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Pre-Session Pairing and Instructional Fading Prior to Instruction

A Thesis
by
Claudia M. Aguayo

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of the Requirements for the Degree of

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Abstract

Given that instructional demands can become aversive with children with ASD, pairing is an effective tool used to decrease problematic behaviors. Previous research has evaluated the effect of antecedent manipulations strategies such as pre-session pairing. Pairing the therapist and teaching environment with highly preferred items can decrease problematic behaviors during instruction. Pre-session pairing and instructional fading might aid in not only decreasing those behaviors but increasing overall responding. Two participants with ASD and ADHD were included in the following study. These participants progressed through 8 stages of pairing and instructional fading. Problem behavior decreased from baseline for both participants in the post-pairing stages.

Keywords: demands, instructional fading, pairing, and rapport building.

Pre-Session Pairing and Instructional Fading Prior to Instruction

Children with Autism Spectrum Disorder (ASD) receive as many as 25-40 hours of behavioral interventions a week (Howard et al., 2005). This intensive intervention is often associated with the therapist because they are the ones making repeated instructional demands. These instructional environments can sometimes become aversive when the child is unsuccessful at the task, evoking escape-maintained behaviors (Geiger et al., 2010). Reflexive conditioned motivating operations (CMO-R) are events, once neutral, repeatedly followed by a set of worsening or improving conditions and influencing the value of the consequences for responding (Cooper et al., 2019). Thus, instructional demands might not signal the availability of positive reinforcement but, rather, negative reinforcement in removing the task (Carbone et al., 2007). In other words, the instructor might initially be a neutral stimulus but, with the consistent presentation of demands, comes to represent a worsening condition to the child.

Pre-session pairing is a rapport-building technique that, when implemented correctly, can prevent the development of the problems discussed previously. Unfortunately, this procedure is typically an informal one, as there have been no clear guidelines developed to date. Shillingsburg et al. (2014) described it as a social approach that entailed establishing a more favorable relationship before presenting any intensive demands. This approach consisted of the tolerance of demands after the pairing intervention took place. The authors examined two male children diagnosed with ASD in a multielement reversal design. Both participants engaged in behavior that consisted of climbing on furniture, running away from adults, and attempting to leave the room when instructional demands were placed. The researchers paired the therapist and the teaching environment with highly preferred activities before instruction. A pairing phase was conducted for 20 min with no demands while the child was provided with their most preferred items. Throughout the first phase of this study,

the pairing intervention took place with a separate therapist while the intervention/demand phase was implemented with a different therapist. During the final phase, both the pairing and demand therapists conducted a demand intervention phase. Results increased in-seat duration and decreased avoidance behavior in sessions where pairing with the participant took place. This study provided evidence of the benefits of pairing procedures to decrease avoidance of the instructional setting.

Practitioners are typically advised to "pair" with their clients before every session, but a need for a systematic protocol identifying the exact steps for effective pairing is still needed. Shillingsburg et al. (2019) identified an initial set of recommended stages for therapists to follow. These steps involved how much access to preferred items is recommended and how to fade instructions to pair with the individual effectively. The authors examined the effects of this pairing protocol with four participants (two 3-year-old and two 4-year-old clients diagnosed with ASD) in a nonconcurrent multiple baseline design. The authors conducted 9 stages of pairing in total. Although responding in baseline was different for every participant, they all exhibited behaviors such as crying or elopement from the table where demands were being made. Stage 1 began with the therapist approaching the child while making no demands and providing access to preferred items away from the intervention location every 30 s. Progression through these stages gradually increased demands from child-led play to an instructional session where the therapist remained at the table with preferred items delivered every 15 s following a response. The authors then conducted a post-test where sessions were identical to Stage 9. During the post-test, the therapist remains at the table with preferred items, and 15 s of demands are followed by 15 s of reinforcement. The participants' behaviors were hypothesized to be avoidance of the therapist, or the demands based on the children's history.

