

Teaching WH-Questions Isn't Enough

Building True Conditional Discrimination

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This presentation is for informational purposes only and does not constitute clinical or legal advice.
Follow up with a trained professional is recommended to develop a specific plan for your child or
student

Objectives

1. Discuss the difference between a tact and an intraverbal tact and the role of convergent and divergent control in the development of true question discrimination
2. Analyze how traditional teaching approaches can lead to faulty stimulus control and how a knowledge of the principles of verbal behaviour can help us be more effective and efficient teachers
3. Outline a cumulative instructional sequences to establish discriminated responding across WH forms, adjectives, features, functions, and class relations.
4. Discuss how to incorporate this approach into existing programming to promote generalization and maintenance of intraverbal tacting



Why is this so hard?

You have a learner with:

- 200+ tacts
- Colours and shapes
- Actions
- Functions

But when you put them together it falls apart

What is a Tact?

Pure Tacts vs. Intraverbal-Tacts

Pure Tact: Non-verbal SD → response

Intraverbal Tacts: controlled by

- A verbal stimulus (question).
- A visible object.

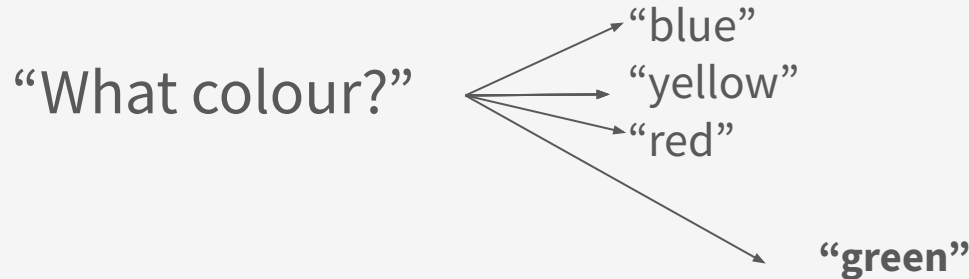
Example:

“What colour is it?” +  = “Blue”

