Increasing Ingestible Allergy Safety Skills In Autistic Children Using Derived Relational Training

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INTRODUCTION

- Autistic children are affected by food allergies and often struggle with flexible, conceptual understanding of danger (1). Traditional teaching methods rely on repetition and rote memory, which may not generalize to novel allergens or real-world situations (2). The responsibility to manage exposure often falls entirely on caregivers, which can be overwhelming and anxiety-provoking.
- Relational Frame Theory (3) builds on Skinner's Verbal Behavior by introducing derived relational responding (4), where individuals relate stimuli based on context, enabling flexible and generalized learning across situations. This supports complex language and cognitive development.
- This study evaluate the effectiveness of Derived Relational Training (DRT) to teach children to relate allergens, allergic reactions, and appropriate responses, moving beyond memorization to functional, generalizable understanding.
- Research Questions:
  - Q1: What is the effect of derived relational training in teaching autistic children to identify and respond to food allergens?
  - Q2: How does derived relational training promote generalization to novel stimuli?

METHODS

- Case series design (N = 3, Male: 100%; age: 5, 10, 12; received ABA for over 3 years; fully able to communicate verbally or using AAC.
- *Procedure*
  - *Trained A-B*: Allergen → Allergic Reaction
  - *Trained B-C*: Allergic Reaction → Verbal Response
  - *Tested A-C and C-D Relations*: Including novel/generalized stimuli
  - 10-20 minutes session were conducted within participant's existing therapy schedule.
  - IOA data were collected for 20% of the trials

RESULTS

- All 3 participants mastered trained (A) and derived relations (A→B, B→C), and generalized to novel allergens through untaught relations (A→D).
- Although training involved matching written verbal refusal cards, all participants spontaneously responded using untaught modalities:
- Natural untrained responses emerged without prompting, indicating generalization across both stimuli and response topography.

CONCLUSION

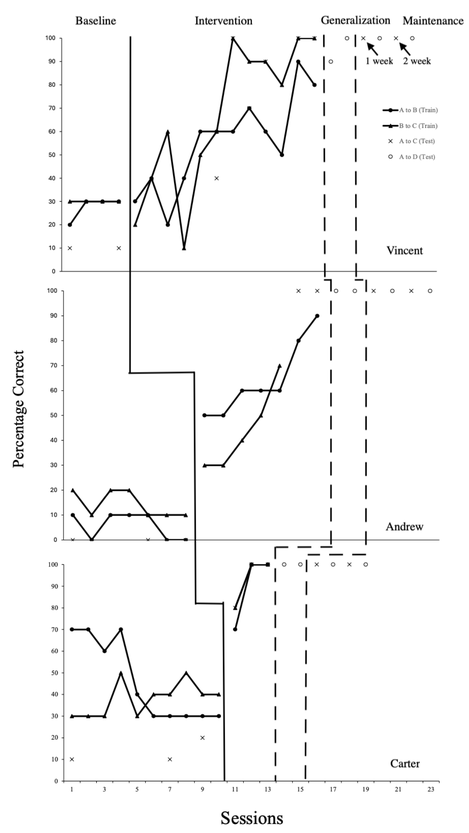
- DRT can help autistic children flexibly and meaningfully relate stimuli like allergens and health risks, potentially reducing reliance on rote safety rules and enabling independent, conceptually grounded avoidance behaviour.

Participant	Trained Relations (A→B, B→C)	Derived Relations (A→C)	Generalization/ Transformation of Stimulus Function (A→D, Novel Stimuli)	Spontaneous Verbal Refusal With Other Untrained Modalities
Vincent	Gradual acquisition (↑ sessions)	Achieved 100% accuracy post-mastery of Trained Relations	✅ (Walnut = Peanut)	✅ (AAC: Thumb down)
Andrew	Rapid acquisition	Achieved 100% accuracy simultaneously across relations	✅ (Walnut = Peanut)	✅ (”Verbal: No, thanks")
Carter	Rapid acquisition	Achieved 100% accuracy simultaneously across relations	✅ (Amoxicillin = Penicillin)	✅ (Verbal and Shaking Head: No, I do not want it)

Allergens don’t come with prompts: DRT helps build cognitive flexibility - move beyond memorization to generalizable safety skills.

