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Using behavioral skills training to teach parents to implement three-step prompting: A component analysis and generalization assessment

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ABSTRACT

Noncompliance is a common childhood behavior problem that has been treated effectively using three-step prompting and differential reinforcement of compliance. Researchers have successfully taught parents to implement this intervention package using behavioral skills training (BST). Although effective, BST is an intensive teaching strategy and the generality of the effects of training on parent and child behavior have not been assessed. The current study conducted a component analysis of the elements of BST (written instructions, modeling, and rehearsal with performance feedback) to determine the sufficient and necessary elements of training needed to teach parents to implement three-step prompting and DRA. Further, we assessed generalization of parents' skills across multiple instructional contexts with their children. The results indicated that the full BST package was necessary for parents to reach mastery levels of correct implementation, but training generalized across untargeted tasks.

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1. Introduction

Noncompliance with caregiver instructions is one of the most common childhood behavior problems resulting in referral to a behavior analyst or a pediatric psychologist (Kalb & Loeber, 2003). The estimated prevalence of noncompliance problems for children between the ages of 2 to 16 years ranges from 25% to 65%, inclusive of children of typical and atypical development (Kalb & Loeber, 2003; Ndoro, Hanley, Tiger, & Heal, 2006; Stephenson & Hanley, 2010). Persistent noncompliance can interfere with children's social relationships with adults and peers, participation in structured activities, and academic progress (Kalb & Loeber, 2003).

Behavioral interventions for noncompliance can be characterized as either antecedent or consequent-based approaches. Antecedent-based approaches are those that involve manipulating the manner in which instructions are delivered. These strategies include maintaining close proximity to the individual, delivering instructions at eye level, making physical contact, obtaining eye contact with the individual, providing warnings of upcoming tasks, providing detailed instructions, providing non-directive instructions, or preceding challenging instructions with less challenging instructions (Ardoin, Martens, & Wolfe, 1999; Beaulieu & Hanley, 2014; Beaulieu, Hanley, & Roberson, 2013; Bouxsein, Tiger, & Fisher, 2008; Bullock &

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Normand, 2006; Call, Wacker, Ringdahl, Cooper-Brown, & Boelter, 2004; Cote, Thompson, & McKerchar, 2005; Ducharme & Worling, 1994; Hamlet, Axelrod, & Kuerschner, 1984; Kraus, Hanley, Desana, Eisenberg, & Jarvie, 2012; Peyton, Lindauer, & Richman, 2005; Stephenson & Hanley, 2010; Wilder, Allison, Nicholson, Abellon, & Saulnier, 2010; Wilder, Nicholson, & Allison, 2010; Zarcone, Iwata, Mazaleski, & Smith, 1994). Presumably, antecedent approaches are effective by enhancing the stimulus control exerted by the instruction, disrupting competing contingencies, and by minimizing the aversive aspects of instruction presentation. To the extent that these goals can be accomplished, antecedent approaches can improve compliance.

In many cases though, antecedent approaches alone are not effective at treating noncompliance; successful treatment may require direct manipulation of the consequences associated with compliance and noncompliance (e.g., Cote et al., 2005; Stephenson & Hanley, 2010; Zarcone et al., 1994). These include differential reinforcement of alternative behavior (DRA) specifically targeting compliance (i.e., delivering positive and/or negative reinforcement following compliance; Bouxsein, Roane, & Harper, 2011; Kodak, Miltenberger, & Romaniuk, 2003; Lalli et al., 1999; Payne & Dozier, 2013; Piazza, Moes, & Fisher, 1996; Russo, Cataldo, & Cushing, 1981; Tarbox, Wallace, Penrod, & Tarbox, 2007; Whitman, Zakaras, & Chardos, 1971) and extinction of noncompliance (i.e., ensuring noncompliance does not result in the termination of demands; e.g., Iwata, Pace, Kalsher, Cowdery, & Cataldo, 1990; McKerchar & Abby, 2012; Stephenson & Hanley, 2010). The combined use of DRA and extinction has been particularly effective in treating noncompliance (Payne & Dozier, 2013).

