THE MOMENTUM METAPHOR

- Momentum of a moving object = 
  mass \times velocity

- Momentum of a response = 
  rate of reinforcement \times response rate
THE MOMENTUM METAPHOR

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THE MOMENTUM METAPHOR

• Momentum of a moving object = mass \times \text{velocity}

• Momentum of a response = rate of reinforcement \times \text{response rate}
BEHAVIORAL MOMENTUM EFFECTS OF DRA

• Reinforcing an alternative response with the functional reinforcer in the same stimulus context in which problem behavior was previously reinforced bolsters the momentum of problem behavior (e.g., Mace et al., 2010; Volkert et al., 2009).

• Mult-FCT may circumvent this problem by establishing the FCR in a stimulus context that is distinct from the one(s) in which destructive behavior historically produced reinforcement.
PURPOSE OF BETZ ET AL. (2013)

• To identify the necessary and sufficient components for the reinforcement schedule thinning

  - Study 1: Evaluated the effects of contingency-correlated stimuli during FCT
  
  - Study 2: Evaluated the necessity of systematic and gradual fading steps during schedule thinning under multiple schedule components
FUNCTIONAL ANALYSIS
AND FCT TREATMENT EVALUATIONS

• Prior to Studies 1 and 2, we conducted functional analyses to show that problem behavior was reinforced by social positive reinforcement for all participants.

• We also conducted treatment evaluations using an ABAB design to show that FCT was an effective treatment.
BETZ STUDY 1: ARE CONTINGENCY-CORRELATED STIMULI NECESSARY?

• Compared rates of FCR and problem behavior under equivalent mixed and multiple schedules using an ABAB design
  - Mixed FR-1:60 s / EXT:60 s
  - Multiple FR-1:60 s / EXT:60 s

• Data on problem behavior is not shown because it remained at near-zero levels throughout this study.
MIXED VS. MULTIPLE ASSESSMENT

General Procedures

• Sessions = 10 min
• Contingency specifying stimuli in both conditions
• FR1 = 60 s
• Extinction = 60 s
• All sessions started with reinforcement interval
• All problem behavior was on extinction
Mands per minute vs. Sessions for Case Study:

- **FR1**: Every 60 seconds
- **EXT**: Every 60 seconds

Sessions 1-10: Multiple condition
Sessions 11-20: Mixed condition
Sessions 21-35: Another Multiple condition

All sessions started with a 60-second interval. All problem behavior was maintained with a 60-second interval.

**Casey**
CONCLUSIONS

• Betz Study 1 showed that inclusion of contingency-correlated stimuli was a necessary component of FCT schedule thinning.
BETZ STUDY 2: 
IS SCHEDULE FADING NECESSARY?

• Compared rates of alternative and problem behavior when schedules were switched from rich to lean without schedule fading in a multiple baseline design
  Mult FR-1:60 s / EXT:60 s  to  Mult FR-1:60 s / EXT:240 s
  Mixed FR-1:60 s / EXT:60 s  to  Mult FR-1:60 s / EXT:240 s

• Data on problem behavior is not shown because it remained at near-zero levels throughout this study.
Multiple 60/60

Multiple 60/240

Reinforcement Component

Extinction Component

Mands per Minute

Sessions

Gordon

Henry
CONCLUSIONS OF STUDY 2 IN BETZ ET AL. (2013)

• Demonstrated that rapid transfer of discriminative control of the FCR from rich to lean multiple schedules was possible, at least with some cases.

• Betz et al. provided contingency-specifying rules, which probably facilitated rapid stimulus control, and thus additional research is needed to determine the exact conditions under which rapid schedule fading is indicated.
• Multiple schedules may facilitate rapid transfer of stimulus control in other ways that are clinically relevant.

• For example, a longstanding problem in ABA involves the transfer of treatment effects from the initial treatment context (e.g., clinic) to other settings (e.g., home) or from the primary therapist to other interventionists.
DO CONTINGENCY-CORRELATED STIMULI FACILITATE GENERALIZATION ACROSS THERAPISTS AND SETTINGS?

• Compared rates of alternative and problem behavior when a multiple schedule was introduce across therapists or settings in a multiple baseline design
  Mixed FR-1:60 s / EXT:60 s  to  Mult FR-1:60 s / EXT:60 s
  Mult FR-1:60 s / EXT:60 s  to  Mult FR-1:60 s / EXT:300 s

• Data on problem behavior is not shown because it remained at near-zero levels throughout this study.
CONCLUSIONS OF FISHER ET AL. (IN SUBMISSION)

• When mult FCT (60/60) was introduced in the first context (or with the first therapist), participants showed marked increases in the rates of the FCR in the presence of the SD and relatively low rates when the absence of the SD signaled the EXT component.

• More importantly, when mult FCT (60/60) was introduced in the second and third context (or with the second and third therapist), treatment effects immediately transferred to these contexts and therapists.
• Transferring treatment effects from the initial therapist(s) to a primary caregiver presents a unique challenge.

• Parents typically have a long history of reinforcing destructive behavior and little or no history of reinforcing the FCR.

• Thus, primary caregivers may often function as discriminative stimuli that exert counter-therapeutic stimulus control.
• Conducted an FA using our staff and the mother as the assessing therapists

• Conducted attention and demand baselines with the mother in accordance with a multiple-baseline design

• Implemented mult FCT and then RR FCT during schedule thinning using our employees as therapists

• Rapidly transferred the treatment effects to the mother
PRELIMINARY CONCLUSIONS OF GREER ET AL. (IN PROGRESS)

• Replicated findings of Fisher et al. (2014) that RR FCT prevented FCRs when reinforcement for this response was unavailable and this treatment also facilitated reinforcer schedule thinning

• More importantly, when RR FCT (60/240) was introduced with the mother, treatment effects immediately transferred to her in both the attention and demand contexts.