THE EFFECT OF IMPLEMENTING A SYSTEMATIC SCHEDULE THINNING STRATEGY ON ACHIEVING THE TERMINAL SCHEDULE ACROSS CONTEXTS

by

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(Under the Direction of Kevin Ayres)

ABSTRACT

Schedule thinning following functional communication training (FCT) can strengthen the applied characteristics of this intervention in natural environments. Previous research has examined the effects of diverse schedule thinning procedures. Specifically, Chesbrough et al. (2024) compared the effects of dense-to-lean (DTL) and fixed-lean (FL) thinning methods on achieving a terminal schedule. The current study adapted Chesbrough et al. (2024) procedures to extend the schedule thinning literature, examining the effects of a systematic method of thinning. Terminal probes set the S^D and S^Δ time parameters for the components of the multiple schedules. Further probes followed mastery of each multiple schedule condition, with zero instances of elopement. Subsequent probes aimed to see natural increases in tolerance to the unavailability of reinforcement, thereby adjusting multiple schedules in a data-based manner to achieve the terminal schedule. A multiple probe design with an embedded ABAB design evaluated the effects of treatment across two settings. Following successful DRA with extinction sessions, terminal probe informed schedule thinning sessions proved effective. However, as time in the S^Δ increased, it became more difficult to achieve zero levels of elopement.

INDEX WORDS: fading strategies, functional communication training (FCT), multiple schedules, resurgence, schedule thinning, terminal schedule

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CHAPTER 1

INTRODUCTION

The underlying features of a socially significant intervention include parsimony, pragmatism, and resiliency to change in the client's life. Without schedule thinning, functional communication training (FCT) fails to stand the test of natural reinforcement availability in a typical environment. The resurgence of challenging behavior quickly breaks down the progress made from schedule thinning if the functional communicative response (FCR) does not contact reinforcement on a dense schedule. In a contrived environment, basic FCT maintains effectiveness. However, a dense schedule of reinforcement, commonly implemented in communication training, does not hold up over time in natural settings. Effective and applied interventions, when well structured, transition seamlessly into an uncontrived environment. Researchers have tested various schedule thinning procedures to achieve attainable rates of reinforcement following successful FCT. The current study adapted the Chesbrough et al. (2024) procedures to extend schedule thinning literature by investigating a data-based systematic thinning method. Following tangible sessions, FCT, and differential reinforcement sessions, researchers conducted terminal probes. Probes informed the active multiple schedule during thinning sessions to achieve the terminal schedule. Researchers used a multiple probe design with an embedded ABAB (withdrawal) design to evaluate the effects of the treatment across two settings.

Before intervening on a child's target response, behavior analysts often conduct a function-based assessment (FBA) to determine the maintaining contingency of the target

behavior. Interventions that lack details of behavior function will only find success through guesswork. Behavior analysts consider interventions shaped by the results of functional analyses (FA) a standard when intervening on challenging behavior (Hanley et al., 2001). The popularity of FCT following an FA or other FBAs comes from its overwhelming effectiveness in the field. Research has shown that when interventions combine FCT and extinction procedures, problem behavior reduces by 92% as compared to baseline levels of responding (Briggs et al., 2018). When conducting an FBA, researchers may use a combination of analog functional analysis, descriptive assessments, or indirect assessments to reach a hypothesis and determine the function(s). Development and implementation of a function-informed intervention come after identifying the maintaining contingency of the target behavior.

Functional communication training commonly follows from the results of an FBA. A type of differential reinforcement of alternative (DRA) behavior, FCT is a distinct form of reinforcement schedule (Betz et al., 2013). DRA procedures include reinforcing the desired alternative behavior while withholding reinforcement for challenging behavior (Cooper et al., 2019). FCT and DRA both work to strengthen appropriate responses and weaken the establishing operation for challenging behavior by providing access to the identified functional reinforcer (Betz et al., 2013). During FCT, knowledge of the maintaining contingency allows the researcher to systematically manipulate the reinforcer in such a way as to reduce challenging behavior and increase alternative communication (Betz et al., 2013). FCT procedures adhere to a common sequence: teaching the FCR while putting problem behavior on extinction. Next, the establishment of independent responding and low rates of challenging behavior is followed by thinning the schedule of reinforcement until the establishing operation results in the emission of an independent FCR at a realistic rate (Briggs et al., 2018). Reinforcement of the FCR on a

fixed-ratio 1 (FR 1) schedule can lead to unrealistic levels of responding, such that rates of the FCR can match rates of challenging behavior prior to communication training (Hanley et al., 2001). Interventions, such as FCT, that implement a dense schedule of reinforcement for the alternative response, while placing challenging behavior on extinction, must consider practicality. FCT works well to teach alternative responses but has its limitations. Following successful communication training, participants will likely request access to reinforcement at incredibly high rates. Teachers, caregivers, and stakeholders cannot practically meet the frequent and mass emissions of requests, therefore, schedule thinning becomes necessary (Betz et al., 2013).