The results of Shilingsburg et al. (2014) extend the literature on building rapport with individuals before intense instruction, but the specific stages of pairing developed by Shillingsburg et al. (2019) need further experimental verification. Although pairing increased the subjects' proximity to the therapist, the effects of the pairing stages on behavior during DTT interventions were not examined.

A limitation of both previously described studies is the participants did not undergo a functional analysis (FA) to identify whether the participants' behavior was maintained by escape. The reason this would be important to know is the pairing stages might have greater or lesser effectiveness based on the controlling functions of the avoidance behavior (e.g., if the child was escaping to avoid demands or to engage in self-stimulatory behavior). Identifying the function of problem behavior can determine if an intervention is effective in treating those functions. Kelly et al. (2015) assessed the effects of pre-session pairing and academic responding with three components: preference assessments, functional analysis of problem behavior, and a pre-session pairing evaluation. Three children with diagnoses of ASD were examined. The experimenters provided a "break space" for the participant to engage with low preference items for 1-2 min before every pairing session. The pre-session pairing sessions were conducted for 2-5 min with highly preferred items or activities and no demands were placed during these sessions. The experimenters then moved into discrete-trial training sessions (DTT), where the participant was offered preferred items contingent on engaging in requested responses. Instructional demand sessions were conducted for 5 min, during which time correct responses were followed by tokens or praise. Incorrect responses were prompted with no reinforcers delivered. Overall, a reduction in problem behavior decreased after paring sessions with the participants. Despite this, the researchers were unable to determine what components of the pre-session pairing decreased the avoidance and escape behavior.

The purpose of the proposed research is to investigate how response classes maintained by different functions are affected by pre-session pairing and instructional fading. Another purpose is to examine the effects of the pre-session paring stages developed by Shillingsburg et al. (2019) on responding during instructional interventions.

Method

Subjects and Setting

The participants were two children that were referred for evaluation of problem behavior associated with tasks and demands. Two additional participants were excused from the study because they did not exhibit problem behavior in the Escape condition of the FA. The children were 5 and 11 years old and exhibited problem behavior when presented with demands during DTT. Johnny (11 years old) has a Down syndrome diagnosis and was referred to by his mother and supervising analyst. He had problem behaviors associated with instruction in a classroom setting. His behavior consisted of eloping from the designated area and engaging in "off task" behaviors such as dancing or singing. Marcus (5 years old) has Attention Deficit and Hyperactivity Disorder (ADHD) and was referred to by a local ABA clinic. The sessions were conducted in a clinic or home setting with a table and two chairs. He engaged in elopement and grabbing behavior that consisted of him removing the learning materials when presented with demands. Highly preferred items to serve as reinforcers were identified via a paired choice preference assessment with items that were previously identified by their current therapist. Preferred items that were included for Johnny were hot wheels cars and wrestling action figures. For Marcus, he preferred Play-doh, Legos, and coloring worksheets. The participants could switch out their preferred items between stages if they indicated for another item.

Experimental Design

A non-concurrent multiple baseline design across participants was used to evaluate the effects of pre-session pairing and instructional fading. The independent variable is the pre-session pairing and instructional fading stages. The dependent variable (DV) for each participant was the rate of problem behavior during the sessions. A secondary DV of correct responding in the post-pairing sessions was going to be calculated but observations of those session were unable to be arranged with therapists.

IOA and Treatment Integrity

Interobserver agreement (IOA) and treatment integrity were collected for 40% of the pre-session pairing sessions. A second observer collected data in vivo during sessions. Interval by Interval IOA was calculated for problem behavior in the pre-pairing stages. The number of unscored agreements when behavior did not occur over the number of agreements and disagreements that behavior did not occur. IOA was at 100% for unscored agreements. Treatment integrity was 80% for the pre-session pairing and instructional fading stages, calculated by the number of correct applications of the stages divided by the total number of stages

Procedure

Functional Analysis

The FA consisted of 4 conditions: escape, attention, no interaction, and play condition (control). A tangible condition was not included because there was no indication of a tangible function based the participants' initial interview. Results of the FA conducted with each participant are displayed in Figures 1 and 2. Conditions were conducted in a therapy room (Marcus) or office in the family home (Johnny) and lasted 5 min each. After each condition, there was a 3-min break. Pairwise FA conditions were conducted for Marcus to determine a clear function of his elopement and grabbing behavior. For Johnny, additional series of all conditions were added post-pairing.