Convergent and Divergent Multiple Control

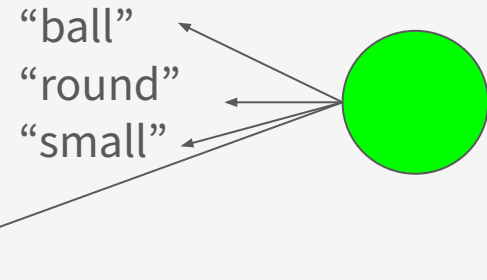
Convergent Control

Multiple stimuli have control over a single response



Divergent Control

A single variable evokes multiple response



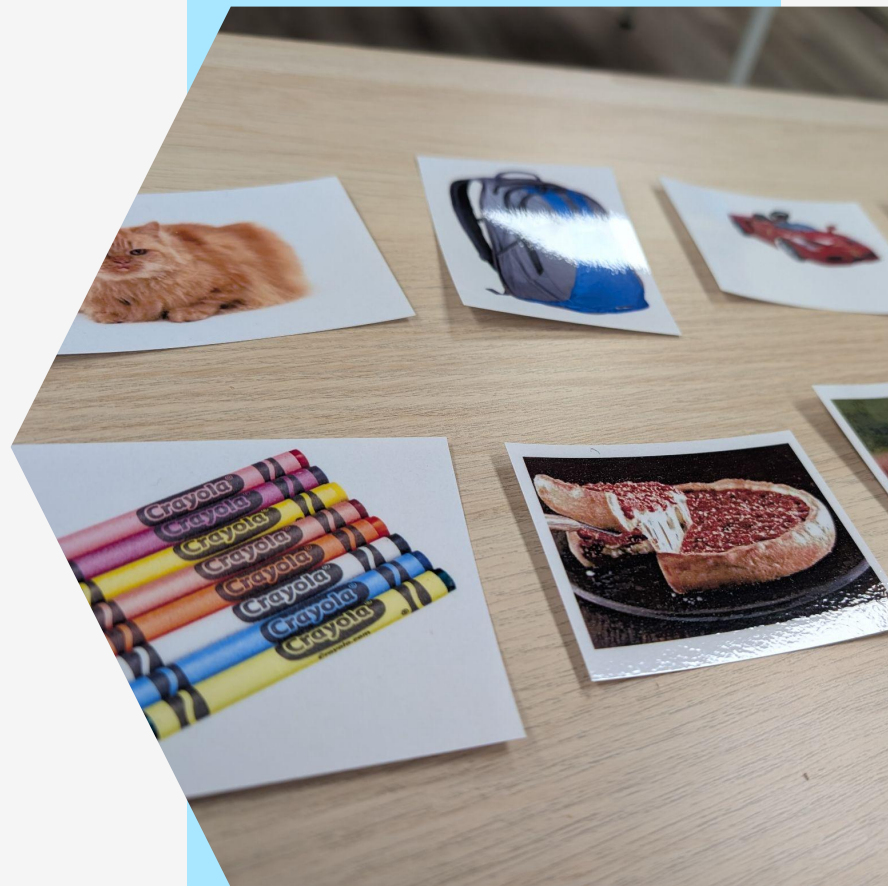
Testing Discrimination

Test question discrimination

- Array or stack of mastered stimuli
- Hold up or point to a random picture and ask 1-2 mastered questions per picture
- Should be able to answer any mastered question about any picture

Determine whether responding is controlled by:

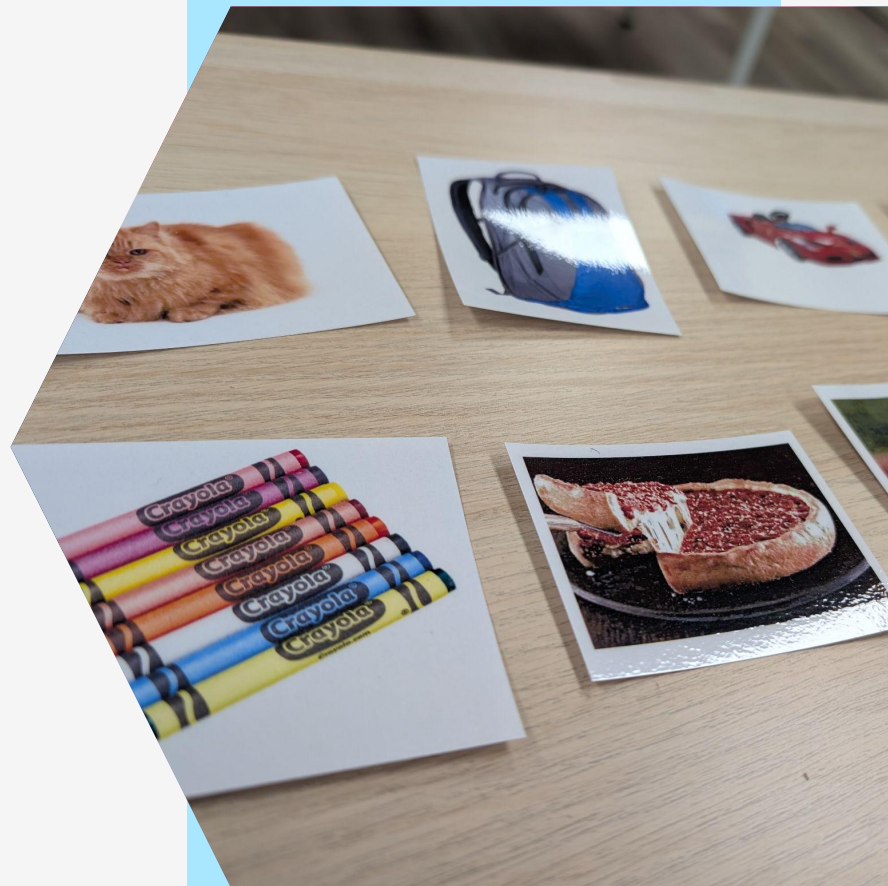
- The object.
- The question.
- Both sources of control.



Testing Discrimination

Phase 1 - Element Tacts

- Two or Three component discrimination
- E.g. Object vs. Colour, Agent vs. Action vs. Location





What is it?
What colour?



What colour?



What colour?



What is it?



What is she doing?
Who is it?



What is she doing?



Who is it?



What is he doing?