The most common means of implementing escape extinction is via three-step prompting (based upon the graduated prompting procedure of Horner & Keilitz, 1975). Three-step prompting involves providing progressively more intrusive prompts (typically a vocal, model, and physical prompt) to complete a task. For instance, in instructing a child to put away toys, a caregiver would first prompt their child vocally (e.g., stating, "Put a block in the bucket"). If the child did not comply within 5 s, the caregiver would repeat the vocal prompt while providing a model or gestural prompt (e.g., stating, "Put the block in the bucket, like this" while themselves placing a block in the bucket). If the child did not comply within 5 s of this model prompt, the caregiver would then repeat the vocal prompt while providing hand-over-hand guidance to complete the task. In this regard, the child is required to complete every instruction (i.e., escape is prevented by the continued prompting of the caregiver and thus escape-related noncompliance is diminished). In the vast majority of studies demonstrating the efficacy of three-step prompting and DRA in treating noncompliance, the intervention was administered by members of the research team (e.g., Iwata et al., 1990; Wilder, Atwell, & Wine, 2006; Wilder, Harris, Reagan, & Rasey, 2007) ensuring high levels of procedural fidelity for evaluation. However, to claim that such interventions are broadly effective in treating noncompliance, it is essential that caregivers can also implement this intervention package with fidelity in the normative environment.

A number of recent studies have evaluated behavioral skills training (BST) as a training package to prepare caregivers to implement these procedures with their children. BST includes providing (a) instructions, (b) modeling, (c) guided rehearsal, and (d) feedback on implementation. Tarbox et al. (2007) used BST to teach parents to implement three-step prompting with their children. BST increased implementation fidelity above 90% accuracy and resulted in increased child compliance. Miles and Wilder (2009) evaluated BST in teaching three-step prompting to three caregiver-child dyads. Following training, parents implemented three-step prompting accurately with their children and child compliance with a targeted task also increased. Further, these authors conducted generalization probes that indicated parents continued to implement three-step prompting accurately with this task in other settings.

Although such studies have demonstrated the efficacy of BST in teaching three-step prompting, there are a few limitations to the BST approach. BST is relatively labor intensive in that it requires a dedicated trainer to be present to provide instructions, modeling, rehearsal, and feedback for the trainees. As such, it is likely the case that a therapist or consultant adopting a BST approach could train only one parent or family at a time. By contrast, if approaches based solely on instruction were equally effective, then implementation of three-step training could be provided inexpensively through published manuals. Similarly, if modeling of procedures alone was sufficient to teach three-step prompting, then training could be provided in large groups or perhaps distributed via video models (e.g., Rosales, Gongola, & Homiltas, 2015). However, if rehearsal with feedback is a necessary component to achieve integral implementation of three-step prompting, then the additional effort of the full BST package is justifiable.

Researchers have conducted component analyses of BST (i.e., evaluated the necessity of instructions, modeling, and rehearsal with performance feedback) with skills other than three-step prompting. For instance, Kornacki, Ringdahl, Sjostrom, and Nuernberger (2013) sequentially introduced instructions, modeling, rehearsal, and feedback in teaching conversation skills to young adults with autism and found that rehearsal and performance feedback were necessary to achieve mastery levels for each of their participants. Other component analyses of BST have included teaching staff members to conduct functional analyses (Ward-Horner & Sturmey, 2012), teaching behavioral interviewing to pharmacy interns (Keane, Black, Collins, & Vinson, 1982), and teaching young children to avoid playing with firearms (Himle, Miltenberger, Flessner, & Gatheridge, 2004). Collectively, these studies have shown variable levels of gains given instructions and modeling, with optimal performance following rehearsal and feedback. However, Severtson and Carr (2012) sequentially introduced written instructions, video modeling, and performance feedback in teaching six novice instructors to implement discrete trial teaching procedures with a confederate. For three participants, the full training package was necessary to develop mastery. However, for three participants, written instructions alone were sufficient to engender mastery level performance. Despite the number of component analyses of BST in the literature, none has directly targeted parents or has included compliance training skills such as three-step prompting.