation of results.

The most critical difference between the current study and the Needelman (2008) study is the improved treatment integrity. In this study a two-way radio device was used for all abbreviated FA and treatment phases. As a result, teachers received real-time prompting to implement treatment components. Treatment acceptability scores according to the TARF-R were lower in the current study than in the previous Needelman study. This may be due to the inclusion of the two-way radio device which may have added intrusiveness to the procedure.

This study also used two dyads with counterbalanced orders in an effort to reduce order effects. If the TO phase followed the baseline phase for all participants, as in the research by Everett et al. (2007) and Needelman (2008), it would not be possible to evaluate the effects of TO with escape extinction immediately following a baseline phase.
The results of the current study suggest that TO with and without escape extinction is an effective procedure immediately following baseline.

The abbreviated FA procedure in this study also included an additional confirmatory escape condition. This additional phase provides additional evidence that noncompliant behavior is primarily maintained by escape from teacher instructions. This is true even though noncompliance also appears to be partially maintained by access to attention and possibly other variables.

The current study also compared the acceptability of the two TO procedures. Needelman (2008) only examined acceptability of the TO procedures as a whole. The results of this study suggested that acceptability of TO with or without escape extinction was not statistically significantly different.

The results from Everett et al. (2007) suggested that TO for escape-maintained noncompliance should only be used with the addition of an escape extinction component. The current results suggest a minimal difference in effectiveness between TO with and without escape extinction.

Although the results of the current study do not support additive effects of the escape extinction component over TO without such a component, it is possible that the addition of escape extinction may make for a more robust intervention. The results from this study and the results from Everett et al. (2007) suggest that a TO procedure may still be effective in treating escape-maintained noncompliance.

As such, it would be reasonable to suggest the use of TO in instances of noncompliance regardless of behavioral function. The results of the current study and the studies by Everett et al. (2007), Needelman (2008), and Benshoof (2009) indicate that TO
is a robust intervention that is likely to work to treat noncompliance with a variety of behavioral functions. Although the current study does not support the need for the escape extinction for an effective intervention, using escape extinction should still be recommended due to the low response effort for the intervention agent and the higher level of treatment acceptability of the escape extinction component.

Other additional factors related to TO with escape extinction could be studied. For example, future research may examine whether increases in compliance are maintained at time intervals following intervention. Compliance could be measured at varying intervals, such as weeks or months, following the implementation of the intervention. Researchers could also examine whether treatment integrity can be maintained if the use of the two-way radio is faded. Further research might also continue to examine other parameters under which the inclusion of escape extinction may be indicated.
APPENDIX A

PARENT CONSENT FORM

University of Southern Mississippi
Consent Document for Research Participants

Title Of Study:
The use of a timeout intervention with and without escape extinction for treatment of escape-maintained noncompliance in a classroom setting

Purpose:
You are being asked to allow your child to participate in a study that is studying the effects of timeout on students’ noncompliance. This study will compare the effects of re-presenting an instruction and not re-presenting an instruction after a child leaves timeout on compliance levels. This study is important because it may provide teachers with another intervention to increase the compliance levels of their students.

Participants:
Your child must be of elementary school age to take part in this study. In addition, your child must comply with 40% or less of instructions during a screening session. Also your child must be noncompliant with instructions to get out of doing work. Your child also cannot be in this study if the time-out procedures used at USM have been used with your child in the past. 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 be in this study and if your child is selected for the study, your child’s teacher will be asked to give instructions to him/her in the same manner that he or she does on a regular basis. If your child complies with less than 40% of the teacher-delivered instructions the next step would be to determine if your child is noncompliant with instructions to get out of work. Next the teacher will use timeout procedures with and without re-presenting the instruction to affect your child’s compliance. The experimenter 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 compliance based on the procedure used.

Benefits/Risks to Participant:
Your participation in the study will help your teacher increase your child’s level of compliance in the classroom. The potential risks include a possible increase in noncompliance because it may be that the use of TO will increase your child’s levels of noncompliance. The timeout procedure also may frustrate and anger your child as he/she will not be allowed access to preferred items and activities while in timeout. Your child also will be presented with many demands and instructions from his/her teacher and may become frustrated by the expectation of compliance. Because of this your child will be praised for compliance and following the study your child’s teacher will be taught
positive procedures including effective instruction delivery and time-in to use with
timeout.