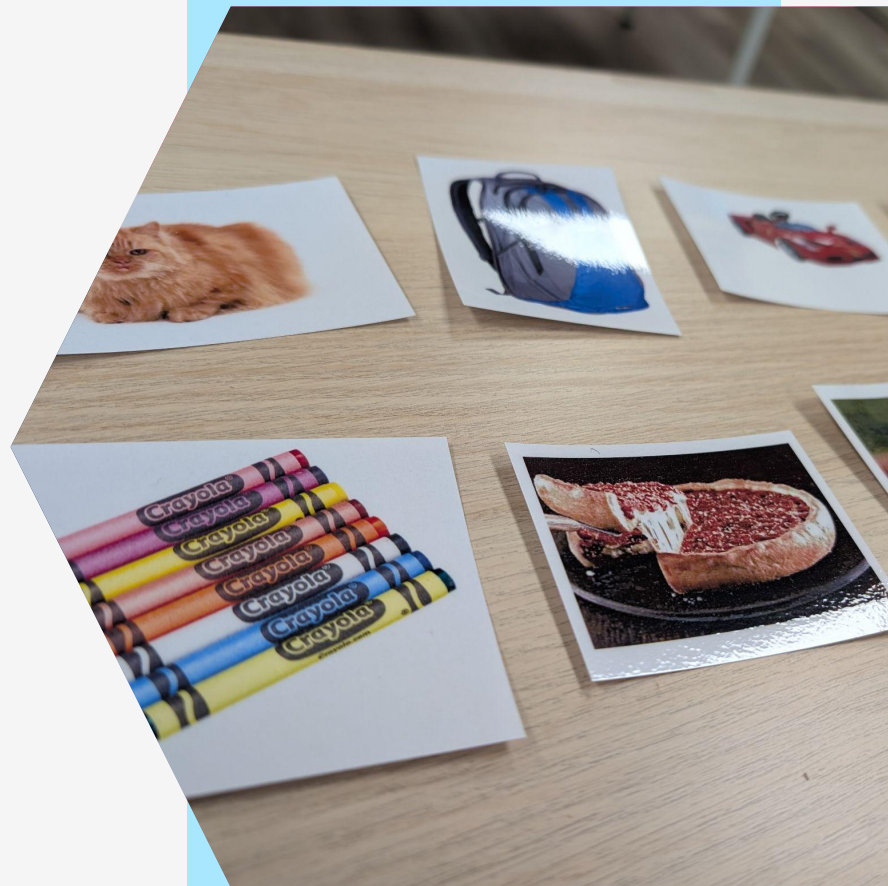
Testing Discrimination

Phase 1 - Element Tacts

- Two or Three component discrimination
- E.g. Object vs. Colour, Agent vs. Action vs. Location

Phase 2 - Property of Objects

- Multiple questions about the same object
- Parts and features, class, function, etc.





What is it?

What sound does it make?

What colour?

What does a car have?

What do you do with a car?

What is a car for?

What is a car?

