

An Evaluation of a Latency-Based Functional Analysis to Decrease Problem Behavior with a Pet Dog

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Abstract

A latency-based functional analysis (FA) is a variation of a standard FA in which the latency between the start of the condition to the onset of the behavior is measured as opposed to measuring the frequency or rate of the behavior. This may be advantageous when assessing the function of behaviors that pose a risk to the participant or others, as the number of behaviors observed is lower compared to a standard FA. Although latency-based FAs have been used to identify the function of behavior in humans, research showing its efficacy with non-human participants is limited. Thus, the purpose of Experiment 1 was to determine the function of jumping behavior with a pet dog using a latency-based FA. The purpose of Experiment 2 was to show that the latency-based FA accurately identified the function of behavior by informing the creation of a differential reinforcement of incompatible behavior (DRI) procedure to reduce jumping. The results from Experiment 1 showed differentiated responding which informed intervention in Experiment 2. The results from Experiment 2 showed a reduction in jumping behavior and increase in the incompatible behavior. Results and areas for future research are discussed.

Keywords: dog, functional analysis, latency-based functional analysis, reinforcement, differential reinforcement of incompatible behavior

An Evaluation of a Latency-Based Functional Analysis to Decrease Problem Behavior with a Pet Dog

When intervening on problem behavior with human populations, a key initial step is identifying the function of behavior, typically through a functional analysis (FA). In a standard FA, the individual is systematically exposed to various conditions (e.g., attention, escape, automatic reinforcement, and control) to determine which one reliably evokes the behavior (Iwata et al., 1982/1994). In recent years, there has been an increase in the use of FAs to identify the function of behavior for non-human populations, in part due to the increased focus on ethical animal training practices and animal welfare (Fernandez, 2024).

For example, Pfaller-Sadovsky et al. (2019) used a standard FA to identify the reinforcing variables maintaining jumping behavior with five pet dogs. The FA included attention, control, demand, ignore, and tangible conditions and the results showed four dogs' jumping behavior was maintained by access to tangibles, and the other dog's behavior was maintained by attention. The authors not only successfully used FAs to identify maintaining variables of problem behavior, but they also trained the pet owners to carry out the FA procedures and yielded useful outcomes, after being trained using behavioral skills training (Pfaller-Sadovsky et al. 2019).

As another example, Waite and Kodak (2022) successfully trained the owners of three dogs to conduct a standard FA to assess the controlling variables of mouthing behavior across ignore, attention, demand and tangible conditions, as well as toy play which served as a control condition. The results of the FA suggested that all three subjects' mouthing behavior was maintained by attention, and in the case of one dog, was maintained by access to tangibles. The results were used to inform individualized interventions. One intervention used differential reinforcement of an alternative behavior, another included differential reinforcement of incompatible behavior (DRI), and the third implemented a multiple schedule involving noncontingent reinforcement and extinction. All three interventions resulted in the reduction of mouthing across dogs (Waite & Kodak 2022).

Rotta et al. (2023) provided a concise review of articles that have used FAs to assess unwanted behavior by non-human participants. This search yielded 13 articles which fit the inclusion criteria, representing 33 non-human participants. Seven of the 13 studies used dogs as their population, with six of those using a standard FA (Dorey et al., 2012; Feuerbacher & Wynne, 2016; Hall et al., 2015; Pfaller-Sadovsky et al., 2019; Waite & Kodak 2022; Winslow et al., 2018), and one using a pairwise FA (Mehrkam et al., 2020). The FA procedures were effective in producing a clear function of behavior for the target responses in 32 of the 33 participants, with one dog showing little responding during the FA. An intervention based on the FA was applied and effective in 12 of the 13 studies.

Despite the growing interest in the use of FAs for non-human populations (Rotta et al., 2023), the use of a standard FA may present some possible limitations, particularly when analyzing the function of behavior that can present safety risks to the participant or people around them. Further, the standard FA presents a limitation when assessing behaviors that require the environment be reset for it to occur again. For example, if using an FA to assess elopement, the participant would need to be returned to the observation area following each behavior. As another example, if the FA was assessing a disrobing behavior, the participant

would have to be re-dressed after each behavior. This could lead to unintended attention provided to the participant which could damage the integrity of the FA (Traub & Vollmer, 2019).

