

INCREASING MASK-WEARING TOLERANCE IN A CHILD WITH ASD USING GRADUATED EXPOSURE, PROMPTS AND DIFFERENTIAL REINFORCEMENT

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INTRO:

- Karpur et al. (2022) found that individuals with ASD are nine times more likely to be hospitalized with COVID-19.
- Graduated exposure, prompts, and differential reinforcement increases mask-wearing tolerance in children with ASD.

PURPOSE:

- This study partially replicates the behavioral treatment package composed of graduated exposure, prompts, and differential reinforcement presented by Halbur et al. (2021), removing the escape extinction component and extending it to a younger individual.

Participants

- 1 M (ASD)

Dependent Variables

- Mask-wearing duration
- Challenging behavior (blocking)

Method

- Setting: Clinic classroom
- Materials: Mask, Leisure Items, tablet with Youtube Kids
- Treatment Package (Graduated Exposure, Vocal Prompts, Physical Prompts, Differential Reinforcement)
- Changing Criterion Design

Conditions

- Baseline (no intervention)
- Intervention Phases 1-3 (Treatment Package)
- Intervention Phases 4-6 (Blocking + Treatment Package)

Reliability

- Behavior, Steps, Duration: 100%
- Procedural Fidelity: 99.56%

The use of graduated exposure, prompts, and differential reinforcement may increase the duration of mask-wearing and reduce mask-removal attempts.