Testing Discrimination

Phase 1 - Element Tacts

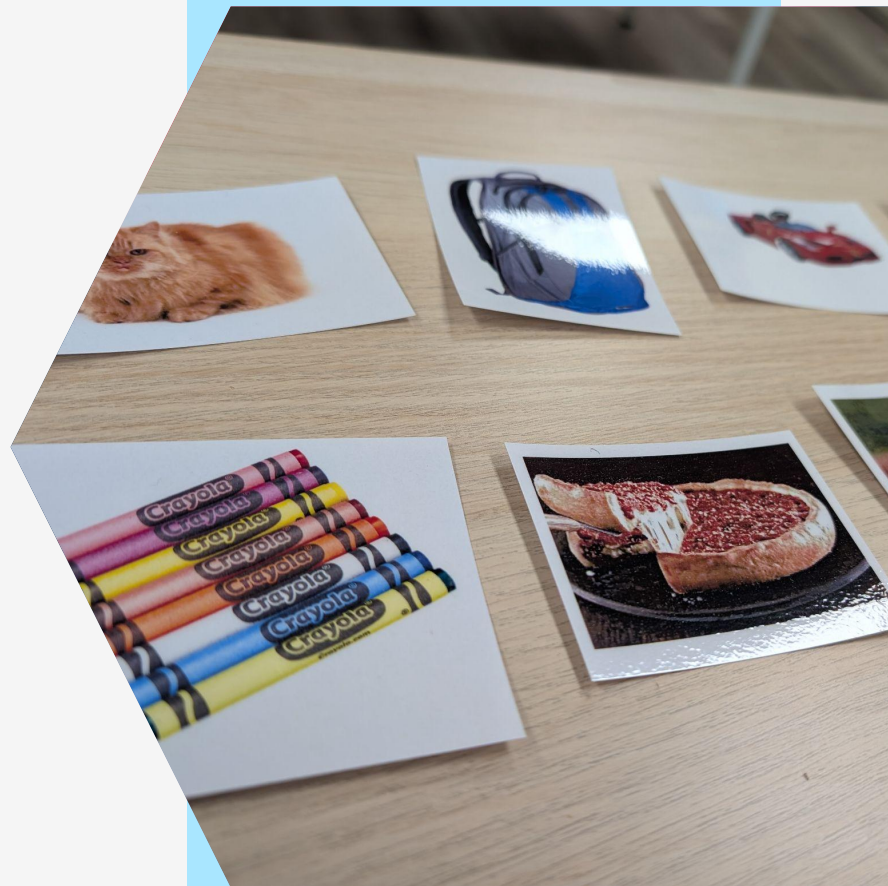
- Two or Three component discrimination
- E.g. Object vs. Colour, Agent vs. Action vs. Location

Phase 2 - Property of Objects

- Multiple questions about the same object
- Parts and features, class, function, etc.

Phase 3 - Two-Element Questions on Events

- Answer multiple questions about simple and complex scenes
- Agent, action, location, prepositions, etc.





Where are they?

Who is cooking?

What is mommy doing?

What is mommy stirring
with?

Where is the glass of milk?

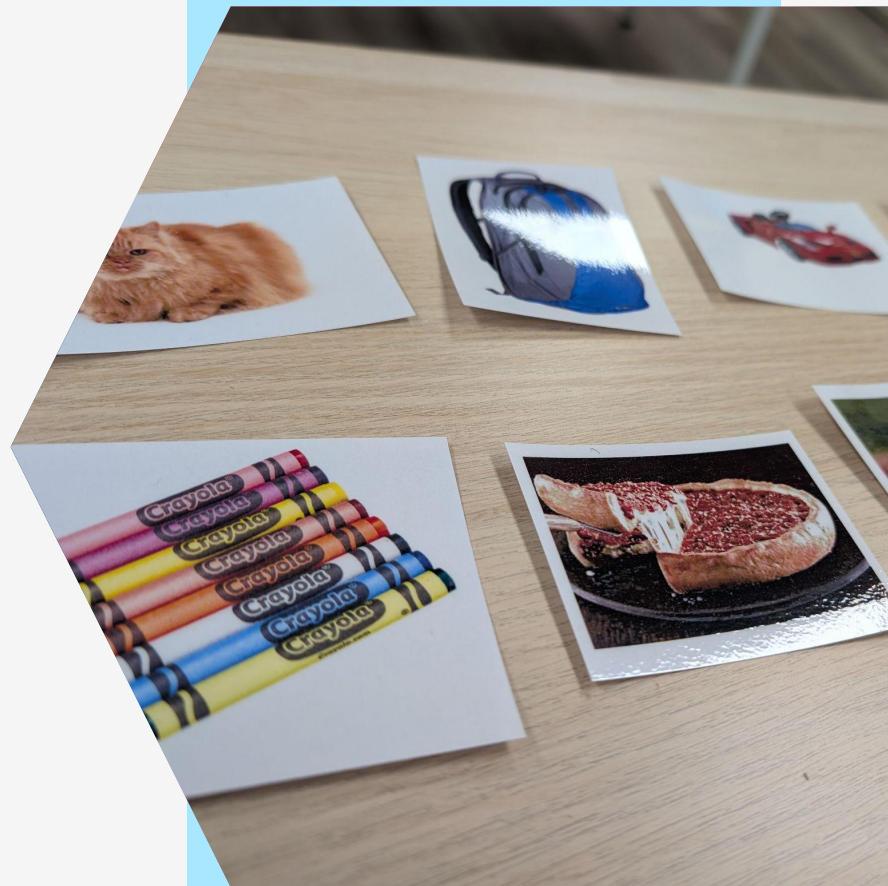
What is in the frying pan?