One variation of a standard FA includes the latency-based FA. The latency-based FA is conducted similarly to a standard FA in that environmental variables are manipulated to create conditions based on functions of behavior, and the participant is systematically and repeatedly exposed to each condition. However, when conducting a latency-based FA, the implementor measures the amount of time between the start of a condition/session and the onset of the target behavior (latency) as opposed to the frequency or rate of behavior (Neidert et al., 2013). The session is terminated after one instance of target behavior which can be useful for minimizing potential risk (Caruthers et al. 2015; Lambert et al. 2017; Mehrkam et al., 2020). This also allows the experimenter to reset the environment after each session as opposed to multiple times within sessions, minimizing potential inadvertent attention being provided, which when provided outside of the attention condition could harm the validity of the FA results (Jessel et al., 2018).

Although benefits of latency-based FAs have been shown in research with human participants (Caruthers et al., 2015; Hamilton et al., 2020; Harper & Luiselli, 2019; Jessel et al., 2018; Lambert et al., 2017; Neidert et al., 2013; Thomason-Sassi et al., 2011; Traub & Vollmer, 2019), similar research with non-human participants has largely been limited to the standard FA described by Iwata et al. (1982/1994) (Dorey et al., 2012; Feuerbacher & Wynee, 2016; Hall et al., 2015; Pfaller-Sadovsky et al., 2019; Waite & Kodak 2022; Winslow et al., 2018). To the current author's knowledge, only one study involving non-human subjects utilized latency measures within an FA. Salzer et al. (2024) implemented a trial-based FA with four dogs across an ignore, attention, escape, and tangible condition, in which the time between the onset of the condition and the behavior was measured. Each condition consisted of one control segment and one test segment. Following the trial-based FA, a standard FA was also conducted, and the results were used to create interventions for each dog which were all successful in reducing the relevant target behavior (Salzer et al. 2024).

Thus, the purpose of the first experiment in the current study was to expand previous research by assessing the use of a latency-based FA to determine the maintaining variables of jumping behavior with a pet dog. The first experiment also added to the research conducted by Waite and Kodak (2022) by adding an additional phase to allow for the comparison of when the FA was conducted by the experimenter versus when it was conducted by the owner, as previous research has indicated that rates of behavior may differ dependent upon the individual implementing the FA (Hall et al., 2015). The purpose of the second experiment in the current study was to assess the effectiveness of a function-based treatment procedure based on the results from the first experiment to decrease problem behavior for the same pet dog.

Experiment 1

Method

Subject and Setting

The Institutional Animal Care and Use Committee (IACUC) approved all procedures. The subject of this study was Norman, a 2-year-old male mini-Bernedoodle. Norman's owner,

who was the primary investigator's classmate, volunteered him to participate in the study, and the primary investigator did not have any previous exposure to or experience with Norman prior to the current study. Norman's owner reported that he was previously enrolled in dog training and had experience with clicker training, but this was not used during this study. Additionally, Norman's owner reported that he often jumped up and put his front paws on people and that this behavior had led to others being knocked over in the past. The owner reported that this behavior occurred most frequently when someone entered the owner's home, but it was not limited to this context and was reported to occur when others were already inside the home for longer periods of time and occurred regardless of if others were previously known to Norman. The owner additionally reported that they implemented what they called "planned ignoring," which included turning away from Norman and avoiding speaking to him during instances of jumping, and that on some occasions this led to Norman sitting, but this strategy did not result in reducing the jumping behavior. At the time of the study, Norman did not have any history of aggressive behaviors such as biting or resource guarding. All sessions of both experiments took place in the owner's home in which Norman resided. The room in which sessions occurred contained a couch, a large chair, a table, and a countertop. Typically, Norman's toys were stored in a container in the room, but this was removed for the duration of the experiments, unless specified.