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 at Joshua
Needelman or Dr. Daniel Tingstrom at (601) 266-5255 or via email at
Joshua.Needelman@usm.edu or Daniel.Tingstrom@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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APPENDIX B

TEACHER CONSENT FORM

University of Southern Mississippi
Consent Document for Research Participants

Title Of Study:
The use of a timeout intervention with and without escape extinction for treatment of escape-maintained noncompliance in a classroom setting

Purpose:
You are being asked to participate in a study that is studying the effects of timeout on students’ noncompliance. This study will compare the effects of re-presenting an instruction and not representing an instruction after a child leaves timeout on compliance levels. This study is important because it may provide teachers with another intervention to increase the compliance levels of their students.

Participants:
Your student must be of elementary school age to take part in this study. In addition, your student must comply with 40% or less of your instructions during a screening session. Also, your student must be noncompliant with instructions to get out of doing work. Your student also cannot be in this study if the time-out procedures used at USM have been used with your student in the past. If your student does not meet criteria a school psychologist-in-training at USM may still provide your 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 give instructions to him/her in the same manner that he or she does on a regular basis. If your child complies with less than 40% of the teacher-delivered instructions the next step would be to determine if your child is noncompliant with instructions to get out of work. Next you will use timeout procedures with and without re-presenting the instruction to affect your student’s compliance. The experimenter and a trained graduate student will observe your student’s behavior and your behavior to see if there is a difference in your student’s compliance based on the procedure used. Also, a two-way radio device will be utilized to provide instructions to you when necessary. You will have opportunities to practice with the two-way radio device prior to use in the classroom.

Benefits/Risks to Participant:
Your participation in the study will help you increase your student’s level of compliance in the classroom. The potential risks include a possible increase in the student’s noncompliance because it may be that the use of could increase noncompliance. The timeout procedure also may frustrate and anger your student, as he/she will not be allowed access to any preferred items or activities while in timeout. Your student also will be presented with many demands and instructions and may become frustrated by the expectation of compliance. Because of this your student will be praised for compliance
and following the study you will be taught positive procedures including effective instruction delivery and time-in to use with timeout.

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 use 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 at Joshua Needelman or Dr. Daniel Tingstrom at (601) 266-5255 or via email at Joshua.Needelman@usm.edu or Daniel.Tingstrom@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 __________________________
APPENDIX C

INSTITUTIONAL REVIEW BOARD APPROVAL

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

Institutional Review Board
118 College Drive #5147
Hattiesburg, MS 39406-0001
Tel: 601.266.6820
Fax: 601.266.5509
www.usm.edu/irb

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 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.
- 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: 28120102
PROJECT TITLE: The Use of a Timeout Intervention With and Without Escape Extinction for Treatment of Escape-Maintained Noncompliance in a Classroom Setting
PROPOSED PROJECT DATES: 11/13/08 to 11/13/09
PROJECT TYPE: Dissertation or Thesis
PRINCIPAL INVESTIGATORS: Joshua Needelman
COLLEGE/DIVISION: College of Education & Psychology
DEPARTMENT: Psychology
FUNDING AGENCY: N/A
HSPRC COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 01/13/2009 to 01/12/2010

Lawrence A. Hosman, Ph.D.
HSPRC Chair

2-19-09
Date
APPENDIX D

FUNCTIONAL ASSESSMENT INFORMANT RECORD FOR TEACHERS

USM School Psychology Service Center
Functional Assessment Informant Record for Teachers

If information is being provided by both the Teacher and the Classroom Aide, indicate both respondents' names. In addition, in instances where divergent information is provided, note the sources of specific information.

Student:_____________________ Respondent(s):___________________________

School:_____________________ Age:_____

Sex: M F Date:________

1. Describe the referred student. What is he/she like in the classroom? (Write down what you believe is the most important information about the referred student.)

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

2. Pick a second student of the same sex who is also difficult to teach. What makes the referred student more difficult than the second student?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

3. a. On what grade level is the student reading? ______
b. On what grade level is an average student in the class reading? ______

4. a. On what grade level is the student performing in math? ______
b. On what grade level is an average student in the class performing in math? ______

5. a. What is the student's classwork completion percentage (0 - 100%)? ______
b. What is the student's classwork accuracy percentage (0 - 100%)? ______

6. Is the student taking any medications that might affect the student's behavior? _____ Yes _____ No If yes, briefly explain:

________________________________________________________________________

________________________________________________________________________

7. Do you have any specific health concerns regarding this student? _____ Yes _____ No If yes, briefly explain:

________________________________________________________________________

________________________________________________________________________
8. What procedures have you tried in the past to deal with this student's problem behavior?

________________________________________________________________________

________________________________________________________________________

9. Briefly list below the student's typical daily schedule of activities.

<table>
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<th>Time</th>
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10. When during the day (two academic activities and times) does the student's problem behavior(s) typically occur?

