Michigan Autism Training Videos Presents:

**Functional Communication Training: Research Foundations**

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Section 1 of 3
FUNCTIONAL COMMUNICATION TRAINING (FCT)

• Used to treat a wide variety of problem behaviors (e.g., aggression, self-injury, inappropriate vocalizations)

• Prescribed based on the results of a functional analysis

• Problem behavior is placed on extinction

• The reinforcer for problem behavior is used to reinforce an appropriate communication response
POTENTIAL COMPONENTS OF FUNCTION-BASED TREATMENTS

• Provide the functional reinforcer for an appropriate alternative behavior.

• Provide a competing reinforcer.

• Remove the motivation or establishing operation for problem behavior.

• Remove the reinforcement contingency for problem behavior (Extinction).

• Remove the functional reinforcer contingent on problem behavior (Punishment).
FUNCTIONAL COMMUNICATION TRAINING (FCT)

- With FCT, the individual is taught a communicative response that produces access to the reinforcer responsible for maintenance of the problem behavior.

- For example, an individual whose problem behavior is maintained by escape from tasks might be taught to request a break by signing “finished” (e.g., Hagopian, Fisher, Sullivan, Acquisto, & LeBlanc, 1998).
STRUCTURAL VS. FUNCTIONAL DIAGNOSIS

- Structural Approach
  - How often a particular set of symptoms or responses cluster or covary.

- Functional Approach
  - Whether and which environmental variables influence the response.
FUNCTIONAL ANALYSIS

- Identifies the environmental contexts in which aberrant behavior is likely and unlikely.
- Identifies the consequences that reinforce and maintain the behavior.
- Used to prescribe effective treatments.
COMMON FUNCTIONS OF SIB

• Social Positive Reinforcement (Attention, Tangible items)

• Social Negative Reinforcement (Escape)

• Automatic Reinforcement (e.g., Sensory Stimulation)
FUNCTIONAL ASSESSMENT IS BROADER THAN FUNCTIONAL ANALYSIS

- Indirect Assessments
- Direct Observation Assessments
- Functional Analyses
APPROPRIATE TOPOGRAPHIES AND DIAGNOSES FOR FCT

• Response topographies treated using FCT include aggression, SIB, property destruction, disruption, elopement, inappropriate sexual behavior, and inappropriate vocalizations.

• Associated diagnoses have included autism, intellectual disability, ADHD, traumatic brain injury, and speech and language disorder
APPROPRIATE OPERANT FUNCTIONS FOR FCT

• It is important to distinguish between the topographical and functional properties of responses.

• If two topographies of SIB may have the same function, one form of FCT can treat both.

• If the two topographies of SIB have separate functions, then each one would require a unique FCT intervention.
APPROPRIATE OPERANT FUNCTIONS FOR FCT

• FCT is most appropriate for problem behavior reinforced by social consequences:
  - Attention
  - Escape
  - Tangible reinforcement

• FCT has occasionally been used successfully with responses maintained by automatic reinforcement, but it is often difficult to manipulate automatic consequences.
OTHER ASSESSMENTS THAT MAY BE NEEDED

• Risk assessment before a functional analysis

• Medical assessments to identify co-occurring behavioral health disorders that may affect treatment (e.g., major depression)

• Medical assessments to identify associated medical conditions (e.g., earaches, headaches, detached retinas; concussions)
RISK ASSESSMENT PRIOR TO A FUNCTIONAL ANALYSIS

• Interview caregivers to determine how often and under what conditions problem behavior has resulted in physical harm to self, others, or the environment.

• SIB or aggression towards delicate body parts (e.g., eye-gouging) should always be blocked or prevented.

• A padded Tx room and/or protective equipment may be needed in some cases.

• Clear criteria for terminating sessions should be delineated and followed (e.g., reddening of the skin; bleeding).
IS FCT THE MOST APPROPRIATE OPERANT TREATMENT?

- Functional Communication Training (FCT) involves the delivery of the functional reinforcer contingent on a communication response.

- Noncontingent Reinforcement (NCR) involves the delivery of the functional reinforcer on a time-based schedule.

- Competing reinforcers can also be delivered contingently or on time-based schedules.
CHOOSING THE REINFORCEMENT COMPONENT

• Is it possible to manipulate the reinforcer (e.g., automatic reinforcement)?

• Are there many times when it is impractical to deliver the functional reinforcer?

• How dangerous is the behavior?

• Is teaching communication an important goal independent of problem behavior?
UNIQUE FEATURES OF FCT

• FCT is a DRA procedure that:
  - specifies its reinforcer (i.e., a mand specifying the reinforcer that previously maintained problem behavior),
  - requires minimal response effort,
  - is reinforced on a dense schedule (e.g., FR 1),
  - once taught, can recruit reinforcement across environmental contexts.
UNIQUE FEATURES OF FCT

• Because of the ease and consistency with which reinforcement can be obtained during FCT, some authors have suggested that the client “controls” the delivery of reinforcement (e.g., Carr & Durand, 1985).

• In addition, Carr and Durand suggested that “control over reinforcement,” contributed to the effectiveness of FCT.
UNIQUE FEATURES OF FCT

• Two investigations found that noncontingent reinforcement (NCR), which does not allow the client to control the schedule of reinforcement, and FCT, which does, produced equivalent reductions in problem behavior (Hanley, Piazza, Fisher, Conrucci, & Maglieri, 1997; Kahng et al., 1997).

