Teaching Observational Learning Repertoires to Children with Autism

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Special thanks to...

- Dr. Elif Tekin-Iftar
- Research Institute for the Handicapped at Anadolu University
- Staff of Alpine Learning Group
- Students at Alpine Learning Group
Overview...

* Observational Leaning
* Research to date with children with autism
* Preliminary Assessment of component skills
* Case illustrations with a focus on skills to teach
Why Observational Learning
What is Observational Learning?
At the foundation of observational learning is imitation

* Imitation: behavior that duplicates some properties of the behavior of a model

(Catania, 2007)
Observational learning requires understanding of contingencies – the learner has to determine which responses he should incorporate in his repertoire and which ones he should not.
Selective imitation
Observational Learning

* The acquisition of novel operants as a result of observing contingencies related to the action of others. (Catania, 1998)
* Observer does not necessarily have to contact the contingencies
Behavior Analyses of Observational Learning


Behavior Analyses of Observational Learning

* Observer attends to a complex stimulus that includes a modeled response and the subsequent consequence. Masia and Chase (1997)
* The modeled response and consequence serves as a complex discriminative stimulus for the demonstration of that response by the observer later in time.
* Imitation of a modeled action is influenced by the history of reinforcement, generalized imitation and stimulus generalization.
Teacher asks the model, “What is two plus two?”

The model responds correctly, “four”.

The teacher praises the model for answering correctly.

The teacher, three days later asks the observer to add two plus two.

**Complex** discriminative stimulus for imitation at a later time.

This is discriminative for the observer to attend to the interaction.
The observer says, "four"

The observer responds correctly, "four"

The teacher praises the observer for responding correctly.

This response is influenced by stimulus generalization, history of reinforcement for imitation, generalized imitation.
Teacher asks the model, “What is two plus two?”

The model responds Incorrectly, Says, “five”

The teacher says, “no that’s not right, it’s four”

The Teacher, three days later asks the observer to add two plus two

Complex discriminative stimulus for engaging in an alternative response to the modeled response

This is discriminative for the observer to attend to the interaction
The observer says, “four”.

This response is influenced by stimulus generalization, history of reinforcement for responding to the teacher’s instruction or for saying something different.

The teacher praises the observer for responding correctly.
Minimally observational learning requires attending to listener behavior for discrimination and imitation.
Motivation?
Observational Learning Research

- Charlop, Shreibman, Tryon (1983)*
- Davies Lackey (2005)*
- DeQuinzio & Taylor (in press) *
- Egel, Richman & Koegel (1981)*
- Goldstein & Mousetis (1989)
- Griffen, Wolery, & Schuster (1992)
- Ogden (1995)
- Pereira-Delgado and Greer (2009)*
- Rehfeldt, Latimore & Stromer (2003)*
- Taylor, DeQuinzio & Stine (2012)*
- Tekin-Iftar & Birkan, (2010)*
- Werts, Caldwell, Wolery (1996)

*participants with autism
This student acquired the words in baseline

Notice how well this child with autism attends to the model, the teacher and the stimuli
This student did not acquire the words

Notice this child does not attend to the model
Observational Learning as an independent variable (e.g., will a child learn new sight words as a result of observing a competent model display these responses and be reinforced for these responses?)

* Unclear what leads to increase in performance

* Only a few studies have examined observational learning as a dependent variable (e.g., will a child learn new sight words during observational learning sessions if they are taught to discriminate the contingencies applied to the model)
Increasing observational learning of children with autism: A preliminary analysis

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We evaluated the effects of monitoring responses on the acquisition of sight words with 3 children with autism. In the training condition, we taught participants a vocal imitation and matching response related to a peer’s reading response. In another condition, participants were exposed only to a peer’s reading responses. Participants read the words more accurately during test sessions when the monitoring response was required. Results and discussion highlight the importance of identifying component responses of observational learning and the need for additional research in this area.

Key words: observational learning, autism, monitoring response

Observational learning has been defined as learning that results from observing the responding of others and the consequences of such responding (Catania, 2007). Research has demonstrated that children with autism do not readily learn by observing others (Varni, Lovas, Koegel, & Everett, 1979), and they show deficits in skills that may be associated with observational learning, such as attending (Patten & Watson, 2011) and imitating (Williams, Whiten, & Singh, 2004). Despite these deficits, only a few studies have attempted to assess or teach children with autism to learn through observation (e.g., Charlop, Schreibman, & Tyron, 1983; Rehfeldt, Latimore, & Stromer, 2003; Werts, Caldwell, & Wolery, 1996), and only one has focused directly on training observational learning repertoires (Perreira-Delgado & Greer, 2009).

Engaging in monitoring responses, such as attending to and imitating the behavior of the model, and engaging in responses that indicate attention to relevant instructional stimuli could potentially facilitate observational learning (Taylor & DeQuinzio, 2012). To date, research has not successfully isolated or assessed the effects of monitoring responses on observational learning.

In this preliminary investigation, we sought to determine if teaching three children with autism to monitor their peers’ reading responses would lead to the acquisition of sight words. Monitoring consisted of imitating the peer’s response and attending to the instructional materials as demonstrated by a matching response. In one condition, the participant observed a peer reading words presented by a teacher while the teacher prompted the monitoring responses. In another condition, we assessed the acquisition of a different set of sight words when participants were exposed to the instructional interaction between the teacher and the peer but the teacher did not prompt monitoring responses.

