Michigan Autism Training Video Treatment Manual:
Functional Communication Training
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Functional Communication Training

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Functional Communication Training

A. Brief Description of Functional Communication Training

Children with disabilities often display severe destructive behaviors (e.g., aggression, self-injurious behavior) that pose significant risk to themselves or others and represent overwhelming barriers to community integration (Hyman, Fisher, Mercugliano, & Cataldo, 1990). These problem behaviors are often treated with behavioral interventions derived from the results of a functional analysis (FA), which is used to identify the environmental antecedents and consequences that occasion and reinforce the target response (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982/1994). That is, an FA is used to identify the environmental conditions in which problem behavior is likely and unlikely to occur. FA results are then used to inform treatment selection.

One such function-based treatment is called functional communication training (FCT), which involves extinction (EXT) of problem behavior and reinforcement of an alternative communication response with the consequence that previously reinforced problem behavior (Carr & Durand, 1985). For example, a child who engages in aggression to get attention from a caregiver would be taught to get attention through a functional communication response (FCR; “Play with me, please”) while learning that aggression no longer produces attention (i.e., EXT).

FCT is a differential reinforcement of alternative behavior (DRA) procedure that is unique in that the communication response: (a) requires minimal response effort; (b) specifies its own reinforcer (i.e., a mand specifying the reinforcer that previously maintained problem behavior); (c) is reinforced on a dense schedule (e.g., fixed ratio [FR] 1); and (d) once taught, can recruit reinforcement across environmental contexts.

B. Purpose and Appropriate Use of FCT

The purpose of FCT is to reduce problem behavior and replace it with an appropriate communication response that serves the same function as problem behavior. FCT is the most commonly prescribed function-based treatment for problem behavior (Tiger, Hanley, & Bruzek, 2008).

When considering the range of problems for which FCT is appropriate, it is important to distinguish between the topographical and functional properties of problem behavior. The topographical features of a response are what it physically looks like, whereas the function of a response refers to the consequence or outcome of the response that reinforces or maintains it. For example, a given child may display two topographies of aggression (e.g., hitting and kicking others) and a single topography of self-injurious behavior (e.g., banging one’s head against objects). Each of these responses may have a separate function (e.g., hitting to get attention, kicking to escape from demands, head banging as a source of self-stimulation), in which case three different treatments would be required to address each of the three behavioral functions. Alternatively, all three topographies may have the same function (e.g., to get attention), in which case a single treatment could be used for all three topographies.
C. Applicability

FCT has been used to treat a wide variety of problem behaviors, including aggression (Fisher, Kuhn, & Thompson, 1998), self-injurious behavior (Fisher, Thompson, Bowman, Hagopian, & Krug, 2000), property destruction (Betz, Fisher, Roane, Mintz, & Owen, 2013), disruptive behavior (Carr & Durand, 1985), elopement (Fisher, Greer, Fuhrman, & Querim, 2015), inappropriate sexual behavior (Fyffe, Kahng, Fittro, & Russell, 2004), and inappropriate vocalizations (Mace & Lalli, 1991). FCT has also been effectively applied to the above types of problems emitted by individuals with a variety of diagnoses, including autism (Fisher, Greer, Querim, & DeRosa, 2014), intellectual disability (Fisher et al., 1993), attention deficit-hyperactivity disorder (Betz et al., 2013), traumatic brain injury (Carr & Durand, 1985), and speech and language delays (Durand, 1999).

FCT is not the first intervention choice for all functions of problem behavior. That is, FCT has primarily been used and validated for the treatment of problem behavior that is reinforced by social consequences (e.g., attention, escape, access to tangible items). FCT has on occasion been used to treat problem behavior maintained by automatic reinforcement (Thompson, Fisher, Piazza, & Kuhn, 1998). However, FCT is less suited for this purpose because the behavior analyst typically cannot manipulate consequences that are automatic products of a response.

D. Treatment Validity and Treatment Matching

D. 1. Matching FCT to the Function of Problem Behavior

FCT is a specific type of DRA prescribed from the results of an FA, and FCT consists of two major components. First, problem behavior is placed on EXT. Second, the reinforcer that previously maintained problem behavior is used to reinforce an appropriate communication response. Because FCT is prescribed based on the results of an FA, the specific elements of FCT vary depending on the function of problem behavior. For example, if the results from an FA suggested that a child’s problem behavior was reinforced by contingent access to a preferred toy (e.g., an iPad), then FCT would consist of providing access to the iPad after the child displays the FCR (e.g., “Toy, please”) and withholding reinforcement following problem behavior. If the FA for another child indicated that the child’s problem behavior was reinforced by escape from (or termination of) nonpreferred tasks, then FCT would consist of providing breaks from work after the child emitted the appropriate FCR (e.g., “Break, please”) and continuing to present nonpreferred demands following problem behavior.