The no interaction condition consisted of the participant in the room with the therapist. The therapist did not engage with the participant and there were no social consequences for any problem behavior exhibited by the participant. During the attention condition, the therapist stated, “I need to do some work.” The therapist sat across the room and appeared to be occupied with their phone, book, etc. The therapist provided attention to the participant for 15 s contingent on the occurrence of problem behavior. Attention was provided by the therapist providing verbal or physical attention such as “Please come sit down.” Upon entering the room during the play condition, the therapist said, “It’s time to play.” Low-to-moderately preferred items were available within proximity of the participant, the therapist engaged with the items with participant. There were no consequences for problem behavior. In the demand condition, the therapist said, “It is time to work,” and sat down at the table with the participant. Academic worksheets or other flashcards were included. The therapist provided verbal instructions and modeled the appropriate response. If the participant did not respond within 5 s of the second command, the therapist provided physical guidance to complete the task. Contingent on problem behavior, the therapist removed the task material from the participant for 15 s. After the time was up, the therapist repeated the verbal instruction and prompts.

Baseline and Post-Pairing

Baseline sessions were conducted just as the escape condition of the FA was for both participants. Post-test observations began in Stage 9 of the protocol displayed in Table 1. During these sessions, the therapist remained at the table and encouraged the participant to join them. Once the participant approached the table, they were given access to one of their highly preferred items for 15 s. A demand or instruction was given (based on the goals in the participant’s current behavior plan) and the instructor then waited 3 s. If the participant did not respond during this time, a response prompt was provided. The prompting hierarchy

presented was least-to-most intrusive (i.e., the instructor used a gestural prompt, then a partial-physical, then a model, then a full-physical prompt). Once the participant complied with the demand presented (with or without prompting), the instructor reinforced responding with access to the preferred item for 15 s. If the participant did not comply with the demand, the instructor re-presented the demand and provided a prompt to complete it. Completion of the task was followed by access to the reinforcer. If the participant physically resisted the prompt, preferred items were withheld until completion of the task without resistance.

Pre-Session Pairing and Instructional Fading

The protocol developed by Shillingsburg et al. (2019) is displayed in Table 1. This protocol was used as a guideline for instructors to follow prior to instruction. Each session lasted 5 min and breaks were provided between stages. Criteria to move onto the next stage consisted of three consecutive sessions with fewer than three instances of problem behavior. This protocol was designed to increase rapport building with the participant and gradually fade in more instruction throughout the stages.

All participants began in Stage 1. Highly preferred items were offered continuously throughout the session. There were no instructions given for the participant to sit with the therapist and receive access to the items. New toys and snacks were provided every 30 s or when the participant indicated they were finished with that item. In Stage 2, all preferred items were offered continuously within arm's reach of the therapist or table. The therapist did not approach the child during this stage; they waited for the participant to approach them or the table. For Stages 2 and 3, if the participant moved away from the therapist or table, access to the item was restricted from the participant. The therapist began to guide the child to their seat in Stage 3. Demands were first introduced in Stage 4. These were given at a rate of one per minute, and compliance was reinforced with access to the item. Demands were presented

more frequently in each consecutive stage. Stages 5-9 gradually faded in more demands and restricted access to preferred items. See Table 1 for a detailed description of each Stage.

