

Why is my Client Eating That?

Laura Grow, Ph.D., BCBA-D

Overview of the Presentation

- Overview of pica
- Medical and behavioural assessment of pica
- Intervention research on pica

Overview of Pica

- Pica is eating indigestible substances (Piazza et al., 1998)
 - Form of self-injurious behaviour
 - Pica comes from the Latin word for a magpie
 - Pica ≠ Mouthing
- <https://www.youtube.com/watch?v=-VqQEaGWwoM>
- Pica is developmentally typical for babies and young toddlers
- Pica becomes a potentially serious problem if the behaviour continues after about 18 months

Common Pica Substances

- Paper
- Clothing
- Rubber bands
- Coins
- Paper clips
- Cigarette butts
- Grass/Dirt/Leaves
- Wood chips/Sticks
- Household cleaners
- Shampoo
- Makeup
- Feces (coprophagia)

Medical Risks of Pica

- Nutritional issues
- Intestinal blockages
- Infections
- Medical procedures needed to remove substances
- Poisoning
- Death
- Higher risk of death than other SIB (Foxx & Livesay, 1984; McLoughlin, 1988)

Table 3
Prevalence of Behavior Topographies

Topography	Number of studies	Percentage of sample
Self-injury	179 (130)	64.6 (4.6)
Aggression	113 (46)	40.8 (1.6)
Disruption	53 (19)	19.1 (6.9)
Vocalizations	35 (16)	12.6 (5.8)
Property destruction	29 (2)	10.5 (0.7)
Stereotypy	25 (17)	9.0 (6.1)
Noncompliance	12 (1)	4.3 (0.3)
Tantrums	10 (1)	3.6 (0.3)
Elopement	8 (1)	2.9 (0.3)
Pica	7 (3)	2.5 (1.1)
Other	10 (0)	3.6 (0)

Note. The numbers in parentheses indicate studies that included one specific topography in the analysis contingency class.

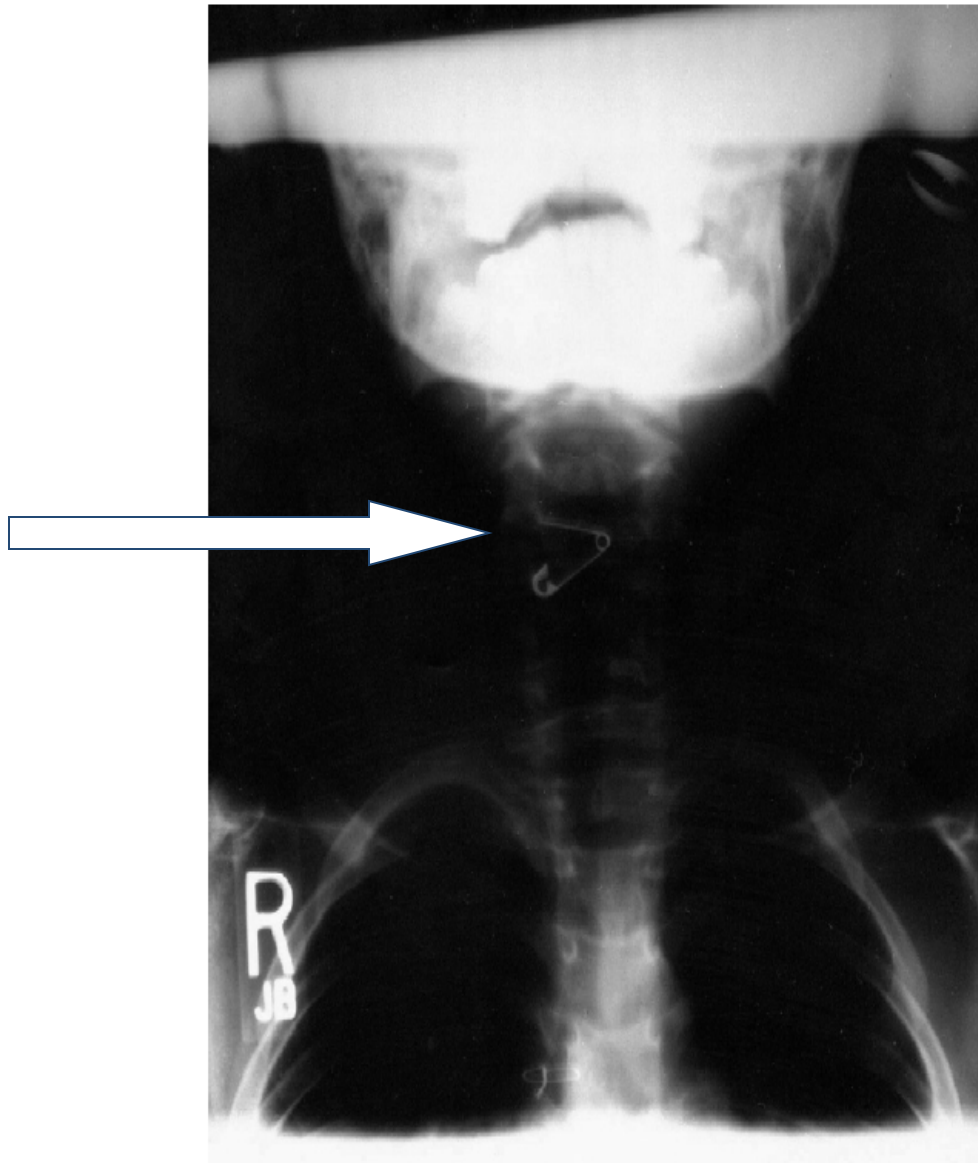


Fig. 1. X-ray showing physical evidence of the severity of Tod's pica (Reprinted with permission from Roane, H. S., Fisher, W. W., Call, N. A., & Kelley, M. E. (2005). Self-injury, aggression and pica. In I. L. Rubin & A. C. Crocker (Eds.), *Developmental disabilities: delivery of medical care for children and adults* (p. 506). Baltimore, MD: Brooks Publishing).