A pragmatic intervention should easily transition into the participant's daily life, meeting the classification of being socially significant (Hagopian et al., 2004). Schedule thinning allows for a reasonably efficient intervention, reducing FCR emission while maintaining the participant's association between communication and reinforcement. Thinning works to combat the possibility of resurgence if the FCR cannot contact reinforcement on an FR1 schedule (Betz et al., 2013). Carefully planned schedule thinning procedures can address some of the limitations created by FCT. Thinning procedures, however, can lead to extinction bursts or extinction-induced aggression previously reduced in communication training (Briggs et al., 2018). Intensive schedule thinning methods may result in the resurgence of challenging behavior, creating a need for additional resources, treatments, or new treatment components.

Researchers have developed many strategies to mitigate resurgence while working toward appropriate terminal schedules. Substituting other activities in place of FCT during delays, training a multiple schedule, or considering punishment procedures, when all else fails, may mitigate the resurgence of challenging behavior that accompanies schedule thinning

(Hagopian et al., 2004). Progressive schedule reductions can help ease the implementation of the program with leaner schedules following the client's initial response suppression (Hagopian et al., 2004). When considering an effective terminal schedule, implementers should consider the client's other environments, the ability of significant others to provide attention in those environments, what resources others will have access to for protocol implementation, etc.

Hanley et al. (2001) claims that a progressive increase in the delay between the FCR and access to the requested reinforcement is ineffective concerning schedule thinning. Their procedures resulted in the addition of punishment to maintain low levels of challenging behavior. The delay procedures deteriorated what was previously established in learning history between the FCR and reinforcement as the delay interval increased, essentially putting the communication response on extinction (Hanley et al., 2001). Rather than implementing a delay to reinforcement, Hanley et al. (2001) suggest training discrete stimuli to develop stimulus control in the context of a multiple schedule. Betz et al. (2013) implemented this strategy and demonstrated an effect when using a two-component multiple schedules, where reinforcement availability during the S^D resulted in reinforcement for the FCR and during the S△, the FCR contacted extinction. The interventionist choose the stimuli to signal reinforcer availability or unavailability - either arbitrary or naturally occurring. When deciding which type of stimuli best suits the participant and their environment, interventionists should consider stimuli salience, portability, and effectiveness according to the prescribed intervention. Henley et al. (2001) suggests stimuli naturally occurring in the client's environment do not achieve reliability as a source of reinforcement, rather contrived stimuli more reliably indicate reinforcement availability and develop more robust stimulus control.

Further exploring multiple schedules, Hagopian et al. (2004) compared two schedule thinning methods for their effects on efficient achievement of 80% target behavior reduction and individualized terminal schedules. This study evaluated dense-to-lean (DTL) and fixed-lean (FL) schedule thinning approaches, that utilized multiple schedules, to signal reinforcer availability. The DTL condition began with high rates of reinforcement for the FCR followed by stepwise schedule thinning procedures until reaching the terminal schedule. In contrast, the FL condition only delivered reinforcement at low rates synonymous with the terminal schedule. In this study, the FL schedules led to more efficient achievement of clinical goals for two of the three participants. The authors hypothesized that the DTL condition could achieve the desired outcomes with variations on thinning procedures or with fewer progressive schedule thinning steps. Early contact between challenging behavior and extinction during treatment progression supports the superior impact of the FL schedule.

A further analysis of DTL and FL schedules was conducted in 2024 by Chesbrough et al. Chesbrough et al. (2024) conducted research seeking to compare a DTL and FL approach to schedule thinning, replicating Hagopian et al. (2004). Findings from Hagopian et al. (2004) research showed the FL schedule produced the most efficient schedule thinning but led to higher rates of challenging behavior. Chesbrough et al. (2024) sought to replicate the Hagopian et al. (2004) study using a reversal design with an embedded alternating treatment design. Following a functional analysis, researchers obtained baseline rates of challenging behavior. During FCT, implementers taught FCR until the achievement of the mastery criterion. Then, implementation of a DRA with extinction condition demonstrated the success of FCT for decreasing rates of challenging behavior, compared to baseline rates of responding. A reversal back to baseline, followed again by DRA with extinction demonstrated the independent variable's effect on the

target response. Following the establishment of the independent variable impact on the dependent variable, terminal probes precede the implementation of DTL and FL schedule thinning procedures. Chesbrough et al. (2024) replicated the findings of Hagopian et al. (2004).

Behavior analysts widely accept FCT as a means of significantly reducing challenging behavior. However, research must be done to refine and analyze schedule thinning procedures as a means to increase the applied significance of FCT as an intervention. One approach, implementing a multiple schedule, has proven effective for reducing the effects of resurgence that can accompany schedule thinning procedures while still achieving an appropriate schedule of reinforcement for the FCR. Hagopian et al. (2004) and Chesbrough et al. (2024) included multiple schedules in two schedule thinning procedures, DTL and FL. This study aims to implement data-based schedule thinning procedures to achieve the terminal schedule for an individual with significant developmental delay across two research settings.

