Functional Communication Training with Demand Fading
To Reduce Self-Injurious Behavior

Introduction

Applied behavior analysts have adopted a two-phase model of behavioral assessment and treatment which begins with a functional analysis of problem behavior (Iwata, Dorsey, Slifer, Bauman, & Richman, 1994) and culminates with the development of a differential reinforcement of alternative behavior (DRA) treatment program, often with an extinction component (Tiger, Hanley, & Bruzek, 2008). One limitation of DRA + extinction treatments is the potential for extinction bursts during the early portions of treatment (Zarcone, Iwata, Vollmer, Jagtiani, Smith, & Mazaleski, 1993). For individuals whose target behavior is self-injury, extinction bursts are a safety concern. Research has shown that demand fading procedures may effectively decrease the likelihood of extinction bursts in DRA + extinction treatments (Pace, Ivancic, & Jefferson, 1994). With demand fading, the ratio requirement to access reinforcement is gradually increased until a predetermined level is reached. The purpose of the current study was to evaluate a demand fading procedure to decrease multiply-maintained self-injurious behavior (SIB) for one young boy referred to an intensive outpatient clinic.

Participants and Setting
John was a 22-month old boy diagnosed with disruptive behavior disorder and developmental delay. He was referred to an intensive outpatient clinic for the assessment and treatment of SIB (i.e., head hitting and head banging). All assessment and treatment procedures were conducted in a clinic therapy room by John’s parents with coaching by a clinic therapist. The clinic therapy room was equipped with a table, chairs, leisure items, and a camera for recording.

Response Definitions and Interobserver Agreement

Data were collected using a computer software program. The target behaviors were SIB, manding, and task completion. SIB was defined as any occurrence of banging his head to the ground, wall or hard object, and/or hitting himself with his hand. Manding was defined as John exchanging the picture card with his mother or father. Task completion was defined as completion of required activities (e.g., putting blocks in a bucket) without physical guidance. SIB, manding, and task completion were recorded as frequency of occurrence. Inter-observer agreement (IOA) was calculated across 30% of sessions for all assessment and treatment conditions, and averaged 91% (range, 73% -100%).

Procedure

Functional Analysis of Problem Behavior

The gold standard assessment to identify functional relations between the environmental factors and the behavior is called a functional analysis (Iwata et al., 1994). A functional analysis
of problem behavior (FA) based on procedures described by Iwata et al. (1994) was conducted to identify the environmental events evocative for SIB and the reinforcers that may maintain SIB. During the FA, test conditions (i.e., escape, tangible, and attention) were alternated with a free play condition according to a multielement design. All sessions were 5 minutes in duration. During free play sessions, John had noncontingent access to leisure items and his parent’s undivided attention. During escape sessions, John was asked to put blocks in a bucket. He received a 30 seconds break from the task contingent on the occurrence of SIB. During tangible sessions, a highly preferred toy was taken away from John and he was asked to play with a less preferred toy. The highly preferred toy was returned to him for 30 seconds contingent on the occurrence of SIB. During attention sessions, John’s parents asked him to play alone with toys while they talked to each other across the room from him. John received 30 seconds of attention contingent on the occurrence of SIB.

Functional Communication Training (FCT) with Demand Fading

Functional Communication Training (FCT) is a differential reinforcement procedure where an individual is taught an appropriate communicative response as an alternative to engaging in problem behavior to get the same class of reinforcement (Carr & Durand, 1985). FCT is an individualized treatment that can teach an individual how to use appropriate communication to gain access to what he/she wants (e.g., a toy, attention, or break from a task). The FCT procedure is paired with the results of the functional analysis so that the reinforcer identified during the FA is provided contingent on an appropriate communicative response during FCT. Problem behavior does not result in the identified reinforcer during the FCT sessions.
Step 1 (no demand). FCT for tangible items was initially introduced to address the tangible function. All sessions were 10 minutes in duration and were conducted by John’s parents with coaching from a therapist. During FCT, a high preferred item was restricted by John’s parents. A picture card was subsequently placed in front of John and was followed by a vocal prompt to exchange the card to regain access to the high preferred item. The highly preferred item was returned contingent on the occurrence of manding. SIB was placed on extinction.

Step 2 (with demand). After step 1, a compliance training component was introduced to address both of the identified functions of problem behavior (i.e., tangible and escape functions). All sessions were 10 minutes in duration. First, John was presented with a small demand (e.g., put 4 blocks in a bucket). Contingent on task completion, the picture card was presented to John followed by the vocal prompt to exchange the card to regain access to preferred items. SIB was placed on extinction during this treatment package. As John showed success with this treatment package, the vocal prompt to mand was faded (i.e., required independent mands) and increased the response effort to mand by keeping the card in a fixed location in the room.

Results and Discussion

Results from John’s FA suggested that his SIB was maintained by social positive (i.e., access to tangible items) and social negative (i.e., escape from demands) reinforcement (See Figure 1, left panel). During tangible sessions, John engaged in an average of 1.0 responses per
minute (RPM) of SIB. During escape sessions, John engaged in an average of 0.9 RPM of SIB. No SIB was observed during the attention condition. Manding ($M = 0.02$ RPM) and task completion ($M = 25\%$; See Figure 2, left panel) occurred at low levels during the FA.

The initial FCT treatment with no demand resulted in near-zero levels of SIB ($M = 0.03$ RPM; Figure 1, middle panel) and relatively high levels of manding. Manding increased to an average of 0.38 RPM during the FCT treatment. The FCT treatment with demand (i.e., compliance training and FCT; Figure 1, right panel) continued to treat John’s SIB well. SIB occurred at an average rate of 0.01 RPM when FCT treatment with demand was implemented. Manding continued to be observed at consistent rates ($M = 0.33$ RPM). John’s task completion increased to an average of 84 % task completion during the FCT treatment with demand (Figure 2, right panel). Overall, these results indicated that the FCT with demand fading was effective for increasing manding and compliance to demands, while decreasing self-injury motivated by access to tangibles and escape from demands. No extinction bursts were noted by visual inspection.

These data replicated previous studies on the use of demand fading procedures to decrease problem behavior (Zarcone et al., 1993; Ringdahl, Kitsukawa, Andelman, Call, Winborn, Barretto, & Reed, 2002). For individuals engaging in high rates of SIB, a demand fading procedure may be helpful to achieve the goal of increasing alternative behaviors, such as manding and task completion, while avoiding an extinction burst. Future research should compare the entire treatment package (DRA+FCT) to the fading procedure (FCT then DRA+FCT).
Figure 1

Figure 2
References