D. 2. Selecting and Training the FCR

The FCR should be simple and require little response effort (e.g., touching or exchanging a communication card) to increase the likelihood of the individual emitting the FCR rather than engaging in problem behavior (Horner & Day, 1991). As noted previously, the FCR should produce the reinforcer that maintains problem behavior as identified during the FA.

When FCT is first implemented, the communication response should always produce reinforcement (Horner & Day, 1991). That is, the FCR should be reinforced on an FR 1
schedule. If the child cannot or will not emit the response independently, the therapist should efficiently prompt the FCR (e.g., using a controlling prompt) and immediately deliver the reinforcer. Early in FCT, it is important to ensure there are no prolonged periods in which the individual is not accessing reinforcement (DeRosa, Fisher, & Steege, 2015).

As noted above, the topography of the FCR should correspond to the function of the child’s problem behavior. For example, a child who displayed problem behavior to escape nonpreferred demands might be taught to say, “Break, please” as the FCR. A child who displayed problem behavior to gain adult attention might be taught to say, “Play with me, please.” Finally, a child who displayed problem behavior to gain access to preferred toys might be taught to say, “Toy, please.”

Children who do not speak are often taught to request reinforcement using a card with a picture of the reinforcer (e.g., Roane, Fisher, Sgro, Falcomata, & Pabico, 2004; Fisher et al., 1998, 2014). For example, a child with attention-reinforced problem behavior might be taught to touch a picture card showing an adult and the child playing together. A child with escape-reinforced problem behavior might be taught to hand over a picture card showing the child leaving a worktable. Finally, a child with tangible-reinforced problem behavior might be taught to touch a picture card showing the child playing with preferred toys.

### D. 3. Other Assessments and Considerations

Typically, it is prudent to conduct a risk assessment before initiating an FA of problem behavior and also to include safety measures to minimize any risks associated with the assessment. Betz and Fisher (2011) provided the following general guidelines for assessing the risks associated with an FA: (a) interview the primary caregiver to determine how often and under what stimulus conditions the client’s problem behavior has resulted in harm to self, others, or the environment; (b) use the collected information to ensure that neither the client nor therapists involved in the FA are exposed to more risk than occurs in the natural environment; (c) block or prevent self-injurious behavior or aggression aimed at vulnerable body parts (e.g., eye gouging blocked by the therapist or prevented using protective equipment); (d) conduct sessions in a padded treatment room or have the client wear protective equipment if the individual displays severe head hitting or head banging because such responses can produce harmful effects (e.g., detached retinas); (e) terminate sessions if problem behavior results in frank bleeding or reddening of the skin, and do not resume sessions until the affected tissue has fully healed; and (f) have medical or nursing staff evaluate and monitor the client if more serious or repeated injury occurs during the FA. These recommendations should also be followed while evaluating possible interventions for problem behavior, including FCT.

There are a number of questions that a behavior analyst should ask and answer before determining whether FCT is the most appropriate intervention for a given client. One such question is, “Is it possible to manipulate the reinforcer for problem behavior?” That is, as mentioned above, FCT is generally not an appropriate treatment for behavior maintained by automatic reinforcement because it is typically not possible to eliminate the contingency
between the target response and its automatic reinforcer, and it is also typically not possible to deliver that reinforcement contingent on the functional communication response.

Another important question to ask is, “Are there times when it is impractical to deliver the functional reinforcer?” For example, if the target response is maintained by adult attention, it may be difficult for the parent to deliver that reinforcer at certain times, such as when the parent is caring for an infant sibling. In these situations, it is important to have identified alternative reinforcers that may substitute for attention. For example, the caregiver may provide access to the child’s favorite video game when adult attention is unavailable for an extended period of time.

A third important question to ask is, “How dangerous is the behavior?” If the behavior poses an imminent danger to self or others (e.g., self-injury or aggression involving eye poking), it may be better to deliver the reinforcer for problem behavior on a time-based schedule (TBS; also called noncontingent reinforcement) rather than contingent on a functional communication response. One can better control and limit the factors that motivate the problem behavior (or its establishing operation) by using a TBS. That is, if we wait for the individual to emit the FCR and that does not occur for an extended period of time, problem behavior will be exposed to its establishing operation for that entire interval, and thus may be more likely to occur. In contrast, we can prevent extended periods where problem behavior is exposed to its establishing operation by scheduling frequent time-based deliveries of the functional reinforcer. However, see the discussion of DeRosa et al. (2015) below for a technique that can be used during initial FCT training to help control exposure to the establishing operation of problem behavior.