CHAPTER 2

METHOD

Participant

The participant in this study received services from a university-affiliated clinic as part of their public education in a nearby county in the southeastern United States. Participant has a school diagnosis of significant developmental delay (SDD) and speech or language impairment. Inclusion criteria for study participation included frequent elopement from a teacher or therapist without permission. Researchers conducted study recruitment through convenience sampling and discussions with treatment team leads (Golzar et al., 2022). Deborah, a 5-year-old black female in kindergarten, was proficient in selecting a preferred object from an array of two items at the start of the study, meaning they advanced beyond Phase IIIA of the picture exchange communication system (PECS; Bondy & Frost, 1994). Researchers obtained consent from Deborah's guardian upon beginning her education at the university-affiliated clinic.

Settings and Materials

All sessions were conducted on-site in university-affiliated clinic treatment rooms. Treatment room one was an empty 16ft 4in by 10ft room with a one-way mirror, covered entirely with white paper. Treatment room two was a larger 25ft 8in by 22ft 6in room with various age-appropriate toys (mini basketball goal, letter mat, small trampoline, small hammock, calendar, books, and seating) and wall art. During the study, Deborah's lead BCBA made changes to the protocol to permanently remove some items in treatment room two (mini basketball goal, letter mat, books, and some seating). At a different point in the study, more furniture, seating, and toys

were added to room two to accommodate new classmates. All sessions took place during the first 10 min of recess and the last hour of the participant's school day. Materials for all sessions included a plastic jar of green bouncy balls, five various colored sensory toys, data collection materials, and a small pad, to be used in the event of self-injurious behavior. Researchers included the participant's PECS book and relevant PECS pictures during FCT, DRA with extinction, and schedule thinning sessions (Bondy & Frost, 1994). In the DRA with extinction and schedule thinning conditions, a stimulus control card was introduced. This was a laminated 8.5in by 11in sheet of paper; one side solid red and the other side black and white striped. In the pre-study functional analysis, baseline, and schedule thinning conditions, the therapist wore a discrete MotivAider (Behavioral Dynamics, Inc., n.d., MotivAider, (Gen5)) [Apparatus] to keep time.

Measurement

The researcher used pen and paper data collection sheets to measure the primary dependent variable, elopement. The primary therapist collected data from video recordings of each session. Deborah's target response was elopement, defined as the participant exceeding the distance of three ft from the therapist, without the therapist's permission. Sessions were 10 min in length and the primary researcher represented elopement as rate.

Procedures

Pre-baseline procedures. Prior to the beginning of this study, multiple stimuli without replacement (MSWO) preference assessments, conducted by therapists, showed Deborah preferred the sensory toys and a jar filled with bouncy balls. This assessment consisted of placing five various objects or edibles in front of the participant and telling them to, "Pick one." Following selection of the first item, the remaining four objects or edibles were randomized, and

the instructions delivered again. Procedures continued until only one object or tangible remained and a hierarchy could be determined. The MSWO procedures produced an overall ranking of stimuli preference. The item with the highest percentage indicated the greatest preference.

A pre-intervention latency-based FA of Deborah's elopement followed the example provided by Boyle et al. (2019) and consisted of the following randomized conditions: control/play, demand, attention, ignore, and tangible. Researchers implemented a multielement design to conduct the functional analysis of Deborah's elopement behavior. When targeting elopement, FA procedures may become confounded if a therapist resets the participant to their original location. However, resetting the individual must occur to ensure data collection reflects the number of instances of elopement (if no reset occurs, only one instance of elopement may be recorded for the duration of the session). Delivering a response-independent fixed-time (FT) prompt can mitigate this confound (Boyle et al., 2019). A FT 30s prompt allows for retrieval procedures and consistent attention across conditions in the form of the prompt - "Stay by me." The five min sessions included a FT 30s prompt delivered throughout sessions in each condition of the FA.

In control sessions, the student had access to highly preferred toys and the therapist provided continuous, high-quality attention without demands. Control sessions had no pre-programmed consequence for elopement (Boyle et al., 2019). Demand conditions began with learning materials at the table while the therapist placed age-appropriate instructional demands. Accurate responses resulted in the therapist saying, "Good job." Elopement resulted in a break from instruction without attention until the delivery of the next FT 30s prompt. Following the FT 30s prompt, instructional demands resumed (Boyle et al., 2019). Attention sessions began with moderately preferred tangibles available and the therapist stating the following contingency, "I

have to go do work, stay with me." If elopement occurred during attention sessions, the therapist would follow the child and provide attention until the next FT 30s prompt (Boyle et al., 2019). Ignore sessions began with no materials in the room and no attention from the therapist. Delivery of the FT 30s prompt ensured the participant remained within the predetermined proximity of the therapist. Elopement resulted in the therapist repositioning themselves appropriately in relation to the participant (Boyle et al., 2019). Prior to beginning tangible sessions, the participant engaged with highly preferred toys for about 30s, then the therapist removed the toys and the session began. Elopement resulted in the therapist providing Deborah with access to the toys until the next FT 30s prompt (Boyle et al., 2019).