What colour are the
flowers?

Testing Discrimination

Common Errors

- Label the item regardless of the question (sometimes even before you've asked the question)
- Give compound answers
- Guess the response



Typical Development



Develops around 2.5-3yrs

Discriminating between multiple questions about the same object typically develops around 2.5 to 3 yrs. (Aragon et al., 2024)

Errors Persist in Autistic Children

Intraverbal-tact conditional discrimination errors often persist, even after their tact repertoire and vocabulary expand beyond 300 different tacts. (Sundberg & Sundberg, 2011)

Discrimination in the VB-MAPP & ABLLS-R

ABLLS-R Labelling Sequence:

- Tact common objects, actions, features, functions, class, etc.
- No assessment of intraverbal tacts/question discrimination

ABLLS-R Intraverbal Sequence:

- Answer What, Where, Who and When questions without any test of discrimination

H30 in the ABLLS-R - Discrimination of questions asked about items and activities. The student discriminates whether they are being asked a “What,” “Where,” “Who,” or “When” question (Partington, 2010).

Discrimination in the VB-MAPP & ABLLS-R

VBMAPP Tact Sequence:

- TACT 7M 50 generalized tacts
- 8M Tact 10 actions
- 9M Noun-Verb Combinations
- 10M Tact up 200 actions and objects

TACT 11M in the VB-MAPP - Tacts the colour, shape, function of 5 objects (15 trials) when each object and question is presented in mixed order (Sundberg, 2008).



Clinical Practice Implications

Faulty Stimulus Control

Not always necessary

Some learners will naturally pick up on the verbal stimuli and learn to intraverbally tact without explicit teaching

Effective Until it Isn't

Basic tact training often falls apart or requires a lot more time, repetition, multiple exemplars, etc. without explicit training and support



How to Avoid Faulty Stimulus Control

Test for Discrimination

If we're only teaching skills in isolation, we may not notice problems until much later

Intersperse Questions

Continually ask mastered questions about current stimuli

Teach Intraverbal Tacting

Teach learners to attend to multiple stimuli - autoclitic frames procedure

Exploiting the Power of Autoclitic Frames

What is an autoclitic frame?

A verbal frame with fixed parts and variable parts.

The frame has a consistent, "fixed" grammatical structure.

Example: In the (kitchen), It says (Moo), She is (running)

The frame exerts intraverbal control over the variable elements

(Palmer, 2016)

Exploiting the Power of Autoclitic Frames

Structured Questions	Autoclitic Frame	Variable Component/ Intraverbal Tact
Initially ask a consistent, specific questions	Teach the learner to respond to the question using an autoclitic frame that is formally similar to the question	Pair that autoclitic frame with potential responses so the frame exerts intraverbal control.
“What does it say?”	“It says”	“Meow”

Benefits of This Procedure

Intraverbal control develops between the words.

What is it? evokes “It’s a”

“It’s a” evokes an object name (noun).

The frame aids discrimination of the question.

- **Helps discriminate question types.**
- **Supports generalized responding.**
- **Encourages sentence structure.**

Intraverbal-Tact Research

2020, degli Espinosa et al.

- Described and evaluated a procedure to establish multiply controlled tacting in 2 children with autism
- Number names, colours, animal names, item names, and animal sounds.

2021, Meleshkevich et al.

- Extension and replication of study to 3 additional participants
- Colour vs. Item took longer than other discriminations

Intraverbal-Tact Research

2021, degli Espinosa et al.

- Compared teaching with and without autoclitic frames procedure
- All four children demonstrated generalized intraverbal-tacting.
- two only achieved intraverbal tacting in the frame condition
- one the frame condition was more efficient



Teaching Question Discrimination Procedure



Teaching Question Discrimination

Prerequisites:

- **Basic tacting** (at least 100-200 items, colours, animals, etc.)
- **Two-word echoic**

The learner must have mastered each component before putting into a discrimination

Teaching First Tact Discrimination

- You can start with:
 - Number vs. colour
 - Letter vs. colour
 - Shape vs. colour
 - Item vs. colour

Select the initial discrimination based on the learner's areas of strength.