Overview of the Presentation

- Overview of pica
- Medical and behavioural assessment of pica
- Intervention research on pica

Medical Assessment of Pica

- Individuals with pica should receive a medical evaluation
 - Assess for nutritional deficiencies
 - Identify possible medical causes of pica (e.g., iron deficiency)
 - Assess and treat any medical issues that have been caused by pica

Additional Roles of Medical Providers

- Conduct periodic assessments to monitor the effect of pica
 - X-rays
 - Manual examinations
- Train caregivers, teachers, and therapists to
 - Conduct stool checks
 - Respond to irregularities in the stool
 - Check for indices of pain/discomfort following pica

Behavioural Assessment of Pica

- In a majority of cases, pica is maintained by automatic reinforcement (Hanley, Iwata, & McCord, 2003)
- Pica is often assumed (incorrectly) to be maintained by automatic reinforcement
- Like any problem behaviour, a variety of environmental variables affect the frequency of pica
- Functional analysis can be used to identify the cause of pica

Methods of Assessment

- Data reports from caregivers, teachers, therapists
 - Situations when it's most and least likely
 - Commonly ingested items
 - Reactions to blocking the behaviour
 - Frequency of pica per day
- Functional analysis
 - Pairwise
 - Extended ignore

Experimental Functional Analysis

- Iwata et al., 1982/1994: Developed a method for conducting functional analyses
- Manipulation of antecedents and consequences to demonstrate a functional relationship between behaviour and environmental events.
 - Must manipulate at least 2 antecedent conditions to be a “functional analysis” (Hanley, Iwata, & McCord, 2003)
- Functional analysis is the only assessment that identifies the cause of behaviour; indirect and direct assessments identify correlations

Functional Analysis Warm-Up

True or False?

- There is a standard functional analysis that is used for clinical purposes.

Functional Analysis Warm-Up

False!

- There is no standard functional analysis for clinical purposes. The specific conditions and style of FA will depend on the client.

Functional Analysis Warm-Up

True or False?

- The functional analysis should always include a control condition.

Functional Analysis Warm-Up

True!

- A functional analysis relies on establishing differentiated responding. While the exact condition will vary across clients, the control condition should result in low levels of problem behaviour (i.e., serve as an abolishing operation for problem behaviour)

Functional Analysis Warm-Up

True or False?

- Functional analysis should be avoided in severe cases because reinforcing problem behaviour will make the situation worse.

Functional Analysis Warm-Up

False!

- Problem behaviour is reinforced on a continuous schedule during the test conditions
 - FR 1 decreases the intensity and frequency of problem behaviour
 - FR1 decreases resistance to extinction

JOURNAL OF APPLIED BEHAVIOR ANALYSIS

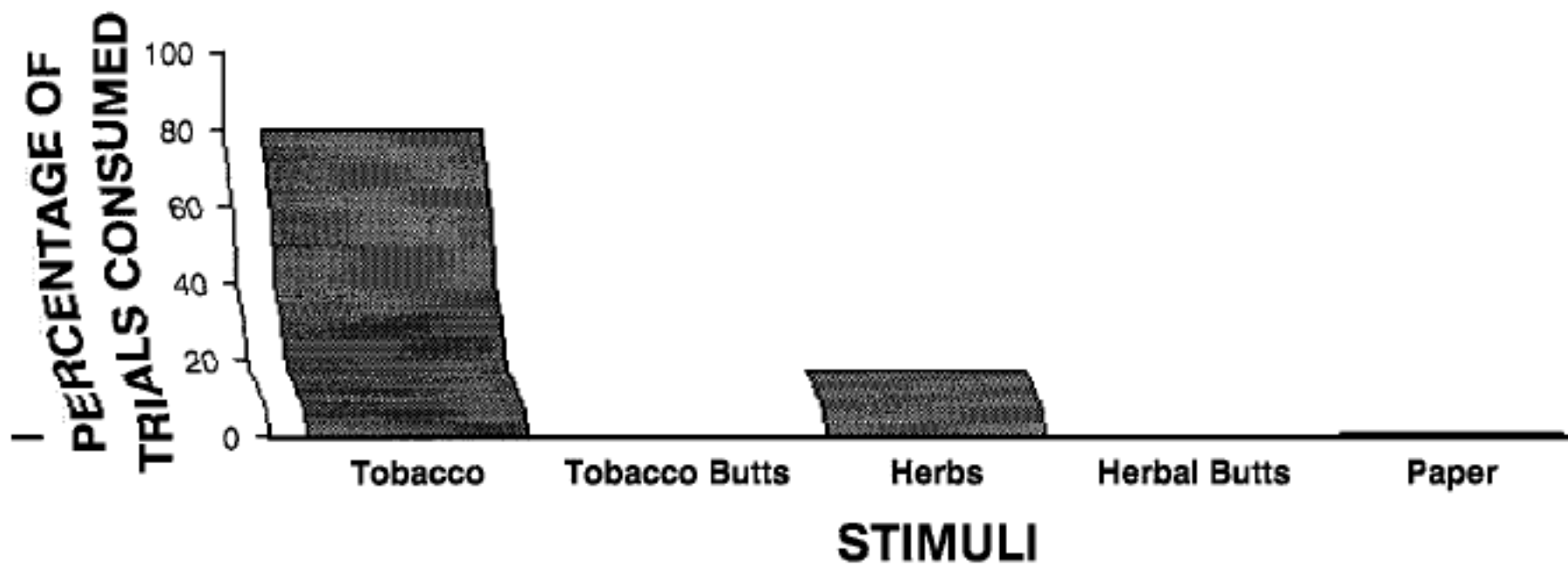
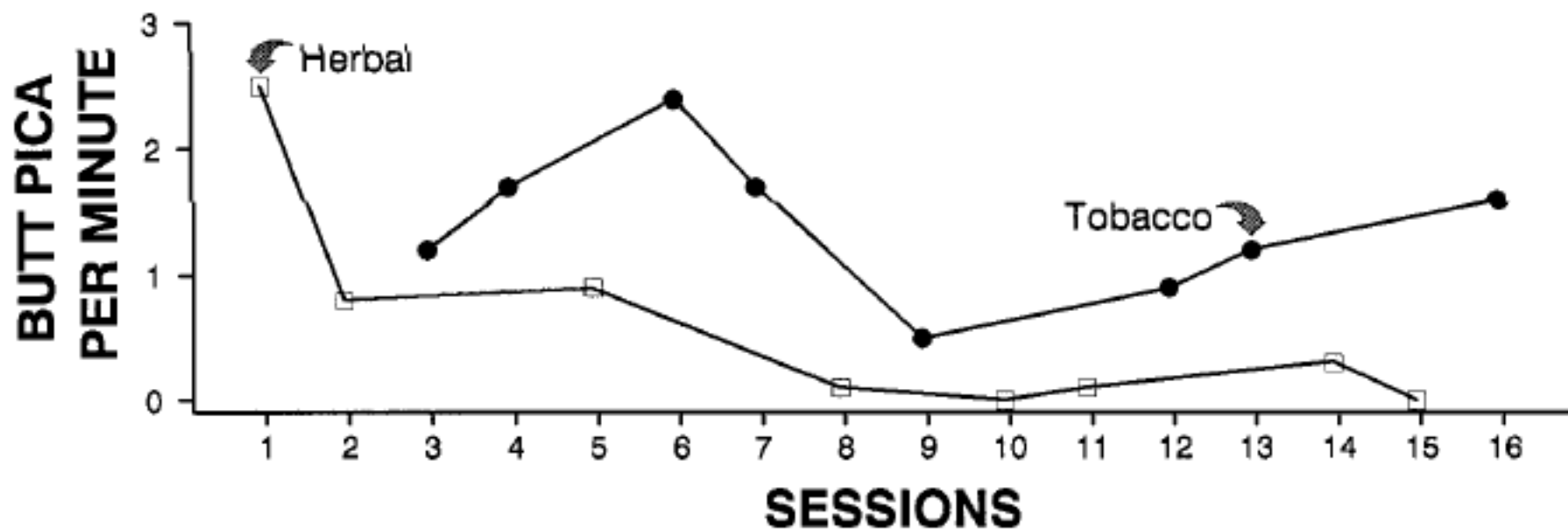
1998, 31, 165–189