Materials

During the first experiment, the owner and the experimenter used the clock application on their phones to measure the latency for each condition. The number of seconds were recorded in an electronic data sheet in between conditions using either a laptop or a phone. Depending on the condition, the individual conducting the FA wore either a black, white, gray, or blue shirt to assist Norman in discriminating between conditions. This choice was made because it has been shown that programmed discriminative stimuli (SD's) can increase the efficiency of an FA, as well as increasing the likelihood for clear outcomes from the assessment (Connors et al., 2000; see Waite & Kodak 2022 for an example of use with dogs). At the start of each session the owner was asked what Norman's current preferred toy was, which was then used in the tangible and control conditions. A camera was used to record sessions for procedural fidelity (PF) data collection and the camera was oriented in a way that it captured both Norman and the individual conducting the FA and was connected to a laptop placed on the counter.

Dependent Variables and Response Definitions

The primary dependent variable in Experiment 1 was the latency between the start of the condition and the onset of the jumping behavior. Jumping was defined as Norman's front two paws exceeding 15.24 cm (6 in.) from the floor. This did not include instances in which Norman raised one paw. At the start of the session the experimenter and the owner pressed the start button on their phones and then pressed the stop button at the onset of jumping. During a break between conditions, the time shown on the stopwatch was converted into seconds and directly transcribed into the electronic spreadsheet.

Procedure

General Procedure

The FA consisted of three test conditions (demand, attention, and tangible) as well as a control condition. The conditions were presented in a multielement design as described by Iwata et al. (1982/1994), across two phases (phase A and phase B). During phase A, the FA was conducted by the experimenter. The owner sat behind the counter collecting interobserver agreement (IOA) data as well as starting and stopping the video recording on relevant sessions. During phase B, the owner conducted the FA while the experimenter collected IOA data and started and stopped the video recording on relevant sessions.

The individual conducting the FA wore a different colored shirt (black for demand, white for attention, gray for tangible, and blue for control) during each condition to aid in Norman's discrimination between each condition. These colors were chosen because dogs have been observed to discriminate between gray and blue, as well as between black and white (Byosiére et al., 2018). These colors have also previously been used as discriminative stimuli when conducting an FA to assess mouthing in dogs (Waite & Kodak 2022). One session was conducted per day and lasted no longer than approximately 1 hr and 20 min. The number of conditions conducted each session was dictated by the availability of the owner. Each condition lasted for a maximum of 5 min. There was also a 5 min break in between each condition to allow for the environment to be reset for the following condition. The conditions were presented in a randomized order (with the exception of the second session with the experimenter – see General Discussion).

Prior to each session, the owner reported what she believed Norman's highest preferred toy currently was, to inform what was used during the tangible and control condition during that session. Other stimuli used during the test and control conditions were based on an interview with the owner. This interview informed what demands would be placed during the demand condition and what verbal and physical attention were provided during the attention and control conditions.

Just before starting the session, the individual collecting IOA data (either the owner or the experimenter depending on the phase) started the camera. The experimenter and the owner both pressed start on their stopwatches when the condition began, and they pressed stop when Norman engaged in jumping. If no jumping behavior was observed within 5 min, then the condition ended, and the individual collecting IOA data said, "End" in a neutral tone. This was done to communicate to the individual implementing the FA that 5 min had elapsed, so that they did not have to reference their stopwatch, as well as to provide a cue in the video that the condition ended. If the condition were to end due to the target behavior occurring, Norman gained access to the reinforcer of the current condition for 10 s, and then the individual implementing the FA removed the reinforcer. After the reinforcer had been removed, or if 5 min elapsed without jumping occurring, then the individual implementing the FA left the home, the IOA data collector behind the counter ended the recording, and the break started. During these breaks the individual implementing the FA switched into the color of shirt corresponding to the next condition, while the person collecting IOA data remained behind the counter, ignoring any behavior Norman engaged in, and saved the recorded video. Both the experimenter and the owner also recorded the amount of time presented on the stopwatches in the electronic spreadsheet during these breaks.