Results

The results of the FA are displayed in Figures 1. For Johnny, the brief FA identified that his off-task behaviors were maintained by escape and attention. The FA results indicated that there was problem behavior in the no interaction condition and, therefore, an extended no interaction phase was conducted. Problem behavior was collected during each minute of this phase. The participants' problem behavior decreased and was completely extinguished by the final minute of the extended no interaction. For Marcus, his FA results identified escape as the function of his elopement and grabbing. The instances of problem behavior are displayed in Figure 2. For Marcus, problem behavior met the criteria in each stage to move onto the next. For Johnny, only stage 5 was repeated to reach 3 instances or below in all consecutive sessions. Problem behavior decreased to 0 for both participants in the post-pairing sessions as seen in Figure 3.

Discussion

Unlike Shillingsburg et al. (2019), the escape conditions of the FA were used as baseline before conducting the stages. This was a confounding variable because it is unclear if the decrease in problem behavior is a result of the post-pairing session, or if it is because of the respondent and operant conditioning that takes place throughout the progression of the stages. For example, the therapist is the neutral stimulus, and the unconditioned stimulus is the preferred item throughout the stages. The presentation of the highly preferred item brought the participant to the table, and the continued presentation throughout the stages allows the therapist to become the conditioned stimulus and as a result, become paired to the participants preferred item. Once the participant is approaching the table and therapist without engaging in high rates of problem behavior, the fading in of demands begin. The

gradual fade in of demands (SD) is then reinforced operantly with the therapist and the highly preferred item once the instruction is completed. Future research should examine both the respondent and operant conditioning throughout the stages to develop a more systematic way to address these types of learning that take place.

For Marcus, there was a delay to the intervention effects in the post-pairing sessions. A potential extraneous variable was that there was a week between the stages and post-pairing sessions due to his ABA clinic being closed. Future research should conduct the stages and post-pairing stages consecutively to avoid this extraneous variable. Another limitation of this study is that it was conducted with only two participants. Future studies should conduct an FA with the stages just as Shillingsburg et al. (2019) did with additional participants to evaluate the replicability of these results. This research used participants with diagnoses other than ASD, further research is needed to examine the efficacy of these stages with differing diagnoses. Overall, this study demonstrated that both participants had decreases in in problem behavior at the end of the post-pairing sessions. This decrease is an indication that the stages can aid future research in determining whether all stages are necessary for pairing.

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Table 1

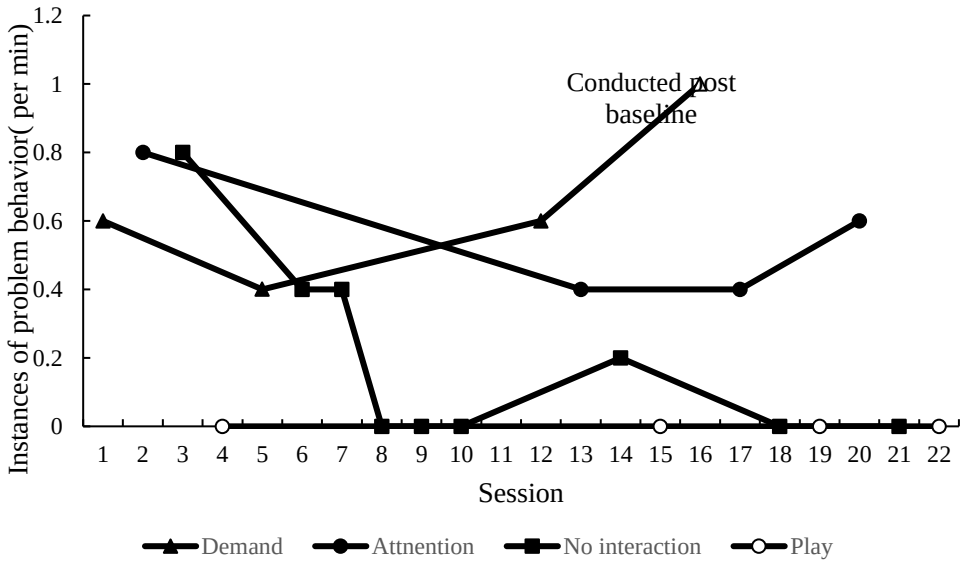
Pre-Session Pairing and Instructional Fading