   Academic Activity #1____________________
   Time___________________

   Academic Activity #2____________________
   Time___________________

11. Please indicate good days and times to observe. (At least two observations are needed.)

    Observation #1      Observation #2      Observation #3
    Date______          Date______          Date______
    Time______          Time______          Time______
Problem Behaviors

Please list one to three problem behaviors in order of severity. Do not use a general description such as "disruptive" but give the actual behavior such as "doesn't stay in his/her seat", or "talks out without permission".

1. ____________________________________________________________________
   ____________________________________________________________________

2. ____________________________________________________________________
   ____________________________________________________________________

3. ____________________________________________________________________
   ____________________________________________________________________

1. Rate how manageable the behavior is:
   a. Problem Behavior 1
      1 2 3 4 5
      Unmanageable Manageable

   b. Problem Behavior 2
      1 2 3 4 5
      Unmanageable Manageable

   c. Problem Behavior 3
      1 2 3 4 5
      Unmanageable Manageable

2. Rate how disruptive the behavior is:
   a. Problem Behavior 1
      1 2 3 4 5
      Mildly Very

   b. Problem Behavior 2
      1 2 3 4 5
      Mildly Very

   c. Problem Behavior 3
      1 2 3 4 5
      Mildly Very

3. How often does the behavior occur per day (please circle)?
   a. Problem Behavior 1
      <1-3 4-6 7-9 10-12 >13

   b. Problem Behavior 2
      <1-3 4-6 7-9 10-12 >13

   c. Problem Behavior 3
      <1-3 4-6 7-9 10-12 >13

4. How many months has the behavior been present?
   a. Problem Behavior 1
      <1 2 3 4 entire school year

   b. Problem Behavior 2
      <1 2 3 4 entire school year

   c. Problem Behavior 3
      <1 2 3 4 entire school year
Antecedents: Problem Behavior #____:______________________

1. Does the behavior occur more often during a certain type of task? Y / N
2. Does the behavior occur more often during easy tasks? Y / N
3. Does the behavior occur more often during difficult tasks? Y / N
4. Does the behavior occur more often during certain subject areas? Y / N
5. Does the behavior occur more often during new subject material? Y / N
6. Does the behavior occur more often when a request is made to stop an activity? Y / N
7. Does the behavior occur more often when a request is made to begin a new activity? Y / N
8. Does the behavior occur more often during transition periods? Y / N
9. Does the behavior occur more often when a disruption occurs in the student's normal routine? Y / N
10. Does the behavior occur more often when the student's request has been denied? Y / N
11. Does the behavior occur more often when a specific person is in the room? Y / N
12. Does the behavior occur more often when a specific person is absent from the room? Y / N
13. Are there any other behaviors that usually precede the problem behavior? Y / N
14. Is there anything you could do that would ensure the occurrence of the behavior? Y / N
15. Are there any events occurring in the child's home that seem to precede occurrence of the behavior at school? Y / N
16. Does the behavior occur more often in certain settings? Y / N
   (circle all that apply)
   large group  small group  independent work  one-to-one interaction
   bathroom  recess  cafeteria  bus
   other:_____________
**Consequences:** Problem Behavior #____:_____________________

1. Please indicate whether the following consequences occur after the behavior is exhibited.

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<thead>
<tr>
<th>Consequence</th>
<th>Yes</th>
<th>No</th>
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<td>Access to Preferred Activity</td>
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2. Is there any task you have stopped presenting to the student as a result of the problem behavior?
   _____ Yes   _____ No

   If yes, describe:________________________________________________

3. Are there other problem behaviors that often occur after the behavior is exhibited?
   _____ Yes   _____ No

   If yes, describe:________________________________________________

4. Does the student typically receive praise or any positive consequence when behavior occurs that you would like to see instead of the problem behavior?
   _____ Yes   _____ No

   Comments:________________________________________________________
Antecedents: Problem Behavior #_____:____________________
1. Does the behavior occur more often during a certain type of task?  Y / N
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3. Does the behavior occur more often during difficult tasks?  Y / N
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7. Does the behavior occur more often during new subject material?   Y / N
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13. Are there any other behaviors that usually precede the problem behavior?  Y / N
14. Is there anything you could do that would ensure the occurrence of the behavior?  Y / N
15. Are there any events occurring in the child's home that seem to precede occurrence of the behavior at school?  Y / N
16. Does the behavior occur more often in certain settings?  Y / N
(circle all that apply)
    large group   small group   independent work   one-to-one interaction
    bathroom   recess   cafeteria   bus
other:______________
Consequences: Problem Behavior #:__________________________