Baseline. Baseline conditions mirrored the FA test condition that showed elevated responding. Highly preferred tangibles were used during baseline sessions and elopement resulted in access to tangible items for approximately 30s before the therapist removed access again. The researcher placed all instances of appropriate behavior on extinction for the duration of the session, 10 min (Chesbrough et al., 2024). Mastery criteria stated the participant could move from baseline to FCT following three stable data points (Chesbrough et al., 2024).

FCT. Implementation of FCT ensured Deborah could functionally gain access to reinforcement. Findings from Tiger et al. (2008) suggest the consideration of response effort, widespread social acceptance of a response topography, and ease of response acquisition when determining FCR topography. Given that the participant had already mastered phase IIIB of PECS training, a widely recognized method, PECS exchange was the chosen communication modality. Deborah's FCR was the PECS exchange of a card that displayed "Toys." The S^D for reinforcement, a black and white striped laminated paper, and the S^Δ signaling extinction, a red laminated paper, were used while teaching the FCR. During the S^D condition, the emission of the

FCR resulted in access to the alternative reinforcers, a jar filled with bouncy balls and five sensory toys. During the S^{Δ} condition, the emission of the FCR resulted in no access to reinforcement. FCR training was conducted using most-to-least prompting. The interventionist blocked attempts to engage in challenging behavior throughout all sessions. Each session consisted of five trials with the mastery criteria set at 80% of trials being independent across three consecutive sessions. Deborah achieved FCT mastery in three sessions in treatment room one and in eight sessions in treatment room two (Chesbrough et al., 2024).

DRA + Extinction. Treatment for elopement consisted of differential reinforcement of alternative behaviors (DRA) with extinction procedures for the participant. Procedures for this condition closely mirrored functional communication training sessions and aimed to establish confidence that the participant could successfully engage in the FCR while maintaining zero rates of challenging behavior across settings. DRA with extinction sessions were 10 min in length with the stimulus control card continuously signaling reinforcement availability (S^{D}). When the participant communicated with the FCR, they received access to tangibles, attention, and the ability to move throughout the room freely. Researchers included the attention component due to the participant tossing her most preferred tangibles aside at points during the session, potentially signaling temporary loss of interest or distraction. Following approximately 45s of access to reinforcement, the therapist directed the participant back to the work area and removed access to reinforcement where the participant could engage in the FCR. These procedures continued for the duration of the session. Mastery criteria stated the participant could move to the schedule thinning condition following three consecutive sessions with zero instances of problem behavior.

Systematic Schedule Thinning. Following mastery of the DRA with extinction condition, a 600s terminal probe, to set the mastery criteria for the following schedule thinning phase, was conducted. During the probe, the S^{Δ} continuously signaled the unavailability of the reinforcer. If the participant engaged in the FCR, the therapist stated, "You can play later." If the participant engaged in challenging behavior, the session ended and the latency until that instance of elopement established the multiple schedule for the preceding schedule thinning phase. For example, if the participant engaged in elopement 240s into the 600s terminal probe, the multiple schedule in the following thinning sessions would signal 240s of reinforcer unavailability and 360s of availability (240s S^{Δ}/360s S^{D}). Mastery criteria for thinning sessions implementing the multiple schedule consisted of three consecutive sessions with zero challenging behavior under the predetermined multiple schedule. Researchers then conducted a new 600s terminal probe. An increase in the amount of time the participant tolerated the unavailability of reinforcement during the probe resulted in adjustments to the multiple schedule in the following schedule thinning phase. For example, if the participant engaged in elopement 420s into the 600s terminal probe, the multiple schedule in the following thinning sessions would signal 420s of reinforcer unavailability and 360s of availability (360s S^{Δ}/420s S^{D}). These procedures continued systematically until the participant achieved the terminal schedule (600s S^{Δ}).

Design

A multiple probe design with an embedded A-B-A-B design evaluated the effects of treatment.

Interobserver Agreement and Procedural Fidelity

Independent secondary observers scored interobserver reliability and procedural fidelity across all conditions. The primary researcher trained secondary observers on data collection until

the combined IOA exceeded 80% agreement. The primary researcher used the total count formula to calculate agreement. If at any point in data collection IOA fell below 80%, the secondary therapist would be retrained.

For Deborah, the secondary observer collected reliability and fidelity data for 100% of baseline sessions and the IOA for this condition was 98.47% with 98.17% procedural fidelity. Reliability was 90% with 100% procedural fidelity for 100% of sessions for FCT sessions. For DRA with extinction sessions, reliability was 80% with 100% procedural fidelity for 78% of sessions. For schedule thinning sessions, reliability was 83.8% across 46.3% of sessions with 100% procedural fidelity for 25.9% of sessions.

CHAPTER 3

RESULTS

Figure 1 depicts Deborah's pre-baseline latency FA results. The average latency to responding in the control condition was 269s, demand was 233s, attention was 209s, tangible was 184s, and ignore was 167s. The tangible condition was deemed the maintaining contingency due to consistent levels of responding, rather than the ignore condition which saw responding at either 300s or between 14-46s. The tangible condition showed consistent, clear patterns of responding with overall latency to elopement ranging from 100-260s. This was the only condition in which elopement consistently occurred. The lack of stability and latency to elopement during the ignore and other conditions led researchers to identify elopement being maintained by access to tangibles.