• Nevertheless, we found that participants preferred FCT over NCR when given a choice (Hanley et al., 1997).
UNIQUE FEATURES OF FCT

• FCT may promote generalization and maintenance because the communication response may prompt both trained and untrained caregivers to deliver differential reinforcement appropriately (e.g., Durand & Carr, 1991).
LIMITATIONS OF FCT

• Teaching the FCT response may evoke problem behavior (particularly if it is maintained by escape).

• Individuals may display the FCT response at exceedingly high rates (e.g., requesting a break from every school task).

• Individuals may request reinforcement at times when it is impossible or inconvenient to deliver (e.g., caregiver tending to an infant sibling).
SELECTING A COMMUNICATION RESPONSE

- The communication response should be simple.
- The communication response should produce the reinforcer identified during the functional analysis.
• When FCT first starts, the communication response should always produce the reinforcer.

• If the child cannot do the response independently, we help them and then deliver the reinforcer.
The communication response matches the function of the child’s problem behavior.

- Demand -> “Break please.”
- Attention -> “Play with me, please.”
- Tangible -> “Toy please.”
Children who do not speak are often taught to use a picture-exchange communication response.

- Attention -> Child hands over a picture of the adult and child playing together. 
- Demand -> Child hands over a picture of the child leaving a work table.
FUNCTION-BASED EXTINCTION

- **EXT (Att):** Attention no longer follows the target behavior
- **EXT (Tang):** Tangible item is longer presented following the target behavior
- **EXT (Esc):** Demands continue following the target behavior
- **EXT (Auto):** The sensory consequences of the target response are eliminated or the response is prevented.
ADDRESSING THE LIMITATIONS OF FCT

• Preventing EXT bursts during the initial training of the FCR.

• Teaching the individual to tolerate periods when a caregiver cannot deliver the reinforcer for the FCR.
SCHEDULE THINNING DURING FUNCTIONAL COMMUNICATION TRAINING

• Signaled and unsignaled delayed reinforcement (Vollmer et al., 1999)

• Activities or alternative reinforcers during the reinforcement delays (Fisher et al., 1998; 2000)

• Multiple and chained schedules with reinforcement and extinction components (Fisher et al., 1998; Hanley et al., 2001)
Steps Involved in Reinforcer Schedule Thinning
In the Context of a Multiple Schedule

• Bring the FCR under the control of discriminative stimuli to signal period in which the FCR will and will not produce reinforcement (mult FR1 EXT; Fisher et al., 1998).

• Gradually lengthen the duration of the EXT component of the multiple schedule until the level of reinforcement delivery is practical (e.g., FR1 intervals lasting 1-2 min; EXT intervals lasting 4-8 min; Hanley et al., 2001).
FISHER ET AL. 1998

• Delivered SR+ for the FCR on an FR1 in the presence of an SD (picture card hung on the wall showing the child consuming the reinforcer)

• Withheld reinforcement for the FCR when the SD was absent (placed the picture card out of sight)

• Procedure reduced reinforcer deliveries by 50%, which was an improvement but still not practical
HANLEY ET AL. (2001)

• Quasi-random alternation between and FR-1 schedule and EXT for communication

• Each component was correlated with a specific signal

• Initially, the duration of the reinforcement component was 3 to 4 times longer than the EXT component

• Gradually, the EXT component was lengthened relative to the SR+ component
Decreases reinforcer deliveries by about 75%
STIMULUS CONTROL REFINEMENTS OF FCT

• Controlling the establishing operation for problem behavior is particularly important during the early stages of treatment.

• Bringing the functional communication response under tight discriminative control is particularly important for increasing the practicality and generality of FCT.
• Fisher and colleagues have shown that delivery of the functional and alternative reinforcers on

• The picture exchange version of FCT (FCT-card) allows strict control of the EO, because the therapist can immediately guide the FCR and deliver the reinforcer, which removes the EO.

• The vocal version of FCT (FCT-vocal) does not allow strict control of the EO, because one cannot guide a vocal response.
DEROSA ET AL. (IN PRESS).

- We compared FCT using a picture exchange (or touch) as the FCR with a vocal FCR.

- The picture exchange version of FCT (FCT-card) allows strict control of the EO, because the therapist can immediately guide the FCR and deliver the reinforcer, which removes the EO.

- The vocal version of FCT (FCT-vocal) does not allow strict control of the EO, because one cannot guide a vocal response.
DEROSA ET AL. PROCEDURES

• Following baseline, the two FCT treatments (FCT-card and FCT-vocal) were both introduced using a progressive time-delay procedure to teach each FCR.

• The two treatments were compared using a multielement phase.

• Following a return to baseline, the more effective treatment was re-introduced in the final phase.
DEROSA ET AL. CONCLUSIONS

• The FCT-card condition allowed better control of the EO for problem behavior.

• The FCT-card condition produced more rapid reductions in problem behavior.

• The FCT-vocal condition was associated with an extinction burst for one participant, which was not observed in the FCT-card condition.
STIMULUS CONTROL REFINEMENTS OF FCT

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BEHAVIORAL MOMENTUM THEORY (BMT)

• Behavioral momentum theory is a quantitative theory of behavior that employs a comparative metaphor based on the classical mechanics of the momentum of physical objects.

• Behavioral momentum theory is relevant to FCT because it provides quantitative models and predictions about the persistence and resurgence of problem behavior when the FCT produces reinforcement and when it does not.