NUMBER 2 (SUMMER 1998)

*TREATMENT OF PICA THROUGH MULTIPLE
ANALYSES OF ITS REINFORCING FUNCTIONS*

CATHLEEN C. PIAZZA, WAYNE W. FISHER, GREGORY P. HANLEY,
LINDA A. LeBLANC, APRIL S. WORSDELL,
STEVEN E. LINDAUER, AND KRIS M. KEENEY

KENNEDY KRIEGER INSTITUTE AND
JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE



Safety/Ethical Considerations of Assessment

- Before conducting a functional analysis, behaviour analysts should consult with medical professionals
 - What items can be included?
 - How many items can be consumed per session/day?

Safety/Ethical Considerations of Assessment

- Before conducting a functional analysis, behaviour analysts should consult with medical professionals
 - How often should interventionists conduct stool checks?
 - What happens if the stool is irregular?
 - What protocol is in place for issues that arise due to pica?

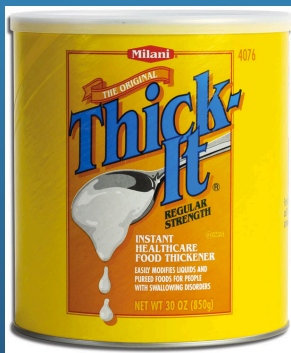
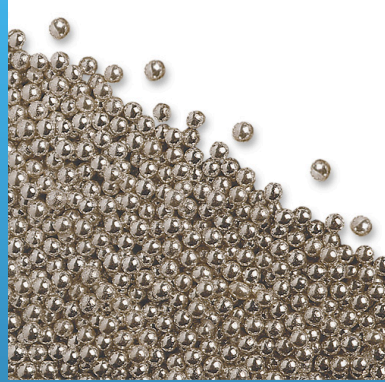
Developing “Bait” Substances

- Considerations
 - What are the typical items that the individual consumes?
 - Are there themes to the items in which the individual consumes?
- Try to replicate the pica substance using safe materials
- If that’s not possible, ask the medical provider how much of the pica substance can be ingested for assessment purposes

Common “Bait” Items

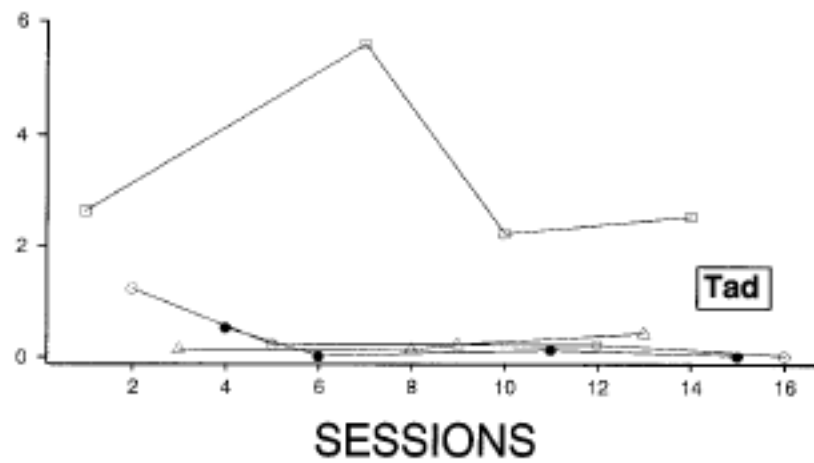
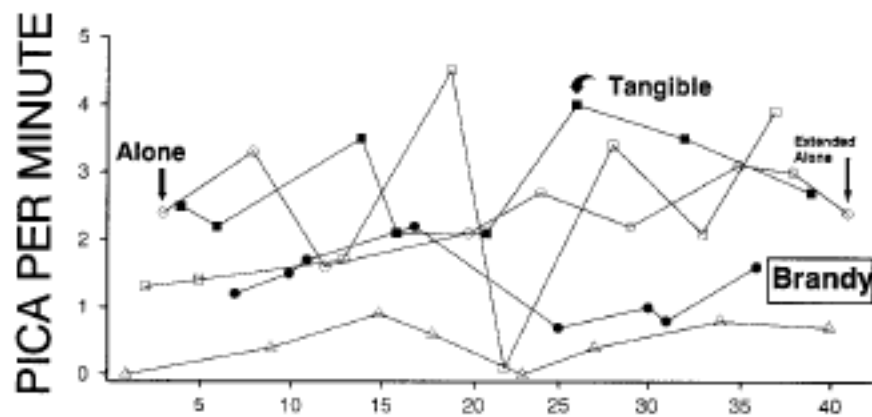
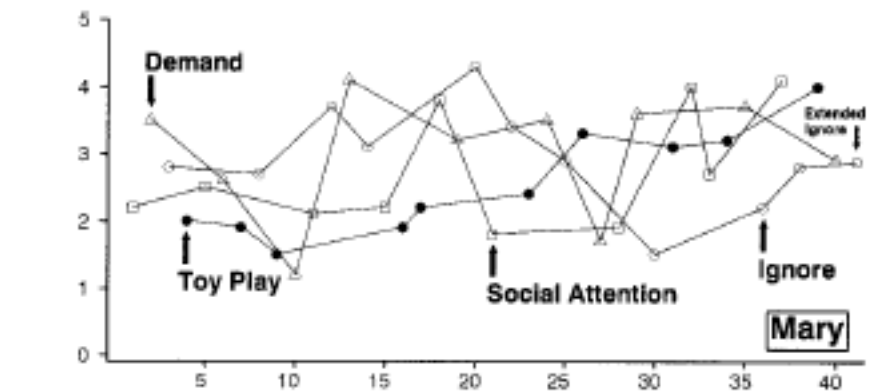
- Dried beans
- Birthday candles or small pieces of wax/crayons
- Dried pasta/rice
- Dehydrated vegetables
- Paper (rice, onion, seaweed)
- Leaves/grass