Figure 2 depicts Deborah's FCT results across both settings. FCT followed stable levels of responding in the tangible condition, acting as the baseline, in accordance with procedures outlined in Chesbrough et al. (2024). In room one, Deborah achieved mastery in three consecutive sessions, while training took place over the course of eight sessions in room two. Researchers hypothesized this discrepancy likely resulted from environmental dissimilarities, such that room two had an abundance of competing stimuli not found in room one. Abundant competing stimuli in room two may have been distracting to Deborah, making meeting mastery criteria more challenging.

Figure 3 shows Deborah's schedule thinning results in room one. Changes in Deborah's rates of elopement co-occur with changes between the tangible and DRA with extinction

conditions of the A-B-A-B withdrawal design. Researchers hypothesize the elevation in the level of elopement in the second DRA with extinction phase stemmed from discrepancies in available attention between Deborah's daily programming and the procedures outlined during research sessions. Other extraneous variables may have impacted the change in level and overall length of the phase, such as programming modifications and daily dosage of communication training. Schedule thinning under the 14s S^{Δ} and 586s S^{D} multiple schedule easily achieved mastery criteria in three consecutive sessions. However, thinning under the 104s S^{Δ} and 496 S^{D} multiple schedule met challenges in achieving consistent zero levels of responding. Variability during this condition was likely due to a significant change made in the participant's daily programming. Researchers also hypothesized that the magnitude of attention provided between the two experimental settings and the client's typical schedule may have had an impact. During the client's daily programming, Deborah accessed quality attention from three to five adults simultaneously. However, during experimental sessions, Deborah received attention from only the primary researcher.

Figure 4 shows Deborah's schedule thinning results in room two. Treatment room two shows a clear demonstration of effect and functional relation in the withdrawal of the tangible and DRA with extinction phases. Researchers hypothesize the elevation in the level of elopement in the first DRA with extinction phase stemmed from environmental discrepancies between the two contexts (abundant competing stimuli). Schedule thinning under the 2s S^{Δ} and 598s S^{D} multiple schedule achieved mastery in five sessions. However, thinning under the 12s S^{Δ} and 588 S^{D} multiple schedule took longer to achieve mastery criteria. Researchers hypothesize that the volume of captivating stimuli in room two played a role in the variability of responding under the

12s S^{Δ}/588s S^{D} multiple schedule, the same environmental discrepancy that likely influenced responding in the DRA with extinction phase.

CHAPTER 4

DISCUSSION

Thinning the schedule of reinforcement following communication training strengthens the applied characteristics and social validity of interventions as they transfer into a natural environment. Without thinning, rates of FCR following FCT may exceed baseline rates of challenging behavior, directly impacting the overall pragmatism of intervention implementation. Chesbrough et al. (2023) found success in comparing two approaches, DTL and FL schedule thinning, using multiple schedules in their thinning procedures. The current study adapted the procedures of Chesbrough et al. (2023) to investigate a systematic terminal probe informed thinning procedure. Researchers aimed to discover the effect of a data-based method of schedule thinning to achieve a terminal schedule for an individual with significant developmental delay. Tangible and DRA with extinction sessions demonstrated a clear functional relation for the participant. The results of schedule thinning showed Deborah's tolerance to time spent in the S^{Δ}, during terminal probes naturally. However, achieving steady state responding proved difficult as time in the S^{Δ} increased.

Results of the pre-baseline latency FA data, shown in Figure 1, depict elopement maintained by access to tangible reinforcers. Manipulation of the establishing operation in this condition consistently evoked elopement more quickly than the other FA conditions. Figure 2 illustrates Deborah's mastery of FCT in rooms one and two. Room one proved to be the environment conducive to efficient FCT mastery, completed in three sessions. Deborah achieved FCT mastery in room two in eight sessions, likely due to the aforementioned environmental

discrepancies. Deborah's results in room one, shown in Figure 3, demonstrated a clear functional relation between tangible and DRA with extinction conditions. Implementation of the multiple schedules proved effective concerning the natural increase in tolerance to the time spent in the S^{Δ}. However, increased time in the S^{Δ} correlated with variable responding. Figure 4 shows similar results in room two - variable responding as time in the S^{Δ} increased.

While initial success was found in the multiples schedules where time spent the S^{Δ} remained low, Deborah did not achieve the terminal goal of 10 min. Following the second terminal probe in both settings, achievement of the terminal goal became more challenging. In room two, an extensive amount of time went into obtaining consistent zero rates of responding in the 12s S^{Δ}/588s S^{D}. In room one, Deborah never met mastery criteria for the 104s S^{Δ}/496s S^{D}. The lack of mastery in room one calls into question the validity of conducting a single terminal probe to inform the multiple schedules in place during schedule thinning procedures. Conducting more or more frequent terminal probes may be necessary to more accurately set the Deborah may have achieved mastery in the first of the two schedule thinning conditions in each context due to the minimal time required to be in the S^{Δ}. In the second, longer, phases of schedule thinning in both contexts, Deborah may have mastered the conditions due to the continued practice. Deborah may have been more likely to achieve the terminal goals of each condition with different mastery criteria. Rather than requiring Deborah to achieve zero rates of elopement across three consecutive sessions, requiring Deborah to achieve zero rates of elopement during the S^{Δ} for three consecutive sessions may be more suitable criteria for mastery.