A fourth important question to ask is, “Is teaching communication an important goal independent of the treatment of problem behavior?” If the answer to this question is “yes,” then selecting FCT as the initial treatment would be appropriate. If the answer to this question is “no,” the treatment-selection questions listed above should take priority.

E. Recommended Personnel and the Role of Caregivers

One commonly recommended method of promoting generalization of treatment effects involves programming common stimuli in both the initial-treatment context and the generalization context (Stokes & Baer, 1977), and the stimuli used in a multiple schedule may be uniquely suited for generalization. In a recent study by Fisher et al. (2015), therapists systematically introduced FCT using a multiple schedule across different therapists or locations. The effectiveness of FCT transferred readily to each new context using the multiple schedule for all participants, suggesting that programming discriminative stimuli may facilitate the transfer of FCT-treatment effects to new contexts.

Despite these findings, the transfer of an intervention’s treatment effects from the therapist to the primary caregivers presents a unique challenge. That is, parents and other caregivers typically have a long history of delivering reinforcement for problem behavior and little or no history of
reinforcing the child’s newly learned FCR. Thus, primary caregivers may often function as discriminative stimuli that exert counter-therapeutic stimulus control (occasioning problem behavior rather than the FCR). To help offset this possibility, caregivers should train the FCR in a unique stimulus context (e.g., with a colored bracelet or colored hat) and consider implementing EXT in another unique stimulus context (e.g., with a bracelet or hat of a different color). Initially, the child should experience the reinforcement component of the multiple schedule almost exclusively, and any exposure to the EXT component should be brief (e.g., 2 to 5 s). This will help ensure that instances of problem behavior are kept to a minimum early on in FCT. If problem behavior happens to occur during periods of EXT, the caregiver should avoid presenting the reinforcement component (i.e., by changing the discriminative stimuli) until problem behavior ceases and has not occurred for at least 3 s (i.e., changeover delay). Similarly, caregivers should delay the delivery of the reinforcer if problem behavior occurs just before or as the reinforcer is being delivered. These modifications will help ensure that problem behavior does not produce reinforcement adventitiously.

Caregivers should set aside short periods of time (e.g., 3 to 5 min) throughout the day in which they allow the child to practice the multiple schedule. Once the child begins learning to discriminate between the components of the multiple schedule (e.g., by emitting the FCR only during the reinforcement component and showing little to no problem behavior across components), the caregiver may then consider (a) lengthening the duration of the EXT component, (b) expanding the amount of time in which the multiple schedule is in place, and/or (c) probing the child’s performance with the multiple schedule in another setting or with a different caregiver (ensuring that the discriminative stimuli used in the training context are also present in this new context).

F. Challenges and Troubleshooting

One limitation of FCT is that the treatment may evoke problem behavior when the FCR is taught, particularly if problem behavior is maintained by escape because prompting the FCR may constitute another demand from which the individual would be motivated to escape. A second limitation is that individuals often display the FCR at exceedingly high rates (e.g., requesting a break from every school task; Hanley, Iwata, & Thompson, 2001). A third limitation of FCT is that the individual may request reinforcement at times when it is impossible or inconvenient for the caregiver to deliver the reinforcer (e.g., when the caregiver is tending to an infant sibling; Fisher et al., 1993). Recently, considerable progress has been made in addressing these limitations, which will be discussed below.

F. 1. Preventing Extinction Bursts when Training the FCR

Bursts of problem behavior can occur when this response is first placed on EXT during the initial training of the FCR. Extinction bursts are more likely to occur if the individual is exposed to the establishing operation for problem behavior for an extended period of time. One way to limit lengthy exposures to the establishing operation, and thereby prevent such EXT bursts, is to ensure that the FCR is emitted quickly and to deliver the functional
reinforcer immediately. In a recent study, DeRosa et al. (2015) found it was easier to control the duration of exposure to the establishing operation for problem behavior when a card touch served as the FCR. We can reduce lengthy exposures to the establishing operation using a card touch by introducing the establishing operation (e.g., by presenting a demand if problem behavior is maintained by escape), immediately guiding the card-touch FCR, and then immediately thereafter delivering the functional reinforcer (e.g., escape). This procedure is particularly useful for individuals with limited vocal-verbal repertoires or those who refuse to follow prompts to emit a vocal FCR.