Helpful Products



Overview of the Presentation

- Overview of pica
- Medical and behavioural assessment of pica
- Intervention research on pica



PICA PER MINUTE

SESSIONS

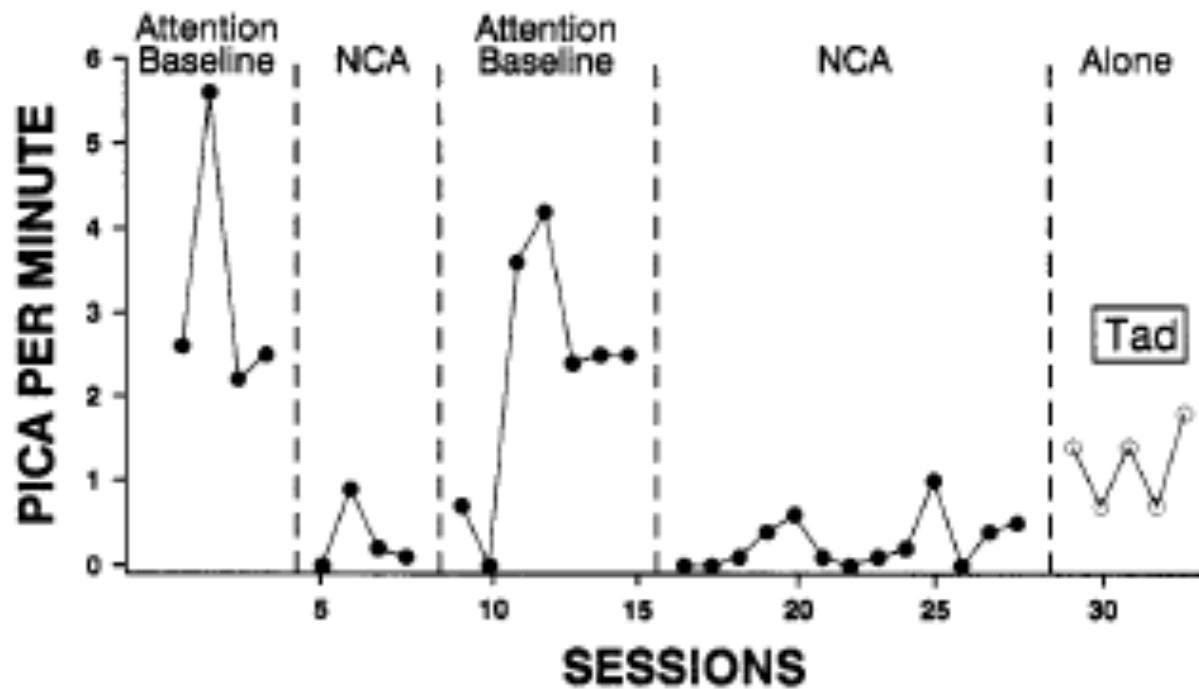
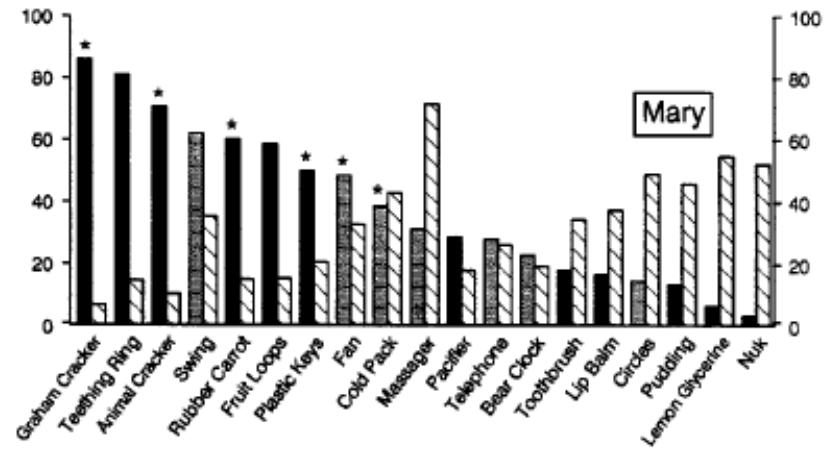
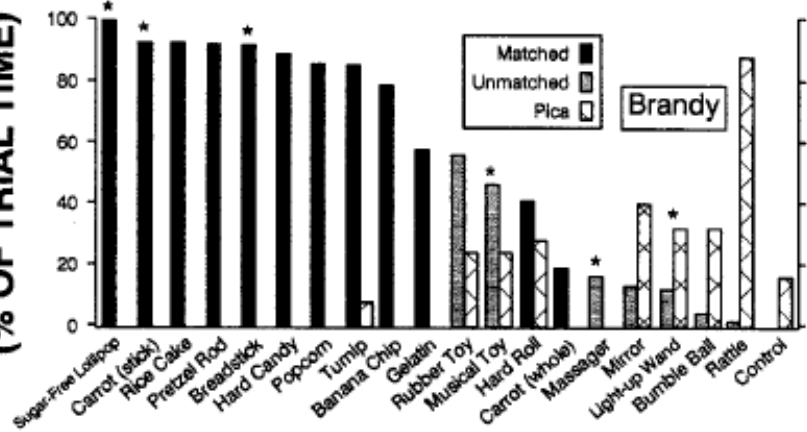


Figure 2. Pica per minute during the treatment evaluation for Tad's attention-maintained pica.