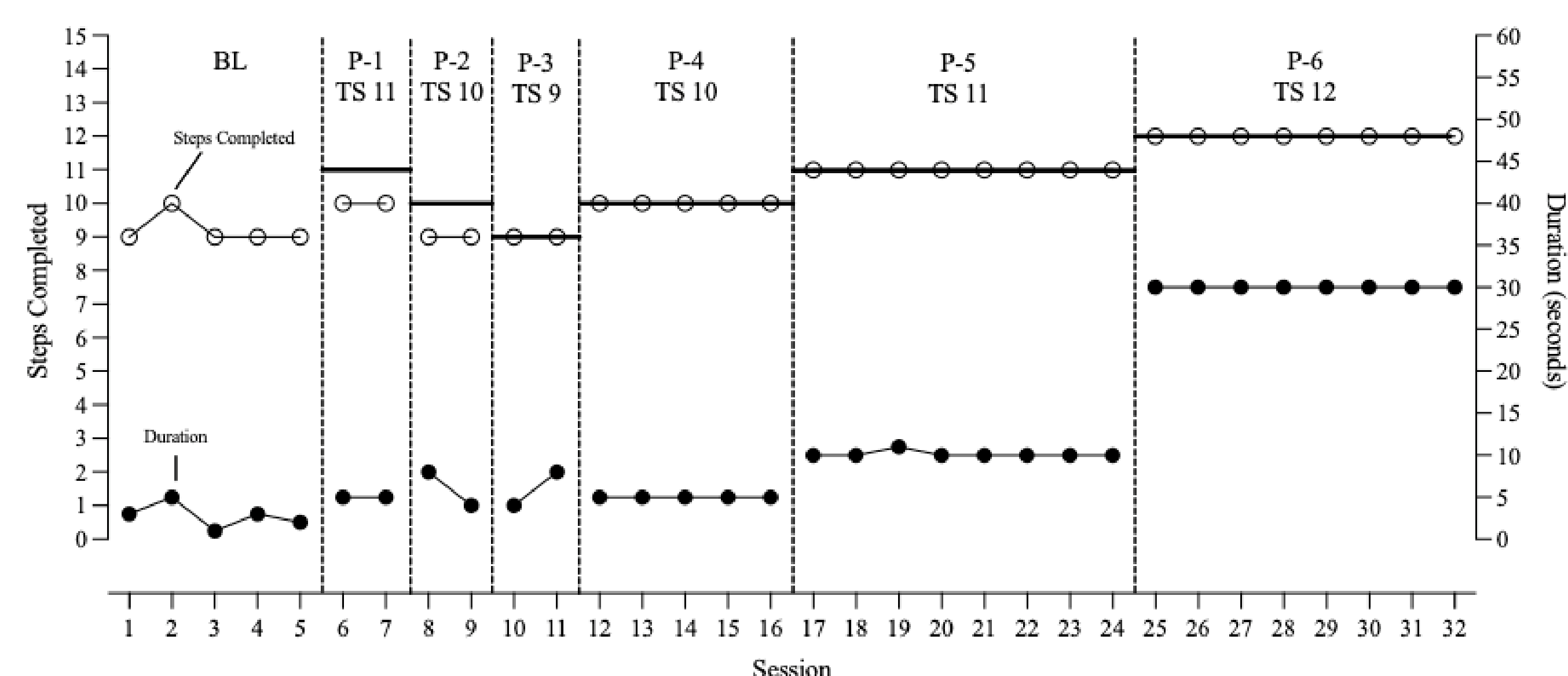


Figure 1. Results for the hierarchy steps completed and the duration the mask was worn by the participant.