METHOD

Participants and Setting

Three children with autism participated: Jack, 4 years 5 months, Eric, 4 years 8 months, and Rebecca, 3 years 8 months. Their age-equivalent scores on the on the Peabody Picture Vocabulary Test were <1.9 years, 2 years, and <1.9 years, respectively. Participants could follow two-step instructions, match words, imitate vocal responses, and label pictures of nouns, and they all had experience with token economies. Two children with autism, aged 4 and 7 years, served as peer models and could read words with clear articulation. All sessions took place in a classroom and were implement-
What we did

* Multi-element design
* Compared acquisition of sight words in two conditions
* In one condition student is exposed to model reading words and being reinforced for reading the words
* In other condition a monitoring response was taught
  * Imitation following the model
  * Matching chip to word card being read
* Participants acquired the sight words in fewer sessions in the condition where the monitoring responses were required.
* For two of the participants, responding in the exposure condition improved over time, potentially indicating generalization.
* For one participant, responding did not increase in the exposure condition until monitoring was prompted in that condition.
Rebecca

Percentage of Words Read Correctly

Sessions

Training set

Exposure set

Started Teaching with Exposure Set

1 week maintenance

2 week maintenance

3 week maintenance
Results

Percentage of Words Read Correctly During Test Sessions

Jack

- Training Set
- Exposure Set

- Two-week maintenance
- Two-month maintenance
Results

Percentage of Words Read Correctly During Test Sessions

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three-week maintenance
If observational learning requires discrimination of contingencies...

* How do you teach children with autism to understand differential feedback to the model?
  
  - Pereira-Delgado and Greer (2009)
    
    * – first to document acquisition of discrimination of contingencies
Sought to extend Pereira-Delgado and Greer (2009) by teaching child with autism to indicate discrimination of the contingencies by imitating the responses that are reinforced, and saying, “I don’t know” to responses that were followed by punishment.

Looked at acquisition of unknown labels in two conditions.
Discrimination of reinforced from nonreinforced responses

- Two Sets of unknown labels
- Child exposed to two conditions
  - Exposure of instruction between teacher and adult
  - Exposure of instruction with opportunity to imitate the adult and prompts for saying, “I don’t know” when the model is incorrect
- Teacher presents trial to adult and delivers one of two consequences
  - Reinforcement: “Good, that’s right” and access to iPad
  - Punishment: “No that’s wrong” and no “iPad”
Learning to discriminate correct from incorrect responses
Assessment of component responses

- Attending
- Imitation
- Discrimination of contingencies
Variables to consider

* Types of responses
  * Motor (e.g., uses correct tool to open the box)
  * Vocal (e.g., mands, tacts, intraverbals)
  * Receptive (e.g., points accurately to pictures following model)
  * Social (e.g., sits next to peer after observing a model be reinforced for the response)
  * Other academic responses (e.g., concept formation)
Variables to consider

- Imitation with no delay, with a delay
- Learning versus Performance
  - Increasing skills already in learner’s repertoire
  - Teaching a new skill
- Access to reinforcement / no access to reinforcement
- Functionality of the consequences provided for model’s response
Will participants imitate modeled responses if a differential consequence is provided:

* Responses that lead to a direct outcome (edible)
  * Direct reinforcement
  * Extinction trials / no reinforcement
* Will participants imitate modeled responses if a differential consequence is provided: teacher feedback
  * Praise / reinforcement
  * Punishment
Graph showing verbal feedback to model with a 5-second delay, with data points for Mark, Rose, Matt, Kerri, and Lauren. The x-axis represents test sessions, and the y-axis represents the number of responses that conformed to the modeled contingency. The title of the graph is "Verbal Feedback to Model Test - 5s Delay." The data points indicate a pattern of punished trials over the test sessions.
What we found

* Participants more often imitated the responses and avoided imitating responses accurately when outcome / consequence was direct access to tangible

* Participants’ responses to praise versus correction / punishment was variable but they more often imitated responses even if they were punished
Component responses?
Attending

* Makes eye contact with adults
* Visually tracks adult’s actions
* Looks at peers when instructed
* Visually tracks peers when instructed
* Visually tracks peer’s actions
* Looks at peers and adults for increased durations
Attending

* Observes two different actions at the same time
  * Tacts actions after viewing
* Observes increased number of actions at the same time
  * Tacts actions after viewing
* Generalized motor, object, and vocal imitation
  * Adult
  * Peer
  * Imitates actions of others when instructed “Do what (person) is doing / did”

* Imitation of actions that lead to a desired outcome
  * Toys
  * Retention of modeled actions
  * Increased delays in time
* Imitation of group behavior
Imitation

* Imitation of actions that lead to a desired outcome
  * Edibles
  * Social praise

**This child is unable to imitate the response
Discriminating Consequences

* Imitation of responses that lead to desired outcome, avoids response that do not
Discriminating Consequences

* Tacts consequences
  * Praise
  * Punishment
  * No reinforcement
Discriminating Consequences

- Imitates responses followed by praise (e.g., “Yes, that’s right!”)
- Does not imitate responses followed by punishment (e.g., “No”)
Discriminating consequences

* Observes teacher reinforcing a particular response
* Child observes interaction
* Child is asked to choose the activity to determine if he chooses to engage in the response that was reinforced
Discriminating Consequences

* Noah is taught to imitate responses followed by reinforcement
* And to say, “I don’t know” when responses are punished
* Continue to isolate potential component responses
* Normative data
* Empirically evaluate responses
* Design procedures to demonstrate model changing feedback in response to feedback
* Observational learning within larger groups, more distracting stimuli
* Identify effective research designs / procedures
Thank you!