

# Resurgence With and Without an Alternative Response- in Applied Behavior Analysis



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# Introduction

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## *RESURGENCE WITH AND WITHOUT AN ALTERNATIVE RESPONSE*

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Resurgence is the reemergence of a previously reinforced response that occurs after the elimination or reduction of reinforcement for an alternative response. Resurgence is problematic in the context of treatment because the reemergence of a previously reinforced destructive response could be detrimental to treatment gains. In the current translational study, we examined a modified resurgence procedure in which the alternative response was either present or absent during extinction. Four participants were exposed to three phases that consisted of (1) reinforcement of a target response, (2) extinction of the target response and differential reinforcement of an alternative response, and (3) extinction of both responses. Results for four out of five assessments showed greater resurgence when the alternative response was absent during Phase 3. Results suggest that more robust resurgence might occur if the alternative response is not available as opposed to the alternative response contacting extinction.

*Key words:* differential reinforcement, extinction, resurgence



# Resurgence



# Resurgence vs Extinction Burst vs Spontaneous Recovery



Resurgence  
continued...



# Methodology

## Participants:

- Andy, Nate, Connor (4 y/o males): Diagnosed with Autism Spectrum Disorder (ASD)
- Sean (5 y/o male): Neurotypical

## Study Requirements:

- All participants had at least one mastered task, measured using a free operant procedure.
- Participants were required to sit in a chair for at least 5 minutes without exhibiting problem behaviors.

## Materials:

- Electronic devices with appropriate software for accurate data collection (computer and camera)
- 1 table with 2 chairs
- Participant-specific materials

## Setting:

- Conducted in an early intervention facility
- Nate, Andy, and Connor: Placed in cubicle work areas
- Sean: Placed in padded treatment room





# Methodology

## Response Measurement & Interobserver Agreement:

- All experimenters collected data on computer devices, meanwhile the second observer collected data via a recorded video.
- Each participant has different tasks, Nate has to stack rings in 2 ring stackers, Andy had to place 2 balls in 2 clear bins, and Connor and Sean sorted blocks by color
- Each observer's data was divided into 10 second intervals.

## Pre-Experimental Assessment

- The experiments conducted a paired stimulus preference assessment that included 6-8 tangibles.
- Andy and Nate's highest reinforcers was an iPad.
- Connor and Sean's highest reinforcers were Skittles.



# Experimental Phases

This study was based on a 3 phase procedure;

- Phase 1(Baseline) : Target behavior is reinforced
  - The target behavior is identified and reinforced using a specific reinforcement schedule.
- Phase 2: target behavior is put on extinction and alternative behavior is reinforced
  - The objective is to increase the frequency of the alternative behavior that is reinforced while reducing the target behavior.
- Phase 3: Both target behavior and alternative behavior are put on extinction
  - The objective is to observe the resurgence of the target behavior or alternative behavior.



# Experimental Design

- Andy & Sean were exposed to typical condition first.
- Andy was exposed to a 2nd 3 phase arrangement In an attempt to replicate his results .
- Sean, Connor, and Andy's first exposure lasted for 7 days.
- Andy's 2nd exposure was 15 days, meanwhile Nates was 8 days long. There were 2-4 sessions a day. Phase changes happened within days.
- Extinction procedures were tested across more than one day .



# Procedure

- In each phase the experimenters presented free operant tasks with no additional prompts
  - Sd: “You can do whichever task as much or little as you want”
- All session for Nate & Andy lasted 5 minutes meanwhile Connors sessions ended either after 5 minutes or 15 edible reinforcers.
- Andy's alternative play responses were blocked during his second exposure at session 10.
- PHASE 1: reinforcement of a target response
  - Participants engaged in free operant tasks.
  - Participants were reinforced with 1 edible item or 20s access to tangible on FR1.
  - Their reinforcement schedule was thinned out to VR2 to promote target response persistence during Phase 3.
- PHASE 2: Reinforcement of alternative behavior
  - The target response is put on extinction.
  - Alternative responses were reinforced with edibles or 20 s access to tangible on FR1 schedule.
  - Note: FCT is typically reinforced on FR1.



# Procedure

- PHASE 3(a): Resurgence test- alternative response present
  - Identical to phases 1 & 2, both target and alternative materials were present.
  - Both target and alt behaviors were placed on extinction.
  - We can think of this being the same as when a parent stops responding/reinforcing functional communication responses from their child.
- PHASE 3(b)-:Resurgence test- alternative response absent
  - Target responses continued to result.
  - We can apply this to the idea of a parent not providing their child with the materials necessary to engage in FCT (e.g. communication devices, PECS)



# Pause..



# Results



- For all participants, reinforcement increased target responding under FR 1 and VR1 (Phase 1)
- Phase 2 reduced the target behavior to zero or near zero, with serves as FCT.
- Phase 3: some level of resurgence was observed in both conditions for all participants except Nate, where the alt response was present.
- Andy's second exposure produced highly variable responding .
- Magnitude of resurgence was absent ( $M = 4.8$  rpm), relative to when the alternative response was present ( $M = 2.1$  rpm) across participants.
- Key finding was that resurgence can occur regardless of the presence of an alternative behavior.
- 4 out of 5 tests resurgence was greater in the test condition in which the alt response was absent relative to resurgence when the alt response was present.

# Discussion



The findings of this study contribute significantly to our understanding of resurgence phenomena in the context of applied behavior analysis. The primary objective was to examine the occurrence of resurgence with and without the presence of an alternative response. The results indicate that resurgence is a robust phenomenon that can occur regardless of whether an alternative response is available during the extinction phase.

One of the key implications of these findings is for the development of treatment protocols for problem behaviors. The study suggests that simply introducing an alternative response during treatment may not be sufficient to prevent the resurgence of the target behavior once the alternative response is also placed on extinction. Gradually thinning the reinforcement schedule may reduce the likelihood of resurgence.

Strategies such as gradually thinning the schedule of reinforcement for alternative responses, incorporating multiple alternative responses, and using differential reinforcement of alternate/other behaviors may help to reduce the likelihood of resurgence. Moreover, ongoing monitoring and adjustments to treatment plans are crucial to address any resurgence that may occur.



# Reference List

Kimball, R. T., M. E., Podlesnik, C. A., Forton, A., & Hinkle, B. (2018). Resurgence With and Without an Alternative Response. \*Journal of Applied Behavior Analysis, 51\*(4), 854-865.