Demand Condition

During the demand condition, the individual implementing the condition wore a black shirt. Norman was given the cues to sit (“sit”), shake (“shake”), spin (“spin”) and come (“Norm come”). These tasks were selected because the owner reported that these were the cues that Norman typically responded independently to, however, the owner also reported that it was not clear if the presentation of cues was contributing to problem behavior. Because Norman had already been trained to respond to these cues, a gestural prompt had been paired with each verbal cue and was used during the condition. For example, when telling Norman to spin, the individual implementing the condition also held their fist above the dog and moved it in a circle. The condition started when the individual implementing the FA delivered the first cue. If Norman engaged in the correct response, the individual implementing the condition provided him with general neutral praise without engaging in any physical contact (e.g., “Good boy”). This praise lasted for 3 s and then the next cue was given. If Norman engaged in jumping, the individual implementing the condition stopped delivering cues and left the room immediately.

Attention Condition

During the attention condition, the individual implementing the condition wore a white shirt. The attention condition started the moment that the door was opened. The individual implementing the condition entered the room and made eye contact with Norman while saying, “Hi doggy,” or some variation (e.g. “Hi puppy”) before ending eye contact and looking at the ground. If 5 s elapsed without any jumping behavior, the individual implementing the FA took a step toward Norman while continuing to avoid eye contact and without touching the dog. If Norman engaged in jumping, they said, “No, no, Norman” while laughing and smiling, making eye contact, and using their hands to block and redirect Norman back to the floor. Once Norman was back on the floor, the individual implementing the condition petted him while saying, “No jumping” for an additional 10 s before leaving the room. These consequences were selected because they were similar to people’s response to being jumped on by Norman, as reported by the owner.

Tangible Condition

During the tangible condition, the individual implementing the FA wore a gray shirt. Before the start of the tangible condition, an opaque container containing the reported highly preferred toy was placed on the counter so that the individual implementing the condition could reach it, but Norman could not see it. The individual implementing the FA entered the room and moved the container toward the edge of the counter so that Norman could see it, and then removed the toy from the container. The condition began as soon as the toy had been removed from the container. The individual implementing the condition held the toy so that Norman could see it but could only reach it if he engaged in jumping. The individual implementing the FA also played with the toy, by either squeezing, tossing, or swinging the toy, while keeping it at relatively the same distance away from the dog. If Norman engaged in jumping, then the individual implementing the condition immediately either put the toy on the floor in front of the dog or let go of the toy if it was already in his mouth. The individual implementing the FA

waited 10 s, removed the toy, and then put it out of sight before leaving the room and starting the break.

Control Condition

During the control condition, the reported highly preferred toy was placed on the floor in view of Norman. The individual implementing the condition also stood in the room in the view of Norman, wearing a blue shirt. The individual implementing the FA provided general praise every 15 s. Pets were also provided any time Norman was within reach. If Norman engaged in jumping, the individual implementing the condition continued to pet/deliver praise until the next time they delivered general praise, while avoiding increased attention like laughing or specific praise delivered during the attention condition. Then they left the room, starting the break.

