A Stepwise Approach to Behavioral Consultation

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My background

• Ph.D., 1992 (Brian Iwata, advisor)
• 1992-1996 School Psychology, LSU
• 1996-1998 Medical School, University of Pennsylvania
• 1998-current  Psychology Department, University of Florida, Behavior Analysis Research Clinic, UF Health CAN
Overview

• Review of operant functions of behavior
• Presentation of the model
Operant Functions of Behavior Disorders

- Socially mediated positive reinforcement
- Socially mediated negative reinforcement
- Automatic positive or negative reinforcement
The Model

1. Ruling out medical variables
2. Making sure good programming in place: establishment of earlier learner skills
3. Establishment of healthy contingencies
4. Conduct a thorough functional assessment
   • If socially reinforced, implement differential reinforcement
   • If automatically reinforced, progressive evidence-based model
5. Care provider training
6. Considerations of impediments to effective treatment
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Medical Variables

• Illness (chronic, reoccurring, acute)
• Medication
• Medical sequelae
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Skills for Earlier Learners

- Social interactions
- Response to name
- Potty training
- Self-care skills
- Verbal behavior
Problem Behavior: 60%

- Work/School: 15%
- Leisure: 15%
- Self Care: 10%
- Leisure: 45%
- Work/School: 30%
- Self Care: 15%
- Problem Behavior: 10%
Social Interactions
AVOIDANT

Percentage of Session on Social Side

Risk Ratio

Sessions

Ace

Social  Alone
EFFECT OF PREFERRED INTERACTIONS

- Vocal: Percentage of Session on Social Side for Edward across Sessions.
- Vocal + Preferred: Percentage of Session on Social Side for Edward across Sessions.

Risk Ratio:
- V
- V+P
Response to Name
Response to Name

- Early developmental milestone
- Looking at the person who calls one’s name
The graph shows the percentage response of Lydia across different sessions.

- **Social**: Initial phase with low response rates.
- **T1**: Further sessions with fluctuating response rates, reaching a peak at session 5.
- **T2**: Sessions 10-15 show a decline in response rates.
- **T2+**: Sessions 15-20, with a sharp increase and then a decline.
- **T3**: Sessions 20-35, showing a gradual increase and a peak at session 30, followed by a decline.

- **Response to own name**: An upward trend starting at session 20, peaking at session 30.

- **Response to other names**: A steady baseline throughout the sessions, with a slight increase at session 30.
Appropriate Urinations

Self-Initiations

Sessions

Appropriate Eliminations (Percentage)

Self-Initiations per hour
Self-care Skills
Example

The Model

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Healthy Contingencies
Healthy Contingencies

• Minimize reinforcement for what we don’t want to see, and maximize reinforcement for what we want to see more of.
• Environmental enrichment/NCR
Positive Reinforcement for Appropriate Behavior

• The therapist will teach functional communication responses, specifically those that are appropriate attention-getting responses and appropriate requests for tangible items.

• The therapists will provide contingent positive reinforcement following appropriate behavior and compliance to instructions.

• The therapists will deliver arbitrary reinforcers for transitioning from a preferred to a nonpreferred context (e.g., returning to a nonpreferred instructional setting following an unstructured leisure activity)
Minimize Differential Consequences for Problematic Behavior

• The therapist will only provide minimal differential consequences for minor problematic behavior

• The probability of reinforcement following problem behavior will be less than or equal to the probability to reinforcement for any other behavior.

• If reinforcing problem behavior is necessary, reinforce least-intense or first response in the chain
Creating Enriched Environments

• Noncontingent reinforcement during both free time and instruction time
• The child will have access to many preferred items and activities throughout the day
• Providing more frequent opportunities to engage in appropriate behavior
• The therapists will arrange the session so that the child has more opportunities to engage in appropriate alternative responses, such as mands for attention, tangibles and other activities.
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Screening for Automatic Reinforcement
Screening for Automatic Reinforcement

• Querim et al. (2013) used a no-interaction condition as a screening for automatic reinforcement

• Hypotheses:
  • Behavior maintained by automatic reinforcement will occur throughout each session
  • Behavior maintained by socially mediated reinforcement (positive or negative) will either not occur or decrease across sessions
Querim et al., 2013
Purpose

• To extend the Querim et al. by
  • Conducting a within-session analysis
  • Including young children with ASD
  • Screening for social-positive and social-negative reinforcement

• To create a brief and non-intrusive screening to predict behavioral function that can be used to guide treatment
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<th>Hypothesis</th>
<th>Rationale</th>
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<td>The problem behavior occurs during the session but decreases by the end</td>
<td>Socially Mediated Positive Reinforcement: ATTENTION</td>
<td>Without the delivery of attention to maintain the problem behavior it should decrease over time</td>
</tr>
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</table>
Automatic Reinforcement

No Interaction

% of intervals of VS

1-min bins

VS

Sam
Attention

Rate of Property Destruction

No Interaction

1-min bins

Seth
Escape

No Interaction

AGG & SIB per minute

1-min bins

AGG per minute

Zara
Tangible

No Interaction

Screaming per minute

1-min bins

Leo
Tangible & Escape

No Interaction

AGG per minute vs. 1-min bins for Corey.
If it is social: Differential Reinforcement Model

• We want to minimize reinforcement for what we don’t want to see, and maximize reinforcement for what we want to see more of.