Stage	Therapist behaviors	Access to preferred items
1	Therapist approaches child; engages with preferred items with child; no demands	Free access at or away from the table; new items offered every 30 s or when indicated for
2	Therapist remains at table; engages with preferred items with child; no demands	Free access at the table; preferred items cannot be removed from the table; new items offered every 30 s or when indicated for
3	Therapist remains at table; engages with preferred items with child when seated; no demands with the exception of gentle guidance to sit as needed.	Free access at the table when seated; preferred items cannot be removed from the table; new items offered every 30 s or when indicated for
4	Therapist remains at table; engages with preferred items with child when seated; one demand per minute following a indicated response	Free access at the table when seated; preferred items cannot be removed from the table; items restricted for demand presentation
5	Therapist remains at table; engages with preferred items with child; one demand every 30 s following an indicating response	Free access at the table when seated; preferred items cannot be removed from the table; items restricted for demand presentation
6	Therapist remains at table; engages with preferred items with child; two demands every 30 s following an indicating response	Free access at the table when seated; preferred items cannot be removed from the table; items restricted for demand presentation
7	Therapist remains at table; engages with preferred items with child; two demands every 15 s following an indicating response	Free access at the table when seated; preferred items cannot be removed from the table; items restricted for demand presentation
8	Therapist remains at table; engages with preferred items with child; three demands every 15 s following an indicating response	Free access at the table when seated; preferred items cannot be removed from the table; items restricted for demand presentation
9	Therapist remains at table; engages with preferred items with child; one to five demands every 15 s following an indicating response	Preferred items cannot be removed from the table; approximately 15 s of demands followed by 15-s reinforcement interval

Pairing and Instructional Fading Stages (Shillingsburg et al. 2019)

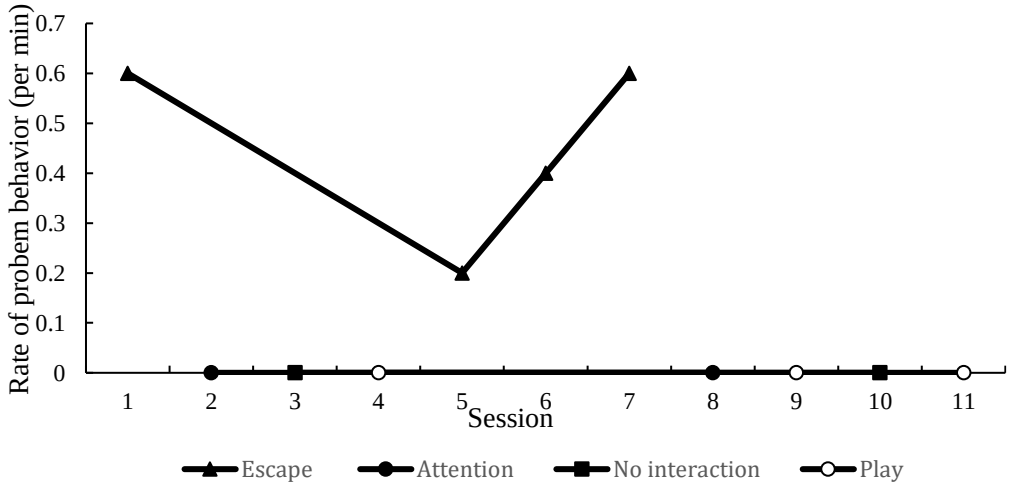
Figure 1

FA Graph for Johnny



Note. This figure displays FA results for Johnny. His problem behavior is maintained by Escape and Attention. An extended no interaction phase was conducted after the initial FA conditions. Additional conditions were conducted post-pairing.