F. 2. Teaching Children to Tolerate Periods of Non-Reinforcement

A variety of procedures have been developed for teaching individuals with problem behavior treated with FCT to tolerate periods in which the FCR does not produce reinforcement. These procedures include (a) providing signals to bridge the gap between emission of the FCR and delivery of a delayed reinforcer (Vollmer, Borrero, Lalli, & Daniel, 1999); (b) providing alternative reinforcers during periods in which the functional reinforcer is unavailable (Fisher et al. 1998, 2000; Hagopian, Contrucci Kuhn, Long, & Rush, 2005); and (c) bringing the FCR under stimulus control of discriminative stimuli using chain and multiple schedules with alternating periods of reinforcement and EXT (Fisher et al., 1993, 1998), and then either gradually (Hanley et al., 2001) or rapidly (Betz et al., 2013) thinning the schedule of reinforcement by lengthening the duration of the EXT component relative to the reinforcement component. Of these procedures, the use of chain or multiple schedules have the most empirical support (Saini, Miller, & Fisher, 2016).

G. Task Analyses and Materials

- Appendix A: Task Analysis
Appendix A

SEQUENCE FOR FUNCTIONAL COMMUNICATION TRAINING (FCT)

PROCEDURE:

*Note: There is no established task analysis for implementing FCT, but based on empirical evidence, the following general sequence is recommended. A Board Certified Behavior Analyst with qualifying experience in the assessment and treatment of problem behavior should provide oversight throughout the entire sequence.*

1. Conduct a risk assessment to assess safety measures before conducting a functional analysis (FA).
2. Conduct an FA to identify the consequence(s) maintaining problem behavior.
3. If FCT is an appropriate treatment, choose a functional communication response (using the guidelines above) that results in the consequence(s) maintaining problem behavior.
4. Teach the child to emit the functional communication response using a most-to-least or progressive-prompt-delay procedure, while ensuring that problem behavior no longer produces the functional reinforcer (i.e., extinction; see guidelines above regarding the use of a changeover delay).
5. Evaluate the effectiveness of FCT using an experimental design (e.g., ABAB in which “A” is the relevant test condition of the FA and “B” is FCT).
6. If found to be effective, select unique discriminative stimuli to signal reinforcement and extinction periods (e.g., colored notecards or wristbands).
7. Begin incorporating the discriminative stimulus correlated with reinforcement into all future FCT sessions.
8. While implementing FCT, begin discrimination training by introducing brief (e.g., 2 to 5 s) periods of time in which the discriminative stimulus correlated with extinction is presented to the individual (removing the other discriminative stimulus), and implement extinction for the functional communication response and any problem behavior.
9. Once the individual is shown to perform well (i.e., near-zero levels of problem behavior and few communication responses during the extinction component), begin reinforcement schedule thinning by increasing the amount of time in which the extinction component is signaled and in place.
10. As schedule thinning continues, ensure the ratio of time in which the reinforcement component is in place to time in which the extinction component is in place does not produce an excessively lean schedule of reinforcement (see Roane, Falcomata, & Fisher, 2007).
11. Train all caregivers and personnel outside of the therapy context to promote generalization using behavioral skills training.
12. Using the discriminative stimuli, test for generalization across new caregivers and/or
settings.

13. Retrain all caregivers and personnel as needed using behavioral skills training.

DATA COLLECTION:

1. Select target problem behavior and create operational definitions for FA and FCT.
2. Determine how the data will be collected (e.g., computer system, paper data).
3. Collect data on the frequency, duration, and/or latency of problem behavior and other important variables (e.g., negative vocalizations, mands, other problematic responses, therapist procedural fidelity) throughout the FA.
4. Following completion of the FA, create an operational definition for the type of communication response selected.
5. In addition to the data collected throughout the FA, begin collecting data on prompted and independent communication responses and other important variables (e.g., duration of reinforcement and extinction components) throughout FCT.
6. Select and record data (e.g., correct delivery of reinforcement, correct implementation of extinction for problem behavior) on caregiver implementation to ensure that FCT is implemented accurately.
7. Provide feedback and rehearsal of critical FCT steps as needed.

DATA ANALYSIS:

1. Graph the FA data and use visual inspection to interpret its results (see Roane, Fisher, Kelley, Mevers, & Bouxsein, 2013).
2. Do the same for the FCT evaluation to ensure that FCT is an effective treatment for problem behavior.
3. Continue to graph, analyze, and make data-based decisions throughout FCT, including reinforcement schedule thinning and caregiver training.
4. If performance declines at any point in time (e.g., a rise in the level, trend, or variability of problem behavior or a decrease in the use of the functional communication response), return to previously effective procedures, and advance more gradually.
References