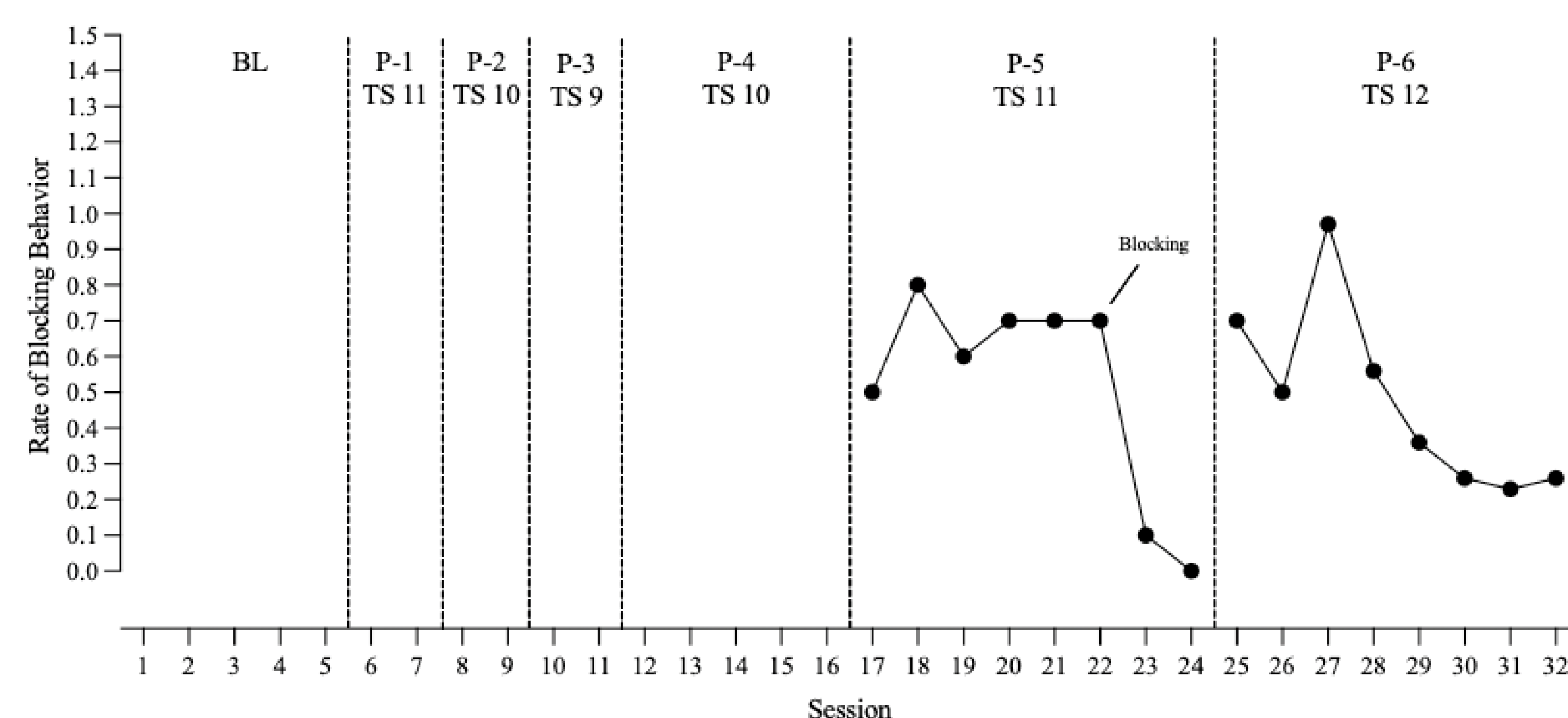


Figure 2. Results for the rate of blocking behavior (attempts to remove mask) exhibited by the participant (per second).

RESULTS

- The participant met the target step in phases 3-6.
- Blocking of mask removal behaviors was introduced in phase 3 and data was collected on the number of attempts in phase 5.
- Blocking behaviors decreased to a rate of 0 in phase 5 and have decreased to .26 blocks per second as of trial 32.

DISCUSSION

- Data collected indicate that a modified treatment package may be used with individuals as young as 3.

Increasing Mask Wearing Tolerance in a Child with ASD Using Graduated Exposure,
Prompts, and Differential Reinforcement

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Abstract

In the wake of the COVID-19 pandemic, mask-wearing has become a commonplace and accepted practice for reducing the spread of germs. Karpur et al. (2022) found that individuals with ASD are nine times more likely to be hospitalized following a COVID-19 infection. With this in mind, it is important to assist individuals diagnosed with ASD in overcoming potential aversions to mask-wearing. This study partially replicates the behavioral treatment package composed of graduated exposure, prompts, and differential reinforcement presented by Halbur et al. (2021). The participant is a 3-year-old non-verbal boy diagnosed with Autism Spectrum Disorder and Ehlers-Danlos Syndrome. During baseline and intervention data collection, the researchers followed the prescribed hierarchy of steps involved in putting a mask on the participant. Baseline sessions were terminated upon the participant removing the mask, and no consequences were presented. In Phases 1 and 2, researchers did not implement blocking of mask removal, and the participant did not meet reinforcement. The decision to implement blocking of attempts to remove the mask began in Phase 3. In Phase 5, data was collected on the number of blocked attempts to remove the mask. Results thus far have shown that the use of graduated exposure, prompts, and differential reinforcement has been successful in increasing the time the participant has been able to tolerate the mask while reducing attempts to remove the mask.

Client: AF: 3-year-old boy with ASD and EDS diagnosis.

Research Question: Will a behavioral treatment package composed of graduated exposure, prompts, and differential reinforcement increase Mask Wearing Tolerance in a 3-year-old boy with ASD?

Purpose: The purpose of this research study is to partially replicate the behavioral treatment package composed of graduated exposure, prompts, and differential reinforcement presented by Halbur et al. (2021). The current study removes the use of escape extinction component for problem behaviors and extends the treatment package to a younger client.

Mask Tolerance: Wearing a face covering (mask) consisting of a rectangular panel of fabric and elastic loops on each side for the ears. Includes allowing the therapist to complete the described step in the exposure hierarchy without engaging in problem behavior.

Exposure Hierarchy:

#	Step
1	Pick up Mask
2	Bring within 3 feet of participant's body
3	Bring within 12 in of face
4	Bring within 1 in of face
5	Touch against face and over nose
6	Hooked to 1 ear
7	Hooked to 2nd ear (both ears now secure)
8	Over face and straighten (nose spot or ear straps should be tightened, if applicable)
9	Tolerate mask for 1s
10	Tolerate mask for 5s
11	Tolerate mask for 10s
12	Tolerate mask for 30s

13	Tolerate mask for 1 min 15s
14	Tolerate mask for 3 min
15	Tolerate mask for 5 min

Measurement: Interval - each step in the exposure hierarchy is counted as one interval.

