



A Retrospective Analysis of Behavior Shaping Techniques and Treatment Outcomes in Pediatric Patients at the NYU Oral Health Center for Individuals with Autism Spectrum Disorder

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Introduction

Pediatric dentistry relies on behavior guidance to foster trust and cooperation among the patient, caregiver, and dental team.¹ The American Academy of Pediatric Dentistry (AAPD) defines behavior guidance as a continuous, patient-centered process integrating non-pharmacologic and pharmacologic strategies to reduce fear and anxiety and support effective care.^{2,3}

Pediatric patients with Autism Spectrum Disorder (ASD) often present with unique behavioral, sensory, and communication needs, requiring individualized, evidence-based approaches. In clinical practice, Applied Behavior Analysis (ABA)-informed behavior shaping techniques—such as reinforcement, escape, and modeling—are implemented in a structured, stepwise manner tailored to each patient's profile. These strategies aim to improve cooperation and treatment acceptance while potentially reducing reliance on sedation and protective stabilization.^{4,5,6} However, limited research evaluates their impact on clinical outcomes in pediatric patients with ASD.

This retrospective study examines the association between ABA-informed techniques and outcomes—including procedural success, sedation use, stabilization, and number of visits—in a university-based special care dental setting, with the goal of informing evidence-based behavior guidance strategies for this population.

Methods

A retrospective chart review was conducted at the NYU Oral Health Center for People with Disabilities, evaluating pediatric dental patients with ASD aged 5–18 years (N = 100). A total of 100 patient charts were analyzed, including 78 patients who received behavior shaping techniques and 22 control patients without documented behavior shaping. Records from January 2023 to January 2025 were reviewed, with a focused 6–8-month sampling window to ensure consistent provider documentation and standardized use of behavior shaping techniques.

Behavior shaping techniques included positive and negative reinforcement, contingent and non-contingent escape, modeling, and temporal framing. The primary outcome was procedural success (completion without GA/OCS). Secondary outcomes included sedation use, protective stabilization, number of visits, and post-sedation return visits. Analyses included chi-square tests, t-tests, and logistic regression.

IRB approval was obtained (s25-00566).

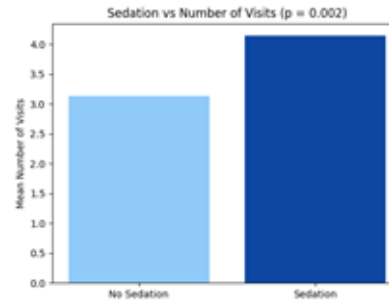


Figure 1. Patients who received sedation required significantly more visits than those who did not (4.14 vs. 3.13; p = 0.002), indicating increased treatment burden.

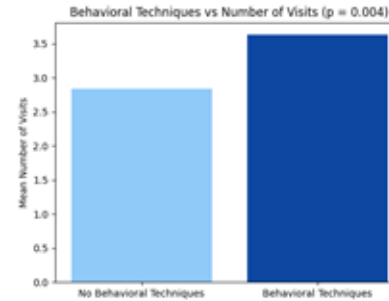


Figure 2. Use of behavioral techniques was associated with more visits (3.63 vs. 2.84; p = 0.004), suggesting a more longitudinal approach to care.

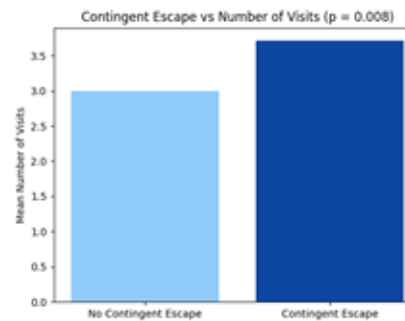


Figure 3. Contingent escape was associated with increased visits (3.71 vs. 3.00; p = 0.008), reflecting greater treatment complexity.

Results

Patient cases were analyzed to evaluate associations between behavioral techniques, sedation use, stabilization, and number of visits required. Patients who received sedation (GA or oral conscious sedation) required significantly more visits (mean = 4.14, SD = 1.62) compared to those who did not (mean = 3.13, SD = 1.19; p = 0.002). Similarly, use of behavioral techniques overall was associated with a higher number of visits (mean = 3.63 vs. 2.84; p = 0.004).

Among individual techniques, contingent escape was associated with increased number of visits (p = 0.008), suggesting greater treatment complexity, defined as increased clinical difficulty reflected by the need for sedation and higher number of visits. No significant associations were found between behavioral techniques and sedation use (p = 0.695) or stabilization use (p = 0.359). Procedural success was achieved in 100% of cases, limiting the ability to assess predictors of treatment success.

Conclusions

Behavior shaping techniques were widely utilized but were not independently associated with procedural success, sedation use, or treatment efficiency, and no individual technique predicted clinical outcomes.

Contingent escape was associated with increased number of visits, suggesting greater treatment complexity. Sedation use was also associated with higher visit burden, reinforcing its role as a marker of increased clinical complexity. Overall, clinical outcomes appear to be driven more by underlying case complexity than by any single behavior shaping technique.

Clinical Implications:

Supports individualized behavior support strategies, early identification of high-complexity patients, and appropriate escalation to pharmacologic management when indicated.

References

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