1. Please indicate whether the following consequences occur after the behavior is exhibited.

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   _____ Yes   _____ No

   If yes, describe:___________________________________________________

3. Are there other problem behaviors that often occur after the behavior is exhibited?
   _____ Yes   _____ No

   If yes, describe:___________________________________________________

4. Does the student typically receive praise or any positive consequence when behavior occurs that you would like to see instead of the problem behavior?
   _____ Yes   _____ No

   Comments:_________________________________________________________
Antecedents: Problem Behavior #____:____________________

1. Does the behavior occur more often during a certain type of task? Y / N

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15. Are there any events occurring in the child's home that seem to precede occurrence of the behavior at school? Y / N

16. Does the behavior occur more often in certain settings? Y / N
   (circle all that apply)
   large group   small group   independent work   one-to-one interaction
   bathroom   recess   cafeteria   bus
   other:_____________
**Consequences:** Problem Behavior #_____ : __________________________

1. Please indicate whether the following consequences occur after the behavior is exhibited.

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   _____ Yes   _____ No

   If yes, describe:__________________________________________________________

3. Are there other problem behaviors that often occur after the behavior is exhibited?
   _____ Yes   _____ No

   If yes, describe:__________________________________________________________

4. Does the student typically receive praise or any positive consequence when behavior occurs that you would like to see instead of the problem behavior?
   _____ Yes   _____ No

   Comments:______________________________________________________________
APPENDIX E

PHASE SPECIFIC OBSERVATION FORM/PROCEDURAL INTEGRITY CHECKLIST

Child’s Code #: ____________________ Date: _________________________
Observer: _________________________ Condition: _____________________

**Abbreviated FA Conditions**

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From Everett (2006).
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From Everett (2006).
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From Everett (2006).
APPENDIX F
TEACHER HANDOUTS

Guidelines for Abbreviated Functional Analysis Conditions

Attention Condition

☐ Deliver an instruction every 30-s upon prompting from the experimenter.

☐ Allow a 5-s latency period for a response to occur.

☐ Provide no response to compliance with your request.

☐ If compliance does not occur within 5-s, repeat the same command 2 times separated by 5-s gaps.

☐ Wait for next instructional prompt, and repeat the same procedure.

Escape Condition

☐ Deliver an instruction every 30-s upon prompting from the experimenter.

☐ Allow a 5-s latency period for a response to occur.

☐ Provide no response to compliance with your request.

☐ If compliance does not occur within 5-s, turn away and ignore the child’s noncompliance for a period of 10-s.

☐ Wait for next instructional prompt, and repeat the same procedure.

Guidelines for Time-out without Escape Extinction

- Present instruction to your student and allow a 5-s latency period for response to occur.
- If compliance, provide praise to the child (e.g., “Good job.”).
- If noncompliance, provide a verbal reason as to why TO will be initiated (e.g., “You did not follow my instruction, TO.”).
- Begin the prompting procedure by verbally directing your student to TO in a spot 2-3 feet from the ongoing activity.
- If noncompliance with verbal direction, physically place the child in a TO spot two-three feet from the ongoing activity with as little physical assistance as required.
- Completely ignore the child while they are in TO, except to repeatedly return the child to the TO spot if they attempt to escape prior to release.
- Once the child has shown appropriate TO behavior (i.e., quiet hands, feet, mouth) a 3-5 behaviorally contingent release period begins.
- Following 3-5 s of contingent quiet TO behavior, verbally release the child from TO (e.g., You are quiet, out of TO.”).

Guidelines for Time-out with Escape Extinction

- Present instruction to the child and allow a 5 s latency period for response to occur.
- If compliance, provide praise to the child (e.g., “Good job.”).
- If noncompliance, provide a verbal reason as to why TO will be initiated (e.g., “You did not follow my instruction, TO.”).
- Begin the prompting procedure by verbally directing the child to TO in a spot 2-3 feet from the ongoing activity.
- If noncompliance with verbal direction, physically place the child in a TO spot two-three feet from the ongoing activity with as little physical assistance as required.
- Completely ignore the child while they are in TO, except to repeatedly return the child to the TO spot if they attempt to escape prior to release.
- Once your child has shown appropriate TO behavior (i.e., quiet hands, feet, mouth) a 3-5 s behaviorally contingent release period begins.
- Following 3-5 s of contingent quiet TO behavior, verbally release the child from TO (e.g., You are quiet, out of TO.”).
- After leaving TO re-present the same instruction that led to placement in TO, and provide either praise or another instance of TO depending on their response.

REFERENCES

Upper Saddle River, NJ: Merrill.

Journal of Applied Behavior Analysis, 3, 77-84.