Intervention: Graduated Exposure, Prompts, and Differential Reinforcement

Research Design: Changing Criterion

References

Cox, A. D., Virues-Ortega, J., Julio, F., & Martin, T. L. (2017). Establishing motion control in children with autism and intellectual disability: Applications for anatomical and functional MRI. *Journal of Applied Behavior Analysis, 50*(1), 8–26. <http://dx.doi.org/10.1002/jaba.351>

Halbur, Kodak, T., McKee, M., Carroll, R., Preas, E., Reidy, J., & Cordeiro, M. C. (2021). Tolerance of face coverings for children with autism spectrum disorder. *Journal of Applied Behavior Analysis, 54*(2), 600–617. <https://doi.org/10.1002/jaba.833>

Karpur, Vasudevan, V., Shish, A., & Frazier, T. (2022) Brief Report: Impact of COVID-19 in Individuals with Autism Spectrum Disorder: Analysis of a National Private Claims Insurance Database. *Journal of Autism and Developmental Disorders, 52*(5) 2350-2356 <https://doi.org/10.1007/s10803-021-05100-x>

Results

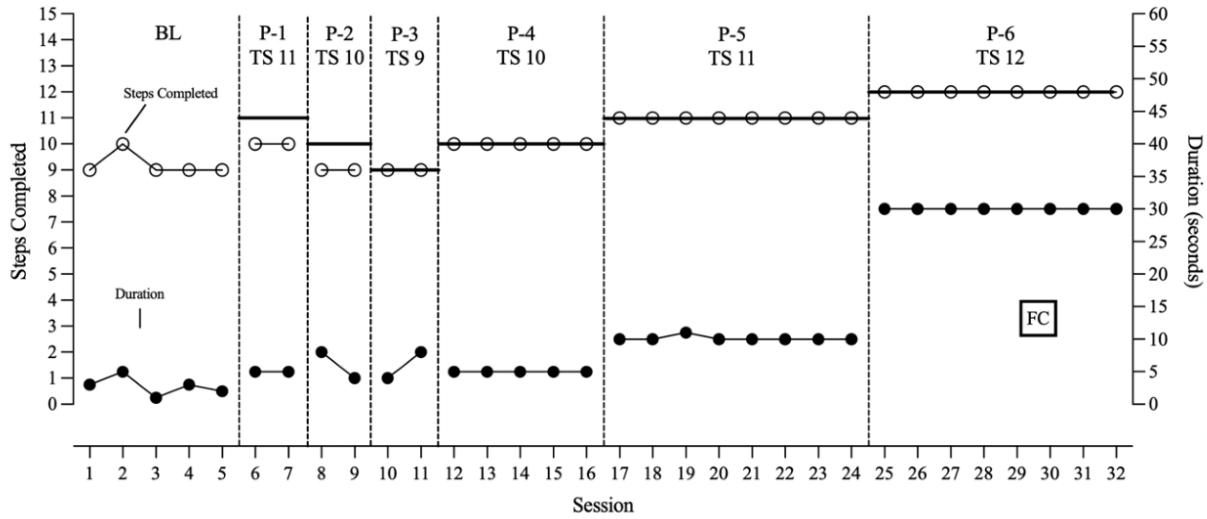


Figure 1. Results for the hierarchy steps completed and the duration the mask was worn by the participant.