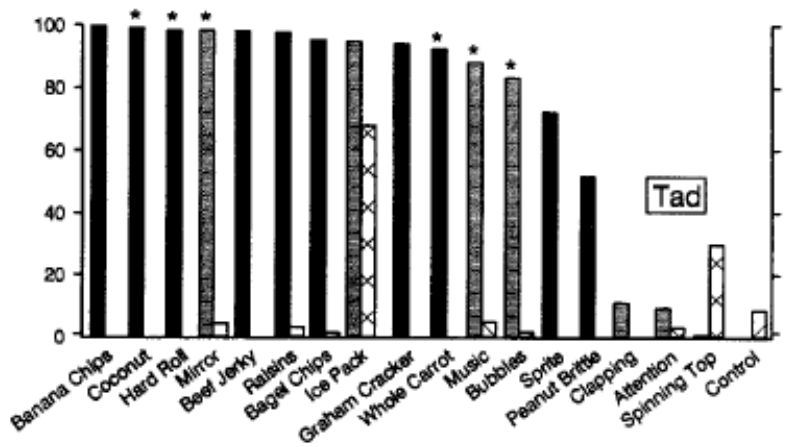
DURATION OF ITEM INTERACTION (% OF TRIAL TIME)



DURATION OF PICA (% OF TRIAL TIME)

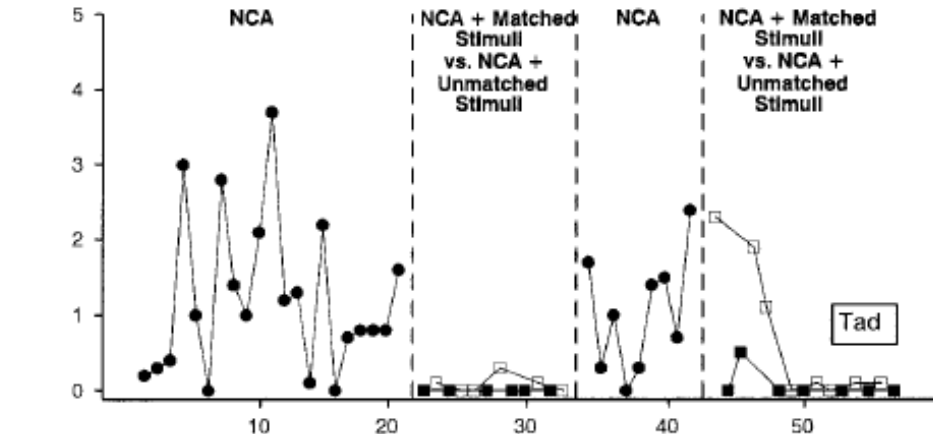
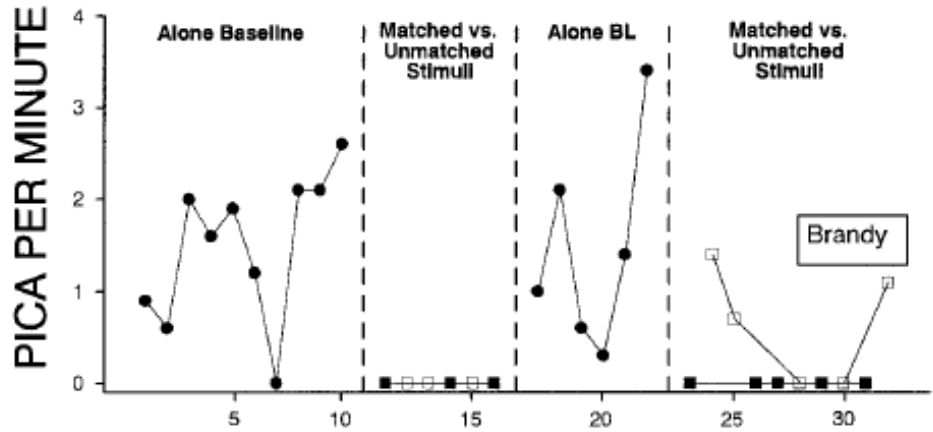
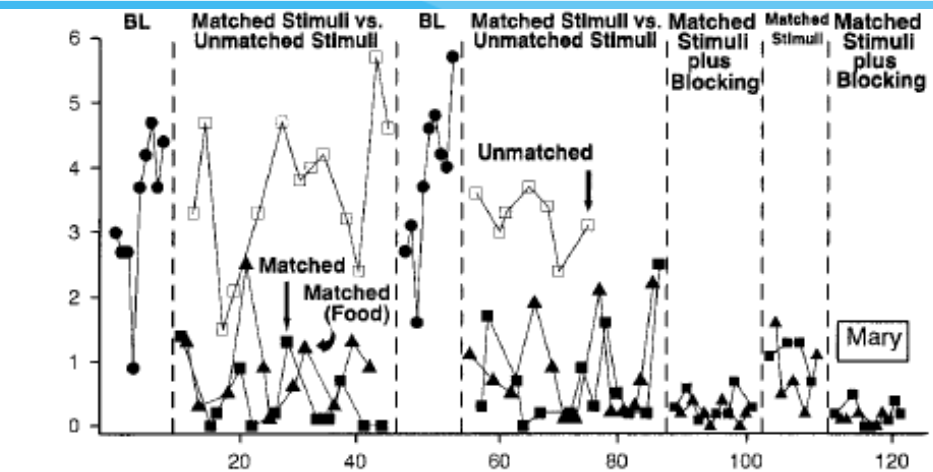