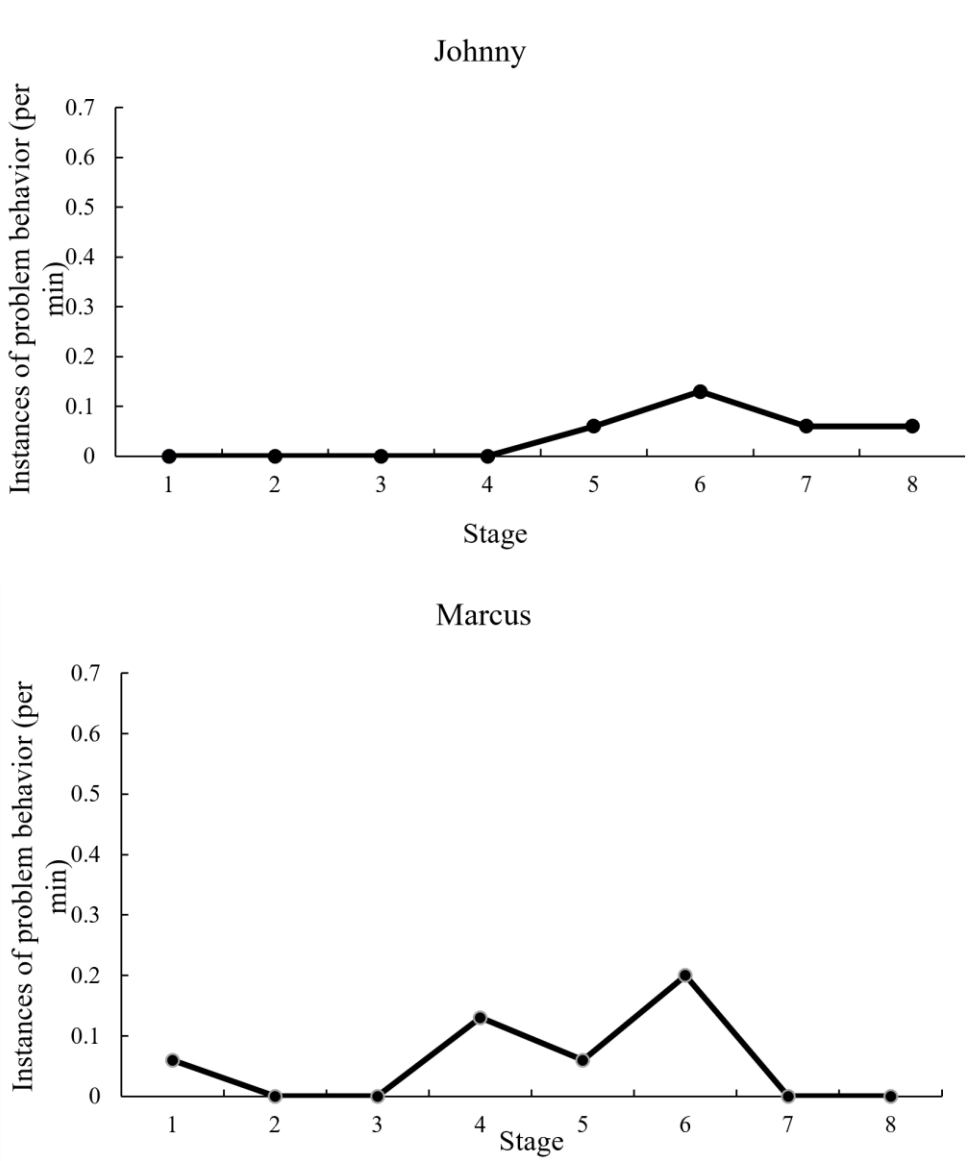
FA Graph for Marcus



Note. This figure displays FA results for Marcus. Problem behavior is maintained by escape.