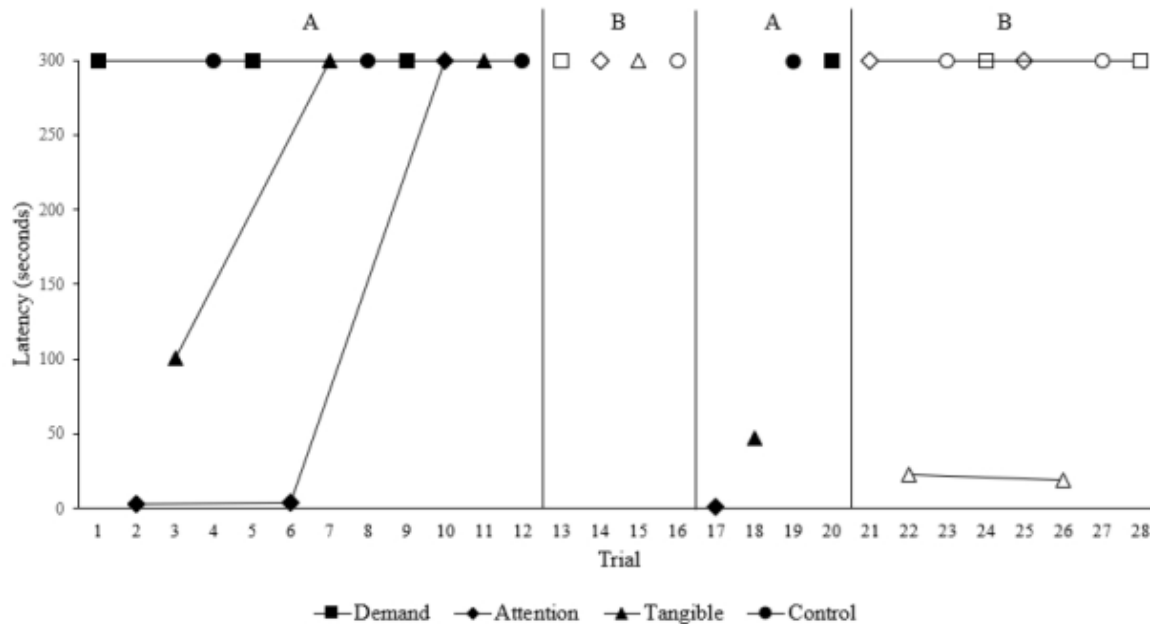
Interobserver Agreement and Procedural Fidelity

Interobserver agreement (IOA) data were collected by either the owner or the experimenter (depending on the phase) across 100% of conditions. Data were collected by the owner during the first phase of the FA and collected by the experimenter during the second phase. IOA was calculated by dividing the shorter latency by the longer latency within each condition and multiplying by 100 to obtain a percentage. IOA averaged 98% (range, 62%–100%). Procedural fidelity (PF) was recorded across 33% of conditions. The primary experimenter reviewed the recording and scored a fidelity checklist consisting of yes and no questions. Each checklist was individualized to the relevant condition (i.e., SD, motivating operation (MO), and consequence). In some conditions, the behavior of the individual implementing the condition was dependent on Norman's behavior (e.g., during the control condition, the experimenter pet Norman only if he got within reach of them), and therefore, "N/A" was marked on the checklist for instances in which the individual did not have the opportunity to engage in these behaviors. PF was calculated by dividing the number of questions answered "yes" by the total number of questions answered either, "Yes" or, "No" and multiplying by 100 to obtain a percentage. PF averaged 97% (range, 75%–100%).

Results and Discussion

Figure 1 depicts the results of the latency FA.

Figure 1 *Latency FA Results*



Note. Closed symbols represent conditions implemented by the experimenter and open symbols represent conditions implemented by the owner.

When the conditions were conducted by the experimenter (phase A), Norman engaged in jumping during three attention conditions (latency range, 1.5 s–3.5 s), and two tangible conditions (latency range 45 s–100 s). When conditions were conducted by the owner, Norman only engaged in jumping during one tangible condition (latency range 19 s–23 s). It should be noted that Norman did not engage in jumping during any attention condition conducted by the owner. These results show that the primary function of Norman's jumping behavior was attention, with a potential secondary function of access to tangibles. The results from Experiment 1 suggest that a latency-based FA can be conducted with dogs and produce differentiated results as described by Iwata et al. (1982/1994). In Experiment 1, the FA predicted attention as the function maintaining Norman's jumping behavior, with access to toys as a possible secondary function. The results of this FA informed the intervention used in Experiment 2. The purpose of the second experiment was to assess how accurately the FA predicted the function of the jumping behavior.