PICA PER MINUTE

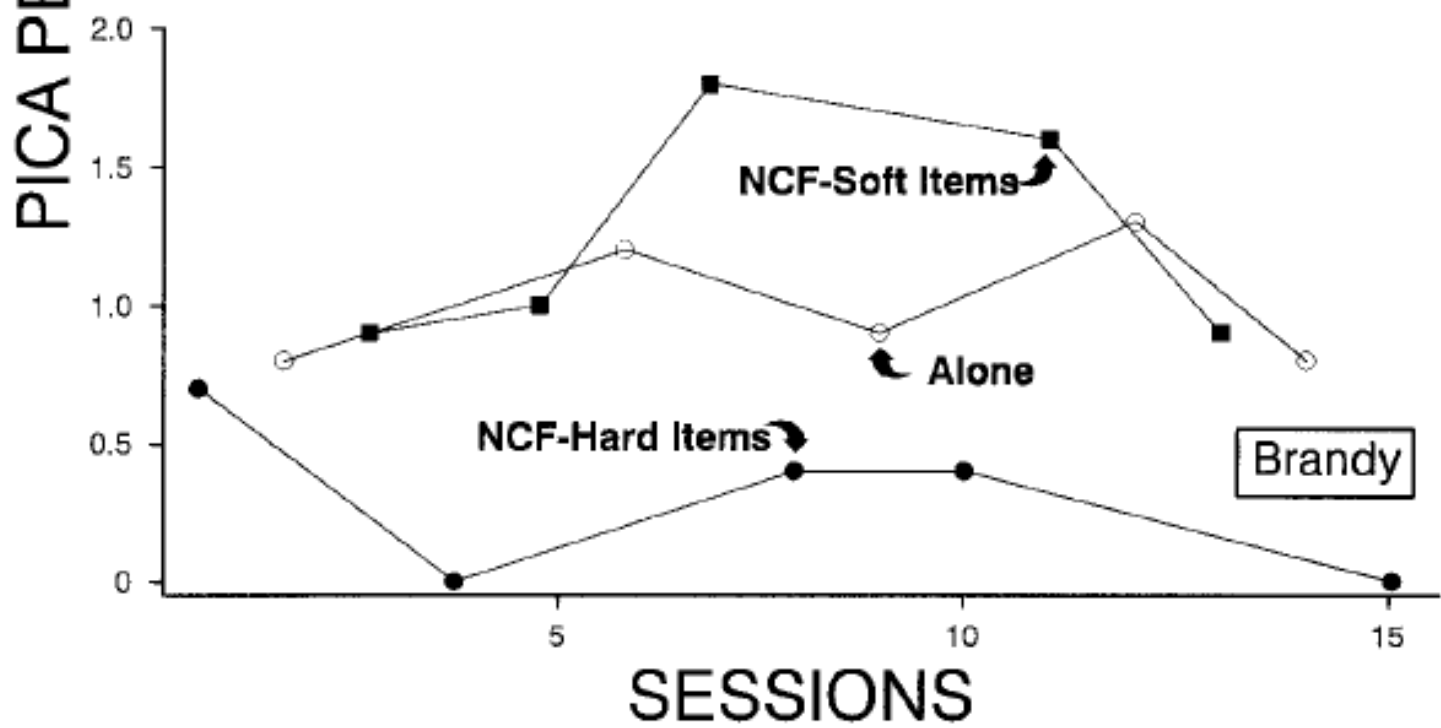
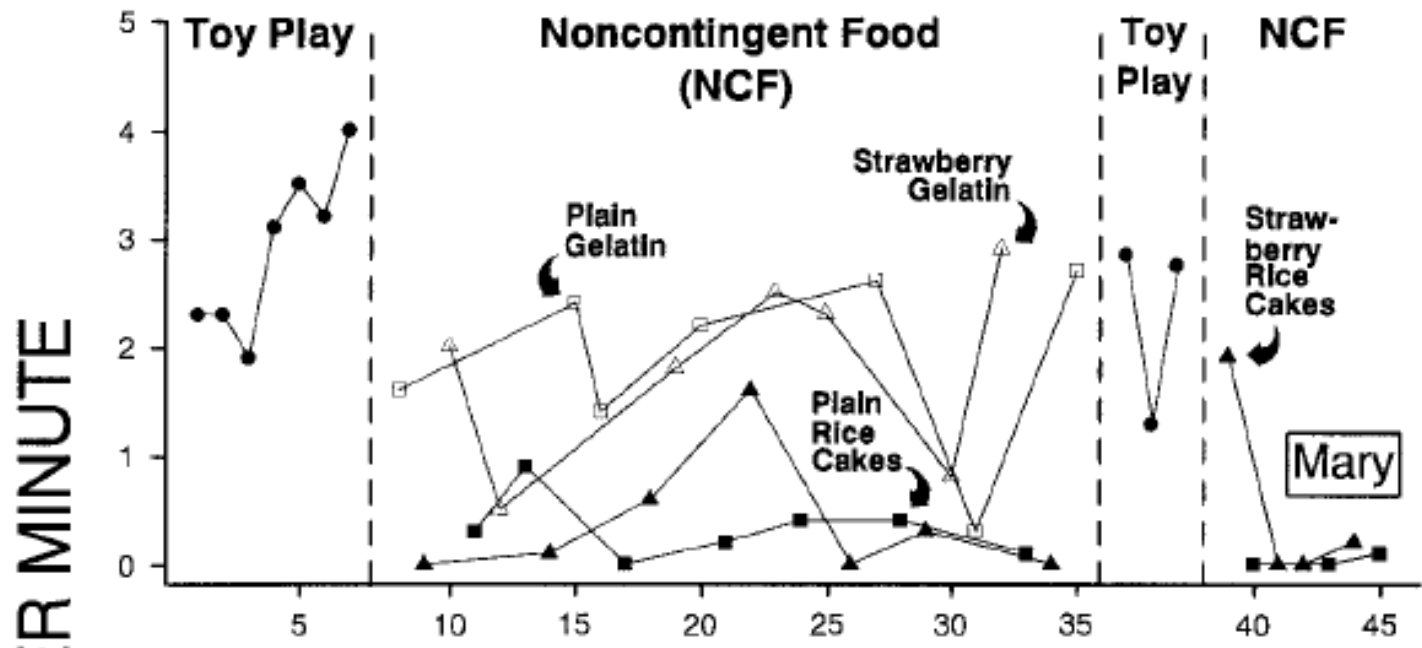


DURATION OF PICA (% OF TRIAL TIME)

ITEMS



SESSIONS



JOURNAL OF APPLIED BEHAVIOR ANALYSIS

1996, 29, 437–450

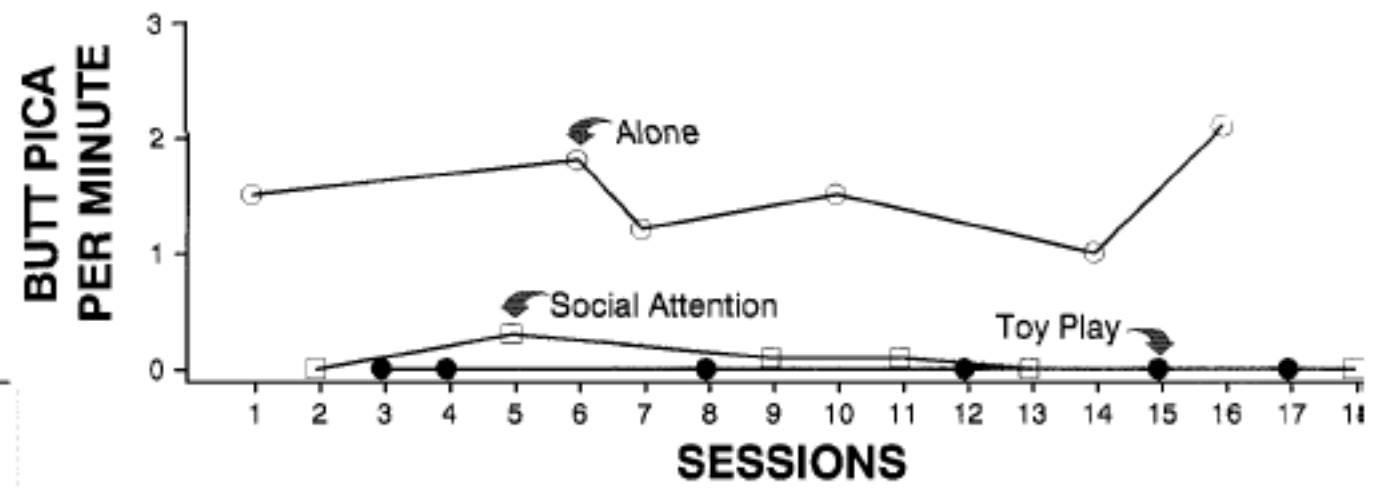
NUMBER 4 (WINTER 1996)