The findings of this study, though having applied implications for schedule thinning in the field, are not without limitations. Significant differences between the two environments led to discrepancies in the number of captivating stimuli and distractions. Natural inequality in

environmental complexities made learning more challenging in room two compared to room one. Deborah's BCBA implemented changes to the daily programming throughout research that included the removal of stimuli from room two, making the environments more equal over time. One threat to internal validity occurring outside of the experiment included the frequency of PECS training in room two. Deborah received approximately 45 min of daily PECS training in room two compared to no PECS training in room one. Consistent communication training in room two, outside the context of the experiment, increased communication skills and decreased the rate of elopement in room two. Therefore, the participant progressed through the DRA with extinction phase more quickly in room two than in room one, where PECS skills did not seamlessly generalize. The primary researcher hypothesized consistent PECS training in room two led to changes in the rate of elopement and accelerated progress through this phase, while room one continued to see variable rates of elopement. The participant's responsible BCBA made other changes to daily protocol during the study that re-established PECS training in room one outside of the experimental context, this immediately decreased rates of elopement and Deborah quickly met mastery criteria. During the schedule thinning phase of the research, at session 38 in room one and session 43 in room two, a significant environmental change was made to Deborah's classroom. These changes included an increase in the number of students receiving services in Deborah's classroom (previously Deborah was alone in all settings throughout her day), an increase in staff members present throughout the day, access to new stimuli and potential reinforcers, and implementation of a new schedule.

Future research can answer many questions left over from the current study. Utilizing two uniform environments for comparison along with minimizing extra-experimental changes to client programming may yield interesting results. Additionally, a third context to measure the

effects of the intervention on generalization may provide information regarding the degree of control needed for the schedule thinning intervention. Another take on the current study could be to analyze the intervention across stakeholders rather than across settings. Establishing an effect across, for example, a client's parent and teacher would strengthen the real-world application of the current intervention. Also, providing the client with an activity during the S^{Δ} component of the multiple schedule may be more naturalistic and reflective of a classroom setting. It is more likely a client be asked to sit or stay near an adult while occupied with a task or toy than staying near an adult with nothing to do. Replicators of the current study should consider an individualized approach to establishing the terminal schedule, rather than basing the goal time on what a client may experience in an inclusive classroom or neurotypical setting.

CHAPTER 5

FIGURES

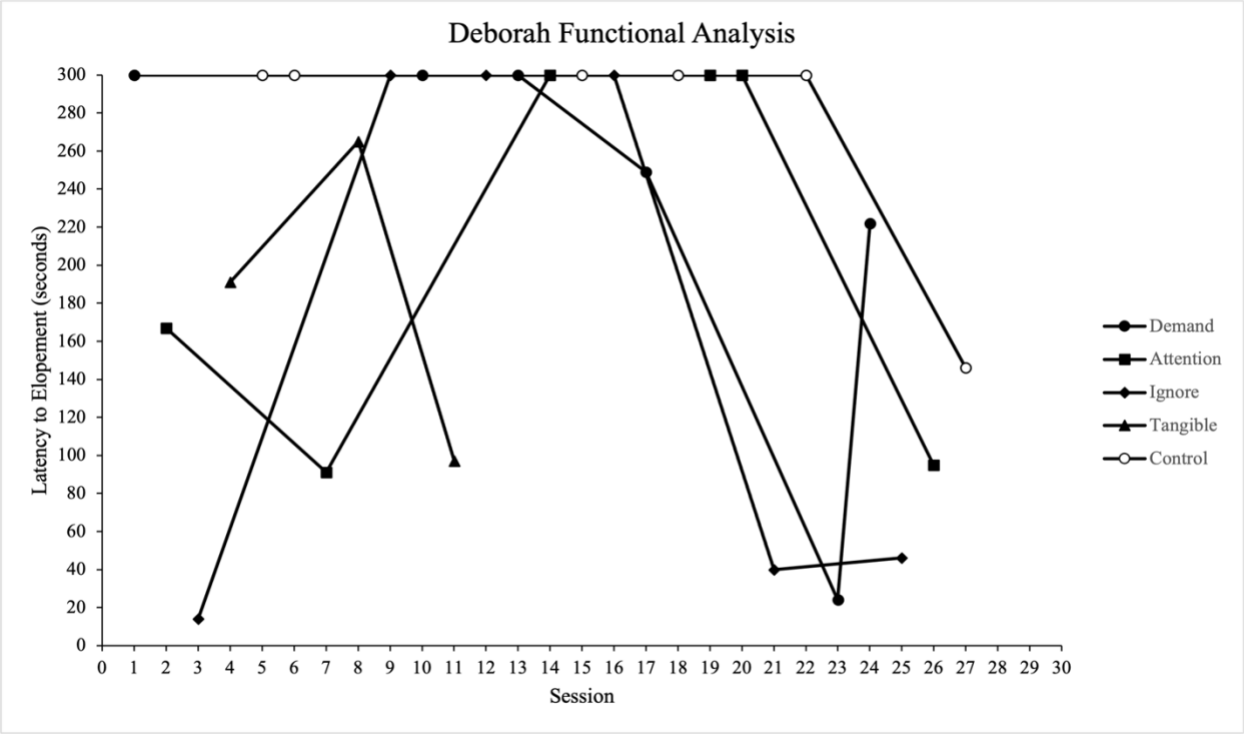

Figure 1. Results of Deborah's elopement FA depicting a tangible function through latency data.