Experiment 2

Method

Subject and Setting

The Institutional Animal Care and Use Committee (IACUC) approved all procedures. The subject and setting of the second experiment were identical to Experiment 1.

Materials

At the start of each session, the experimenter asked the owner what Norman's most preferred toy was, as was done during Experiment 1. The reported toy was then used during trials in the intervention and Norman's toys were out of reach for the duration of the second experiment. After each trial, both the experimenter and the owner recorded data on sitting behavior and jumping behavior on the electronic data sheet using either a laptop or a cell phone. A camera was used to record sessions for PF data collection and the camera was oriented in a manner that allowed it to capture both Norman and the experimenter. The camera was connected to a laptop placed on the counter. The same clock application used in the first experiment was used again to measure the time delay before prompting.

Dependent Variables and Response Definitions

The primary dependent variable was the percentage of trials per session in which Norman engaged in jumping. Jumping was defined identically to Experiment 1. A secondary dependent variable was an incompatible behavior, specifically the percentage of trials per session in which Norman engaged in sitting. Sitting was defined as any time in which Norman's bottom contacted the floor without raising both of his paws higher than 15.24 cm (6 in.). Throughout the experiment gestural prompts were used when needed to prompt Norman to sit. This consisted of the experimenter extending their upward facing palm and moving it upwards by roughly 45 degrees.

Experimental Design

An ABABC reversal design was used to evaluate the effects of the intervention. After the second intervention phase, a phase in which the toy was faded was conducted. This design was selected to allow for an easy comparison between the behavior in the baseline and intervention conditions while also allowing the experiment to conclude with the reduction of problem behavior and an increase of the replacement behavior.

Procedure

Baseline

Trials during the baseline condition were procedurally identical to the attention condition from the FA during Experiment 1.

Intervention

During the intervention, the experimenter started outside of the owner's home. The trial started when the experimenter entered the home as described in the attention condition of Experiment 1. Because of the secondary function of access to tangibles as seen in the results of the FA in Experiment 1, the experimenter also held a preferred toy when they entered the home. After the experimenter entered the home and said, "Hi doggy!" they also delivered a gestural prompt along with a verbal instruction, "Sit" at a 0 s delay upon entering. After the first three trials, a 2 s time delay was implemented prior to delivering the instruction and prompt. This time delay increased by 2 s every two consecutive trials in which Norman did not engage in jumping.

If Norman engaged in sitting before the prompts were presented, the experimenter provided access to the toy while also providing petting and giving general praise. If Norman engaged in sitting after the prompts were presented, then access to the toy was still provided along with general praise, but Norman did not receive any petting. After Norman had access to the toy for 10 s, the trial ended. If he engaged in jumping at any time, the experimenter presented the prompts, or represented the prompts, and waited 5 s for Norman to sit. The experimenter delivered general praise if sitting occurred and if he did not sit within the 5 s following the prompt, the experimenter ended the trial. Once a trial ended, a 5 min break occurred, during which the experimenter and the owner filled out the electronic data sheet for that trial. Following the break, the experimenter re-entered the home, starting a new trial. Each intervention session consisted of five trials. The intervention condition ended when Norman engaged in sitting before the prompt was delivered in 80% of trials across two consecutive sessions.

Toy Fading

The purpose of this phase was to fade the use of the toy from the intervention. This phase was procedurally identical to the intervention phase except that the toy was not used in some trials. When the toy was not used, the experimenter brought the toy outside as they did during intervention, but the toy was not visible when they entered the home at the start of the trial, and the toy was not delivered contingent on Norman's sitting behavior. During the first session of the toy fading the toy was not used in one of five trials. During the second session the toy was not used in three of five trials. During the third session the toy was not delivered in two of five trials, and in the fifth session the toy was not used at all. The other difference involved the prompt being delivered after a 20 s time delay. This delay remained at 20 s throughout the phase.