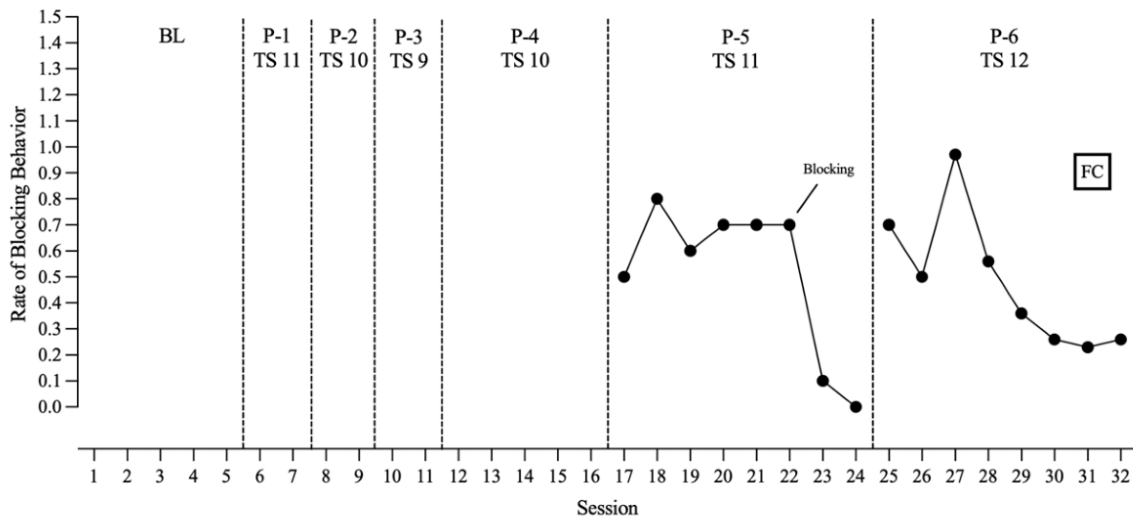


Figure 2. Results for the rate of blocking behavior (attempts to remove mask) exhibited by the participant (per second).

Mask-Wearing Tolerance Research Project Data Sheet - Baseline | Treatment

Client: _____ Observer: _____

Date: _____ Time: _____ Location: _____

Session: _____ Target Step #: _____

Tolerance: Includes allowing the therapist to complete the described step without engaging in blocking or problem behavior.

Mask Removal: Any instance of the participant using their hands or other objects/body parts to pull one or both ear straps off (once they are on) or pulling the face mask down from covering the face (once it is in place).

Blocking: Contact between any part of the participant's body and the therapist's hand or the face covering. Includes behavior that stops the therapist from completing the step and the materials from being placed near or touching the participant's body at the location specified by the current step before the step duration was complete. Does not include head turning.

Problem Behaviors:

SIB: Any instance of head-banging. Head-banging includes the client's head making contact with the floor or any other surface. This includes making contact with the therapist or another client. Does not include slips, trips, or falls.

Elopement: Any instance of moving more than 3 feet from the therapist. Includes any instance of leaving the room or attempting to leave the room by touching the door handle. Do not count if the client requests to use the restroom. In this situation, terminate the session.

Dropping: Any instance that the client makes contact with knees or bottom on the floor from a standing or sitting position. Exclude slips, trips, or falls.

Screaming: Any occurrence of a vocalization higher than conversation level. May include crying with or without tears.

Session Termination Criteria:

- Session should be terminated if the client engages in problem behavior.
- Session should be terminated if the final step is successfully completed.
- Session should be terminated if the client engages in dangerous, aggressive, or self-injurious behavior.
- Session should be terminated if the client or a therapist becomes injured.
- Session should be terminated if the client requests to use the restroom.

Circle Target Step #	Step	Step Completed Write (+) if the step is completed Write (-) If the step is not completed	Blocking Tally the # of times the behavior occurs
1	Therapist picks up Mask		
2	Bring within 3 feet of participant's body		
3	Bring within 12 in of face		
4	Bring within 1 in of face		
5	Touch mask against face and over nose		
6	Hooked to 1 ear		
7	Hooked to 2nd ear (both ears now secure)		
8	Over face and straighten (nose spot or ear straps should be tightened, if applicable)		
9	Tolerate mask for 1s		
10	Tolerate mask for 5s		
11	Tolerate mask for 10s		
12	Tolerate mask for 30s		
13	Tolerate mask for 1 min 15s		
14	Tolerate mask for 3 min		
15	Tolerate mask for 5 min		

#	Reason for Termination Write the reason for termination (blocking, elopement, dropping, tantrum, final step completed, dangerous behavior, aggressive behavior, SIB, injury, client request, etc.)
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