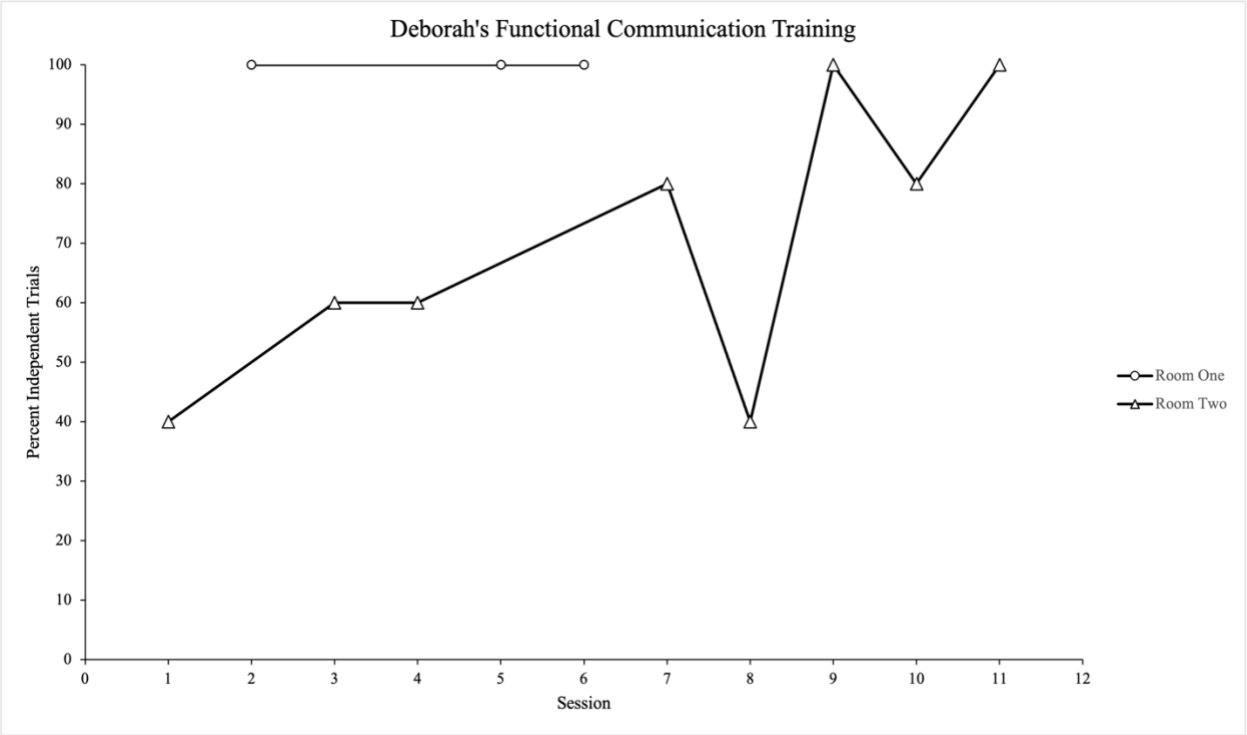

Figure 2. Results of Deborah's FCT training showing mastery in treatment rooms one and two.