• Positive reinforcement
The Matching Law

In a concurrent arrangement, the relative rate of one response alternative will essentially “match” the relative rate of reinforcement available for that response alternative.
Aggressive Behavior

- Probability of Attention: 1.0
- Delay to Attention: < 3 sec
- Quality of Attention: Verbal and Physical Attention
- Duration of Attention: > 20 sec

Appropriate Behavior

- Probability of Attention: 0.2
- Delay to Attention: ~ 20 sec
- Quality of Attention: Brief Verbal Attention
- Duration of Attention: < 3 sec

The Problem
### Aggressive Behavior

- **Probability of Attention:** 1.0
- **Delay to Attention:** < 3 sec
- **Quality of Attention:** Physical Attention
- **Duration of Attention:** < 10 sec

### Appropriate Behavior

- **Probability of Attention:** 1.0
- **Delay to Attention:** < 3 sec
- **Quality of Attention:** Verbal and Physical Attention
- **Duration of Attention:** > 20 sec

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**Differential Reinforcement Solution**
Responses per Min

Sessions

Greg

Athens & Vollmer, 2010
Deshais, Vollmer, & Lloveras (in progress)

• FA shows that behavior is maintained by escape
• Escape extinction is not feasible for any one of the aforementioned reasons
• Phase one is a concurrent choice: a) aggress→escape to barren area, b) FCR→ escape to “cool area” or c) work for highly preferred reinforcers
• Schedule thinning
Mand Training
RR1 (prompt fading)

RR
(increasing requirement)

Terminal RR goal
(maint)

Percentage of Session Spent at Work Table

10 20 30 40 50 60 70 80 90 100
0 20 40 60 80 100
6 7 8 15 22 25 33 41 46 55 61
Current Applications

• Sometimes we need to provide reinforcement for problem behavior that mirrors what happened in the FA (e.g., 30 s escape)
  • When the PB is severe
  • When reinforcement is going to happen anyway

• But sometimes practical reasons may prevent extinction, but we don’t need to provide the reinforcer for every response
  • “No programmed consequences”
  • “Pushing through”
Current Applications

• Sometimes the “cool” break may not be necessary...we can just tip the scales in favor of work completion.

• Comparison of a Work/Break schedule to an Enriched work schedule
  • Phase 1: Work for the fun stuff that is available in the break and only in the break
  • Phase 2: The fun stuff is freely available during work (can earn small snacks for correct responding)
Advantages of Sr+ for escape behavior

• Reduces the motivating operation for escape behavior
• Location matching
• Sets up schedule competition between appropriate and problem behavior
• Can be used as a part of an “emergency” treatment when behavior must be eliminated right away
Responses per minute

Sessions

Slocum & Vollmer, 2015
Automatic Reinforcement
Historical Usage of the Term
Automatic Reinforcement

• Skinner (e.g., 1953, 1957) used the term simply to indicate that the reinforcement maintaining some behavior was not socially mediated.

• Vaughn and Michael (1982) concluded that automatic reinforcement refers to situations in which behavior is maintained by operant mechanisms independent of the social environment.
Related Points

• Automatic reinforcement does not imply positive or negative reinforcement.

• Automatic reinforcement should not trump the usage of the specific source of reinforcement if the specific source is known.

• Both problem behavior and appropriate behavior can be maintained by automatic reinforcement.

• Behavior analytic authors and speakers should avoid usage of “…the behavior is automatic” or “automatically maintained.”
Usage in Applied Behavior Analysis

• The first usage in JABA was seen in 1987 (Lovaas, Newsom, & Hickman), though usage with another meaning was presented by Tate (1968) in a technical note to imply automation.

• Usage has increased steadily and maintained in recent years.
Evidence that automatic reinforcement maintains some problem behavior

- Persistence of behavior in an “alone” or no consequence condition of a functional analysis.
- The behavior does not go away after repeated sessions or observations without social consequences.
Ringdahl et al., 1997
Evidence of automatically reinforced behavior as *operant behavior*

- Contingent access to the behavior increases other behavior that produces such access.
- The behavior goes away if the stimulus products are sufficiently blocked.
- Many appropriate forms of behavior are known to be maintained by automatic reinforcement.
Subtypes of Auto SIB (Hagopian et al., (2015))

Subtype 1
  • SIB high in alone/no interaction, low in play condition.

Subtype 2
  • SIB high across all conditions.