Figure 2

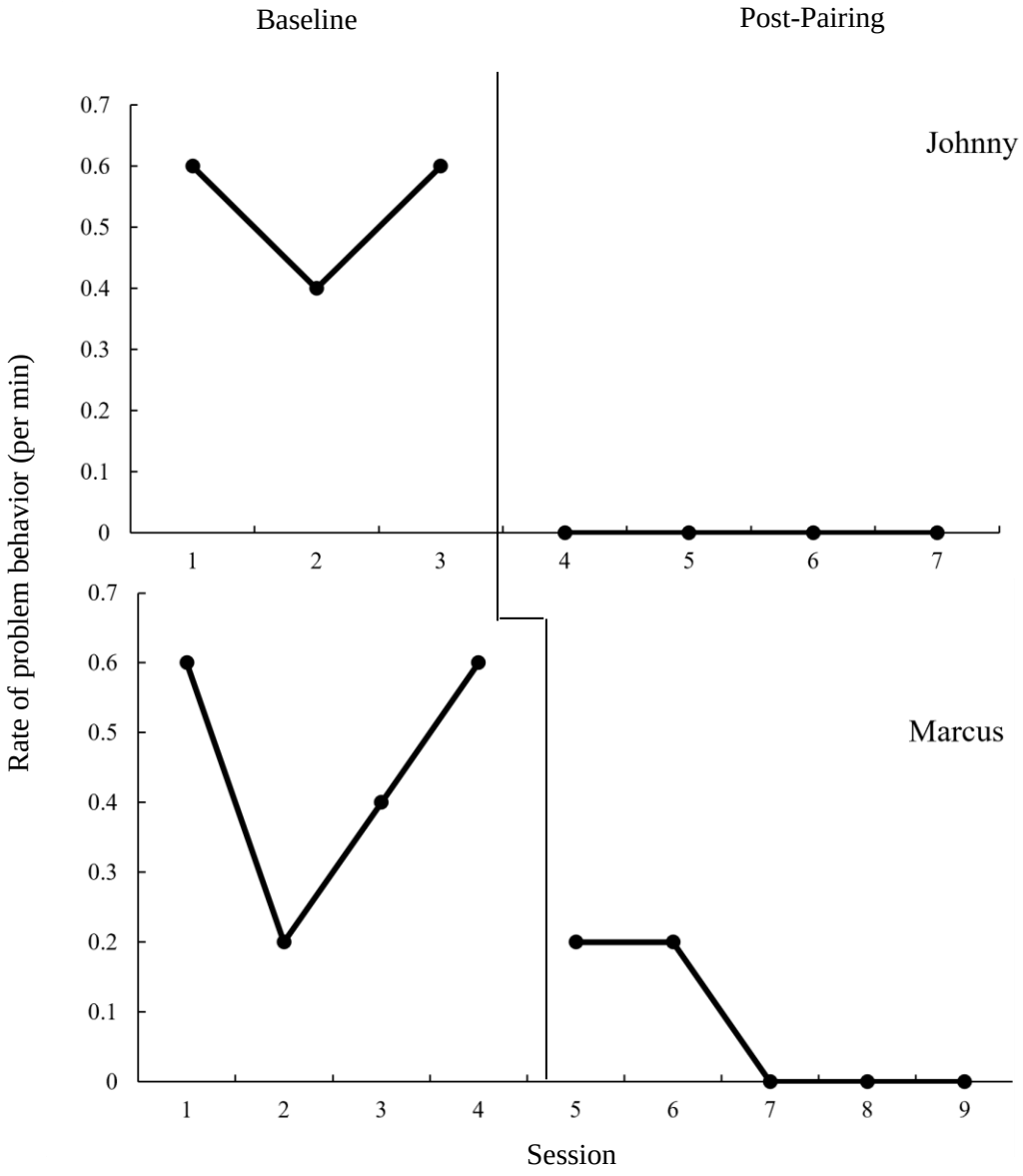
Pre-session Pairing and Instructional Fading



Note. This figure displays the total instances of problem behavior per min during all 3 consecutive stages conducted during the pre-session pairing stages and instructional fading for both participants.

Figure 3

Baseline and Post-Pairing



Note. This figure displays the rate of problem behavior for each participant in the post-pairing sessions.