*FUNCTIONAL ANALYSIS AND TREATMENT OF
CIGARETTE PICA*

CATHLEEN C. PIAZZA, GREGORY P. HANLEY, AND WAYNE W. FISHER

KENNEDY KRIEGER INSTITUTE

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE



Limitations of Current Research

- Current research is limited in two ways (Williams & McAdam, 2012)
 - Many studies don't include long-term maintenance and/or generalization
 - Despite large reductions, some participants still engaged in several instances of pica per day

Goals for Intervention

- Develop a comprehensive treatment plan that addresses the medical and behavioural causes of pica
- Implement the treatment at all times and across all environments
- Reduce pica to zero or near-zero levels

Types of Interventions

- Antecedent based-strategies
 - Response prevention (Fisher, Piazza, Bowman, Kurtz, & Lachman, 1994)
 - Environmental enrichment (Piazza et al., 1998)
 - Noncontingent reinforcement
- Consequence-based strategies
 - Blocking
 - Differential reinforcement of incompatible behaviours
 - Empirically derived punishers

Study characteristics.

Category	Number of studies
Function of pica	
Automatic	7
Attention	1
Effective treatment (>80% reduction)	
Behavior analytic treatments	26
Reinforcement only	6
Response reduction only	8
Reinforcement + response reduction	12
Effective treatment (>90% reduction)	
Behavior analytic treatments	21
Reinforcement only	5
Response reduction only	5
Reinforcement + response reduction	11
Design	
Reversal	15
Multiple baseline	6
Multielement	5
Combination	

Response Prevention

- Critical to educate families and therapists about pica and its medical risks
- Remove typical pica substances out of the environment or keep it out of reach
- Consider adding safety locks to cabinets/closets that contain preferred pica substances
- Reduce clutter and regularly clean the environment
- Client anecdote

Pica Prevention

- <https://www.youtube.com/watch?v=XEj5VAh3i6k>

Environmental Enrichment

- Typically indicated if the learner's environment is relatively barren
 - Highly preferred toys
 - Engaging work materials
 - Interspersal of engaging activities
- EE not the same thing as a “Sensory Room”

Environmental Enrichment

- Access to spiced foods reduced coprophagia (Baker, Valenzuela, & Wiesler, 2005)
- Access to play and recreational items and activities reduced pica (Madden, Russo, Cataldo, 1980)

Noncontingent Reinforcement

- Noncontingent reinforcement is the time-based delivery of reinforcers on a predetermined schedule
- Preventative strategy for reducing the likelihood of pica in the moment

Noncontingent Reinforcement Considerations

- Schedule density
 - Dense schedules are more efficacious than leaner ones
- Stimulus magnitude
 - Higher magnitudes are more efficacious than lower ones
- Schedule thinning
 - FT and VT schedules typically start dense and are systematically thinned

Competing Items Assessment

- Helpful for identifying materials for environmental enrichment and/or noncontingent reinforcement
 - Conduct a preference assessment
 - Competing items assessment
 - Collect data on frequency of pica and engagement/consumption with the “competing items”
 - Identify items with high engagement and low levels of pica

Response Blocking

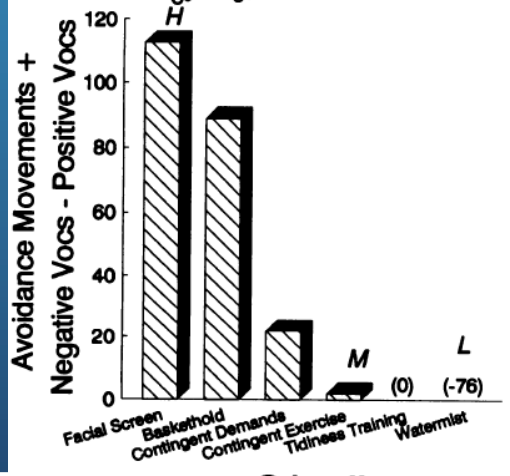
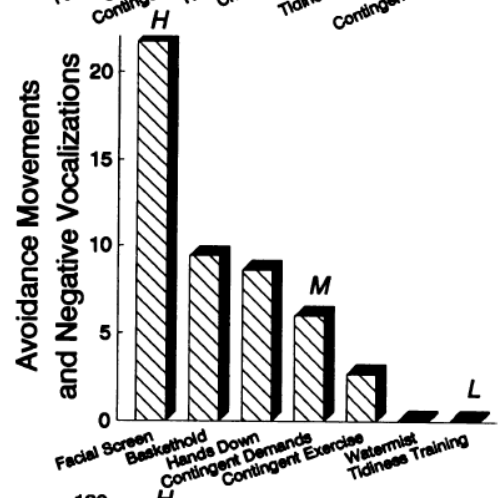
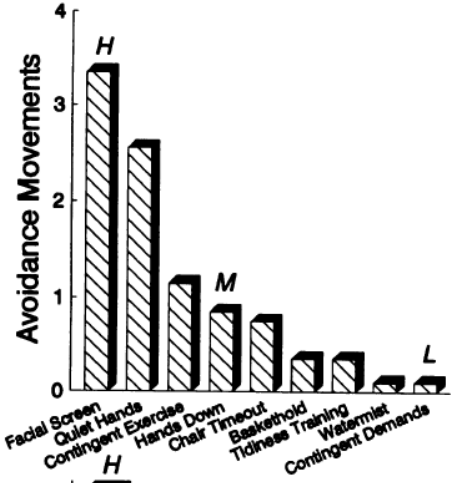
- Response blocking is a consequence-based strategy
- Use the least intrusive method for blocking pica
 - Arm
 - Mouth
- Potential limitations
 - Requires the immediately availability of another person
 - May evoke problem behaviour
- Develop a plan if problem behaviour occurs as a result of blocking