Subtype 3
  • Presence of self-restraint.
    • Self-restraint during at least 25% intervals for 3 alone sessions.
    • SIB found to be maintained by automatic SR+ (when self-restraint was blocked).
Subtype 1

Sessions Responses per Minute (SIB)

SIB high in alone/no interaction condition, low in play condition

Subtype 1 (Automatic)

Tangible

Demand

No Interaction

Attention

Play
Subtype 2 (Automatic)

Sessions Responses per Minute (SIB)

SIB high across all conditions

No Interaction

Attention

Demand

Play

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Subtype 3 (Automatic) Access to Self-Restraint

<table>
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<tr>
<th>Sessions</th>
<th>Responses per Minute (SIB)</th>
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Self-restraint during 25% of intervals for 3 alone sessions
Prognosis

• Treatment of socially reinforced behavior → good prognosis.
• Treatment of automatically reinforced behavior → not so good.
Typical treatment progression for auto Sr

- Environmental enrichment.
- Differential reinforcement.
- Blocking, brief timeout, or mild punishment.
- More extreme punishment or restraint.
- Note: Overall skill development and early intervention is always in the back drop.
Vollmer et al., 1994

Sessions

Percentage of Intervals
Percentage of Intervals

appropriate mouthing

Rhonda
Possible functions of blocking

• Extinction (Smith et al., 1999).
• Punishment (Lerman & Iwata, 1996).
• Positive reinforcement (Vollmer et al., 1992).
• Neutral.
• Motivating operation (Fernand et al., in prep; Rispoldi et al., 2014).
Considerations in developing treatment

• Stimulus preference.
• Effects of preferred stimulus on problem behavior.
• Effects of response blocking (see other slide on this topic).
• Skill development.
• Care provider training.
Staff and Parent Training
Staff and Parent Training

• Variables influencing parent/caregiver behavior
• The method
• Matching data
Marcus, Swanson, & Vollmer, 2001

• Behavioral Skills Parent Training
• Identify effective treatment in highly controlled circumstances, then:
  • Step 1: Didactic interaction
  • Step 2: Role play A—parent as kid
  • Step 3: Role play B—therapist as kid
  • Step 4: Immediate feedback
  • Step 5: Delayed feedback
  • Step 6: Monitoring and follow up
• Booster training as necessary
In all Posts

Log Problem Behavior/Log Appropriate Behavior

Log Reinforced Problem Behavior/Log Reinforced Appropriate Behavior

-1 -0 1

Initial

Post
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Impediments to Effective Treatment

• When EXT is not viable
• Automatic reinforcement
• Medical antecedents
• Medical variables influencing the behavior itself
• Medical outcomes
• Little understood but viable mechanisms
• Rigid behavior
• Methodological limitations
Impediments to Effective Treatment

• **When EXT is not viable**
• Automatic reinforcement
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Situations when/where extinction may not be viable

• Physical: The individual is larger or faster than the parent, therapist, or teacher.

• Legal: State, local, or facility laws/rules require blocking of dangerous behavior, even if it is attention-maintained

• Ethical: You cannot include a component of an intervention that places individuals at risk for getting hurt. The “ignore” fallacy.

Impediments to Effective Treatment

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Medical Variables
Medical Considerations

• Medical antecedents
• Medical variables influencing bx itself
• Medical outcomes (no FA at school, etc.)
Impediments to Effective Treatment

• When EXT is not viable
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Little Understood Mechanisms
Alternative (viable) mechanisms

• Elicited “biting” when the organism experiences aversive stimulation (e.g., Hutchinson, 1977).
Alternative (viable) mechanisms

- Elicited “biting” when the organism experiences aversive stimulation (e.g., Hutchinson, 1977).
- Elicited or schedule-induced aggression (e.g., Azrin, Hutchinson, & Hake, 1966).
MONKEY

M-121

SHOCK

BITING

--- 4 SEC. ---

MAN

N-4

NOISE

BITING

--- 4 SEC. ---

Hutchinson, 1977
Azrin, Hutchinson, & Hake, 1966.
Alternative (viable) mechanisms

• Elicited “biting” when the organism experiences aversive stimulation (e.g., Hutchinson, 1977).

• Elicited or schedule-induced aggression (e.g., Azrin, Hutchinson, & Hake, 1966).

• “Damage” to another organism as reinforcement.

• These possible mechanisms need up-to-date research with humans.
Impediments to Effective Treatment

• When EXT is not viable
• Automatic reinforcement
• Medical antecedents
• Medical variables influencing the behavior itself
• Medical outcomes
• Little understood but viable mechanisms
• **Rigid behavior**
• Methodological limitations
Rigid Behavior
Abby

Item Displacement

Play (Control)

Blocking

Item Displacement

Sessions

Rate of Aggression

1.0

2.0

0.0

1 2 3 4 5 6 7 8 9

Abby
Rate of Aggression

Schedule Thinning & 60-s Delay Probes

- Immediate Reinforcement
- 60-s Delay (Continuous Signal)
- 60-s Delay (Brief Signal)
Methodological Limitations

- When the problem behavior is very low rate or can only happen once
- When we cannot allow the problem behavior to occur at all
  - Pica
  - Inappropriate sexual behavior
Conclusion

• Review of the Model
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