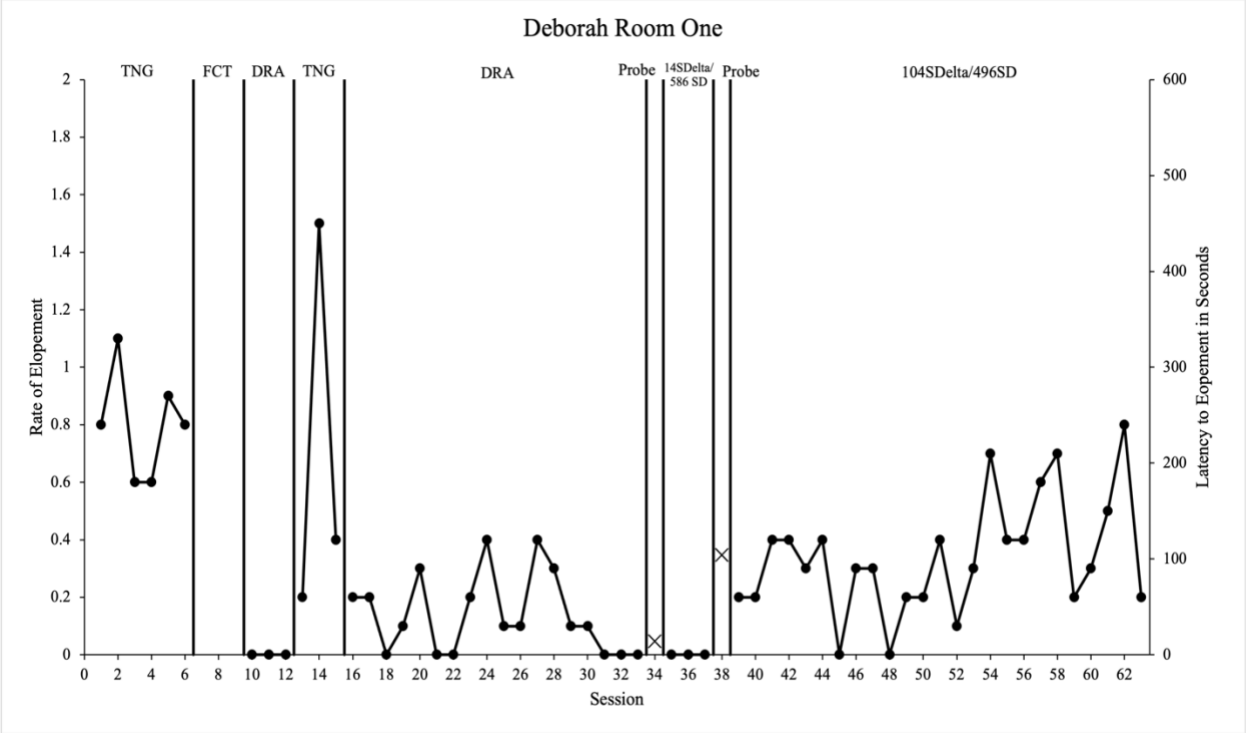

Figure 3. A scatterplot showing changes in rate of elopement across sessions in treatment room one. Condition abbreviations: “TNG” is tangible.

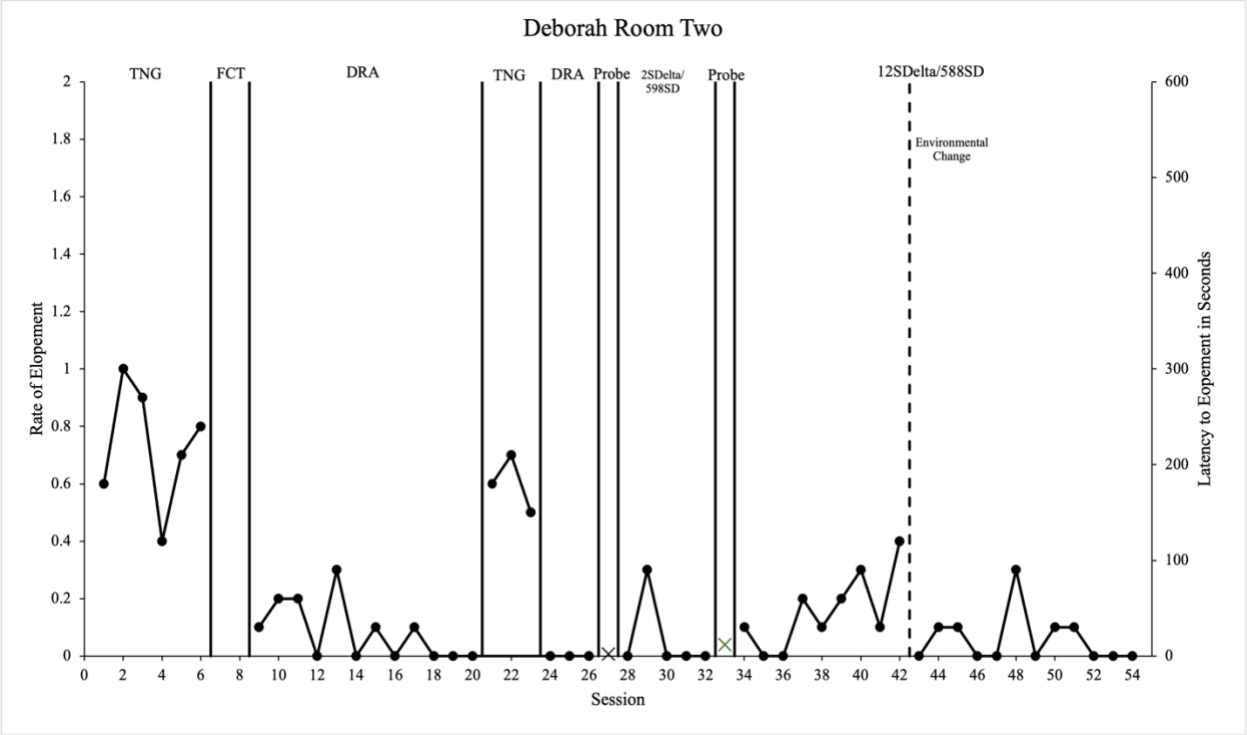

Figure 4. A scatterplot showing changes in rate of elopement across sessions in treatment room two. Condition abbreviations: “TNG” is tangible.

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