Differential Reinforcement of Incompatible Behaviour

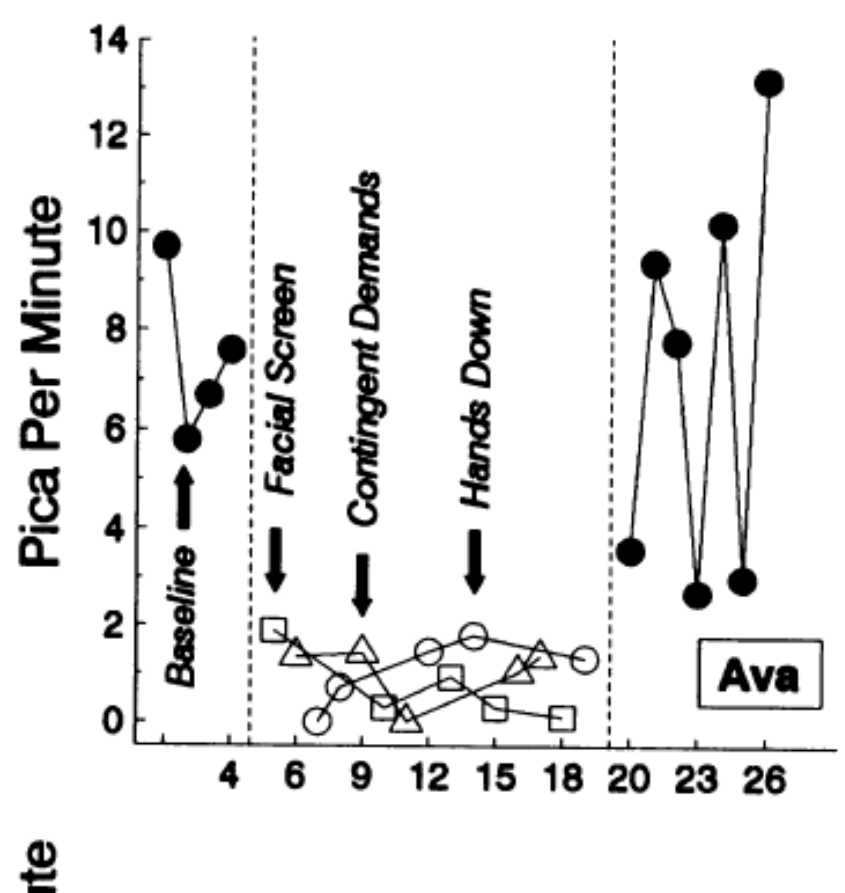
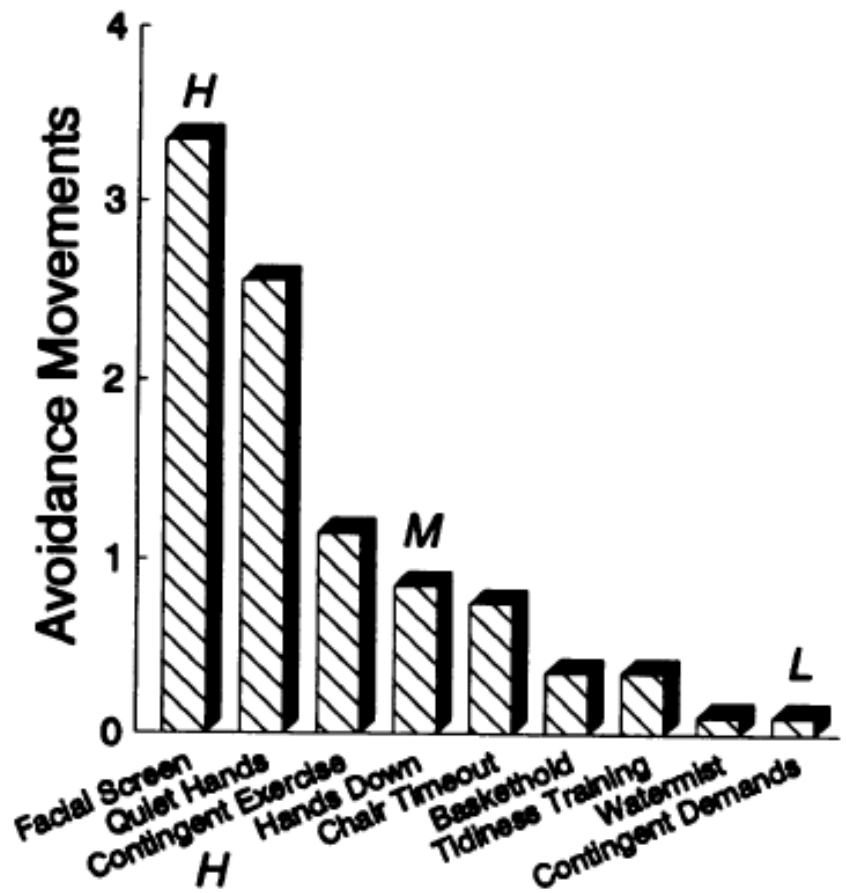
- Teach individuals to exchange pica substances for preferred foods/items (Kern, Starosta, & Adelman, 2006)
- Reinforce appropriate toy play that doesn't involve the mouth (DRI)
- Reinforce behaviours such as keep his/her mouth clean and hands on work (Smith, 1987)

Empirically Derived Consequences

- Punishment may be considered in cases where reinforcement-based procedures have failed or with life-threatening behaviours
- Fisher, Piazza, Bowman, Kurtz, and Lachman (1994) conducted an assessment of potential positive punishers for the treatment of pica



Stimuli



Considerations for the Use of Punishment

- Use a comprehensive reinforcement-based intervention
- Implement punishment in conjunction with reinforcement-based interventions
- Identify punishers empirically
 - Do not assume an event functions as a punisher!
- Closely monitor effects on behaviour
 - Punishment should work quickly
 - No effect → change the intervention

Requirements for use of Punishers

- Safety assurance
- Evidence that behaviour is sufficiently severe
 - Will greater harm come from doing nothing?
- Establish written guidelines for implementation
 - No deviation from these rules
- Procedures should undergo “peer review”
 - Nurses, case manager, psychiatrist, other behaviour analysts, behavioural ethics board

Requirements for use of Punishers

- Safety assurance
- Evidence that behaviour is sufficiently severe
 - Will greater harm come from doing nothing?
- Establish written guidelines for implementation
 - No deviation from these rules
- Procedures should undergo “peer review”
 - Nurses, case manager, psychiatrist, other behaviour analysts, behavioural ethics board

Resource for Families and Professionals

- Autism Treatment Network's Guide for Families
 - http://www.autismspeaks.org/sites/default/files/docs/sciencedocs/atn/pica_parents_guide.pdf
- Brian Iwata on assessment and treatment of self-injurious behaviour through WMU Autism Center for Excellence
 - <https://www.youtube.com/watch?v=9W2qSgi1R10>
 - <http://wmich.edu/autism/self-injury>