Echoic Training

Teaching Colour vs. Number

1

Echoic training “colour green”, “colour red”, “colour blue” and “number 3”, “number 5”, “number 4” etc.

Increases intraverbal control of the verbal stimulus **Colour** and the name of a colour vs. **Number** and the name of a number

Echoic Training



Autoclitic Tacting

2

Establish tacting of numbers with autoclitic frame **Number [X]** with black numbers on white paper and colours with autoclitic frames **Colour [X]** colour swatches

Present 4 numbers and ask “**What number?**” while point to each stimuli.

Response is:

- Partly an echoic
- Partly intraverbally controlled
- Partly a tact (specific sample)

Initially provide full verbal prompt then fade

Tact with Autoclitic Frame

Autoclitic Tacting - Numbers



Teaching Multicomponent Discrimination

3

When the autoclitic tacts have been established in steps 2, run discrimination trials

Run echoic trials as a priming session

- Present 4 coloured numbers on table
- Ask 1 of the 2 questions about each stimulus - ask both questions for one of the stimuli
- Initially, use an intraverbal filler when pointing to the relevant stimuli

Multicomponent Discrimination

Colour vs. Number

Echoic Priming





Prompting

- **Use least-to-most prompting**
- Autoclitic frame: e.g. “What colour” → “Colour...”
- Autoclitic frame & answer: e.g. “Colour blue”

Common Errors

Tact Errors

- The learner is making errors when labelling the color, number, item, etc.
- Tact training and increasing fluency

Incorrect autoclitic frame

- Responses like “Number yellow”
- Return to Step 2
- Reintroduce echoic priming

Not attending to verbal SD

- Instructor asks “What colour?” they say “Number 4”
- Use textual or picture prompts to support attending to the SD



Textual Prompts

1. Present textual prompts for the autoclitic frame.
2. Deliver the SD without showing the target stimuli and immediately prompt the learner to select and say the correct autoclitic frame
3. Then present the target stimuli

Note: the textual prompts should always be presented in the same position



Textual Prompts

Examples of how to fade the textual prompts:

- Have the learner point to blank cue cards
- Point to the table without cue cards
- Give SD before presenting stimuli

Question Discrimination

Textual Prompts

With Textual Prompt



Autoclitic Frames

Skill	Question	Autoclitic Frame	Example
Tact Object	What is it?	It's a ____	"It's a car"
Tact Colour	What colour?	Colour ____	"Colour blue"
Tact Shape	What shape?	Shape ____	"Shape circle"
Tact Number/ Letter	What number? What letter?	Number ____ Letter ____	"Number four" "Letter B"
Animal Sounds	What does a (animal) say? What says (animal sound)?	A (animal) says ____ A ____ says (animal sound)	"A cow says moo" "A pig says oink"
Tact Class	What is a ____?	A ____ is a ____	"A car is a vehicle"
Parts of Items	What does a (item) have?	A (item) has ____	"A cat has whiskers"
Functions	What do you (action)? What do you (action) with?	You (action) a ____ You (action) with a ____	"You kick a ball" "You eat with a fork"

Example Skill Progression

From Tacting to Functions

Nouns	Colour	Sounds	Category	Parts	Prepositions/Places	Function
Yes/No-Is it X? Conditional- Is it X or Y?						
	What colour?	What colour?	What colour?	What colour?	What colour?	What colour?
	What is it?	What is it?	what is it?	what is it?	what is it?	what is it?
		What does it say?	What does it say?	What does it say?	What does it say?	What does it say?
		What is a ____?	What is a ____?	What is a ____?	What is a ____?	What is a ____?
		What does it say?	What does it say?	What does it say?	What does it say?	What does it say?
		What is a ____?	What is a ____?	What is a ____?	What is a ____?	What is a ____?
			What does it have?	What does it have?	What does it have?	What does it have?
				Where is it?	Where is it?	Where is it?
				Where do you find it?	Where do you find it?	Where do you find it?
				What is it for?	What is it for?	What is it for?

Category/Class

Task Objective: The learner will label the class when given the member and asked “What is a ___?”