Autistic children can learn to recognize and avoid allergens those are untaught or presented in unfamiliar ways.

Figure. 1. Percentage of correct responses during baseline, intervention, generalization, and maintenance phase for Vincent, Andrew, and Carter.



Derived Relational Responses Training Data Collection

Participant: CD

Date:	18-Sep		Session#	1		Phase:	Baseline	
Relations: A --> B			Relations: B-->C			Relations: A--> C		
Trial #	Stimuli	Response Score	Trial #	Stimuli	Response Score	Trial #	Stimuli	Response Score
1	1	Correct	1	2	Incorrect	1	1	Incorrect
2	2	Incorrect	2	6	Incorrect	2	2	Incorrect
3	4	Correct	3	1	Correct	3	3	Incorrect
4	3	Correct	4	5	Incorrect	4	4	Incorrect
5	5	Incorrect	5	7	Incorrect	5	3	Incorrect
6	6	Correct	6	3	Incorrect	6	4	Correct
7	8	Incorrect	7	4	Incorrect	7	2	Incorrect
8	7	Correct	8	9	Incorrect	8	1	Incorrect
9	4	Correct	9	10	Correct	9	2	Incorrect
10	6	Correct	10	8	Correct	10	4	Incorrect
Total Correct Response		70	Total Correct Response		30	Total Correct Response		10

Date:	20-Sep		Session#	2		Phase:	Baseline	
Relations: A --> B			Relations: B-->C			Relations: A--> C		
Trial #	Stimuli	Response Score	Trial #	Stimuli	Response Score	Trial #	Stimuli	Response Score
1	6	Incorrect	1	2	Incorrect	1		
2	7	Correct	2	3	Incorrect	2		
3	4	Correct	3	8	Correct	3		
4	2	Correct	4	9	Incorrect	4		
5	5	Correct	5	6	Incorrect	5		
6	3	Incorrect	6	1	Incorrect	6		
7	1	Incorrect	7	7	Incorrect	7		
8	8	Correct	8	10	Incorrect	8		
9	4	Correct	9	4	Correct	9		
10	8	Correct	10	5	Correct	10		
Total Correct Response		70	Total Correct Response		30	Total Correct Response		

Date:	23-Sep		Session#	3		Phase:	Baseline	

Figure 3. Visual Presentation of Relational Frames During Intervention and Generalization Phase for Andrew.

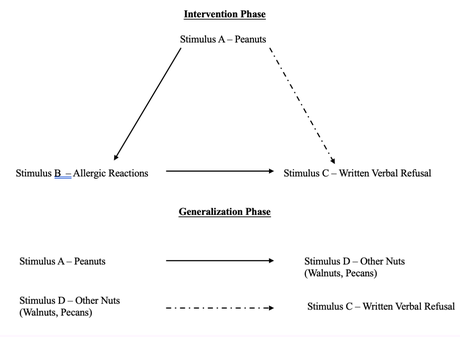
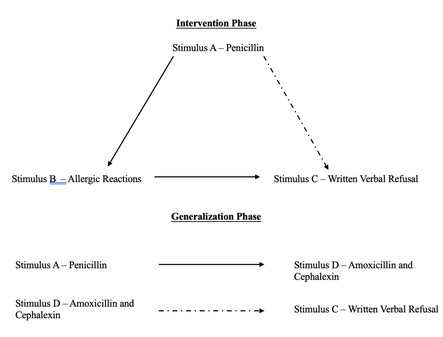


Figure 4. Visual Presentation of Relational Frames During Intervention and Generalization Phase for Carter.



References

(1) Giannakakos et al., 2020
(2) Giannakakos et al., 2021
(3) Dixon et al., 2021
(4) Belisle et al., 2020

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