Prerequisites:

- Fluently discriminates item vs. colour vs. sound

Autoclitic Frame:

What is a (item)? A (item) is a (category)

Category/Class

Teaching Procedure:

1. Pair class name with item through sorting activity
 - a. Sort items by class
 - b. Ask mastered questions throughout e.g. what is it, what colour, what does it say, etc.
 - c. Model “A (item) is a (class)”
2. Once paired name of class with items, intersperse questions about class e.g. “What is a (item?)” R: “A (item) is a (class)”

Parts of Items

Task Objective: The learner will label and identify the parts or features of objects, at least 2 parts of 25 items and the learner will be able to name distinctive features when asked “what does a ____ have?”

Prerequisites:

- Fluently discriminates item vs. colour vs. sound vs. category

Autoclitic Frame:

What does a (item) have? It has (salient part)

Parts of Items

Teaching Procedure:

1. Teach the learner to identify and label the parts of common items
 - a. Where is the (part)?
 - b. What part is it? + point to part of item
 - c. Intersperse mastered discrimination questions
2. Tact only the most salient part(s) of items
 - a. “What does a (item) have?” “ It has _____”

Similar Progression with Events



Event Discrimination

Task Objective: The learner will answer Who, What & Where questions about an event

Prerequisites:

- Tacts people, actions and location.
- At least a two-word echoic

Autoclitic Frames:

Who is it? It's _____

What are they doing? They are _____ing

Where are they? In the _____ or At the _____

Event Discrimination

Teaching Procedure

Step 1

Autoclitic Tacting

Use the autoclitic when tacting the person, action or location

Possibly introduce during initial tacting programs

Step 2

Question Discrimination

Teach initial discrimination

e.g. Who is it? Vs What are they doing?

Step 3

Increase Discriminations

Introduce additional questions

E.g. Who is it? Vs What are they doing? Vs Where are they?

Autoclitic Frames

Skill	Question	Autoclitic Frame	Example
Tact Agent	Who is it?	It's ____	"It's mommy" "It's a man"
Tact Action	What is she/he doing? What are they doing?	He is ____ She is ____ They are ____	"He is running" "She is dancing" "They are driving"
Tact Location	Where is he/she? Where are they?	In the ____ At the ____	"In the bedroom" "At the beach"
Features	What colour is his ____	His ____ is ____	"His shirt is blue"
Prepositions	Where is the ____?	The ____ is ____	"The cup is on the table"
Functions	What is she (actioning)? What is he (actioning) with?	She is (actioning) ____ He is (actioning) with ____	"She is eating soup" "He is eating with a spoon"

Example Skill Progression

From People to Functions

People	Actions	Locations	Features	Prepositions	Functions
Yes/No – Is it X? Conditional – Is it X or Y?					
	Who is it? What is he doing?	Who is it? What is he doing? Where is he?	Who is it? What is he doing? Where is he? What colour is his top? What colour is his hair?	Who is it? What is he doing? Where is he? What colour is his top? What colour is his here? Where is the juice?	Who is it? What is he doing? Where is he? What colour is his top? What colour is his here? Where is the juice? What is he drinking? What is he drinking with

Implementation and Maintenance

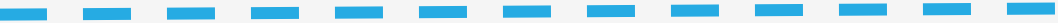
Mastery Based on Discrimination

To master a current target, needs to be able to answer the question in discrimination

Mastered Question Charts

Make it easy for staff to remember mastered questions with posted charts or SDs on the back of stimuli

Transition to Intraverbal



Intraverbal tacting leads to Intraverbals

If you have successfully taught intraverbal tacting, transitioning these skills to intraverbal is incredibly easy

In Summary

- Question discrimination often falls apart because of faulty stimulus control.
- Traditional programming can result is learners not acquiring generalized intraverbal tacting
- Research shows that intraverbal tacting is a common deficit in autistic children and these methods improve generalized intraverbal-tacting.
- Explicitly teaching intraverbal tacting using the autoclitic frames procedure can lead to more efficient and effective teaching of question discrimination
- Layering skills and continually teaching and testing for question discrimination can lead to generalized intraverbal tacting

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Handouts and Resources

Following the presentation, you will receive an email for AlphaBee that will include:

- Presentation slides
- Example program template
- Example Data Sheet

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