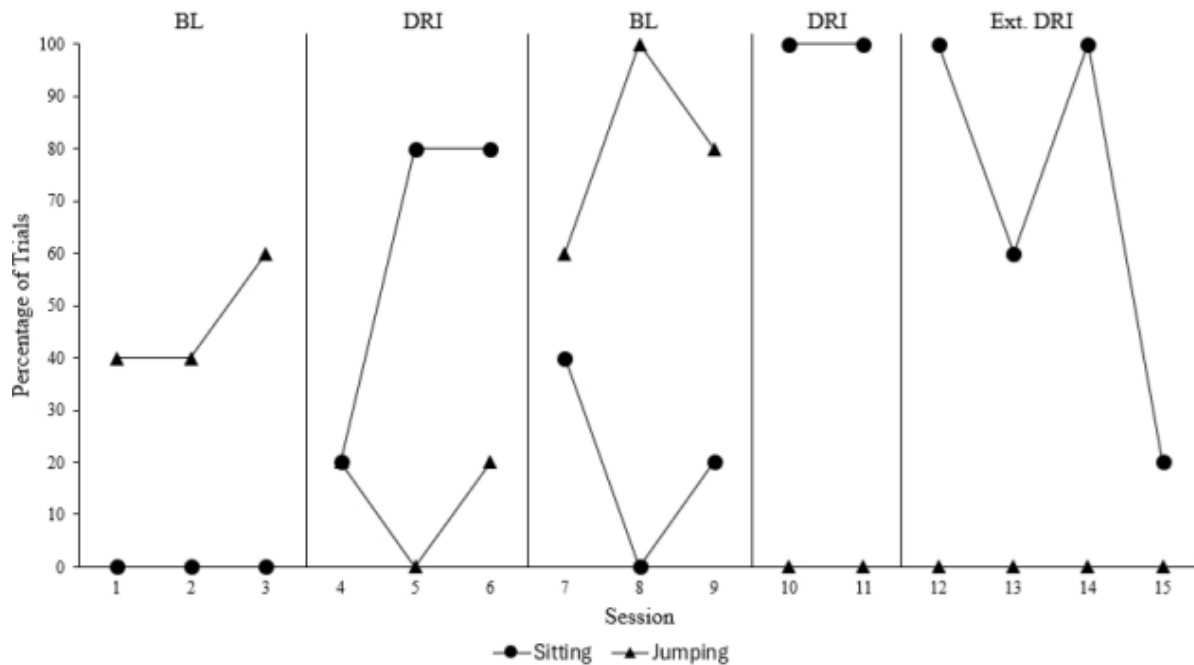
Interobserver Agreement and Procedural Fidelity

IOA data were collected by the owner across 100% of sessions. The total number of agreements was divided by the total number of trials and then multiplied by 100. IOA was 100%. The experimenter reviewed the recordings and scored a fidelity checklist consisting of yes and no questions similar to Experiment 1. These questions included whether the experimenter presented the SD, consequence and prompt, as well as if the delivery of the prompt followed the time delay schedule. If a prompt was not used (e.g., if Norman sat before the prompt was given) then an "N/A" was scored for that question. PF was recorded by the experimenter across 34% of trials in baseline and intervention. PF was calculated by dividing the number of questions answered "yes" by the total number of questions answered "yes" and "no" and multiplying by 100 to obtain a percentage. PF averaged 98% (range, 66%–100%).

Results and Discussion

Figure 2 depicts the results of Experiment 2.

Figure 2 *Percentage of Trials with Jumping and Sitting Across Conditions*



During the first baseline phase, Norman engaged in jumping during an average of 47% of trials per session (range, 40%–60%) and did not exhibit any sitting behavior. During intervention, Norman's sitting behavior increased to an average of 60% of trials per session (range, 20%–80%), and his jumping behavior occurred at an average of 13% (range, 0%–20%). When conditions were returned to baseline, the percentage of trials per session in which Norman jumped increased to an average of 80% (range, 60%–100%), and the sitting behavior decreased to an average of 20% of trials per session (range, 0%–40%). Once the intervention resumed, sitting immediately increased to 100% in all sessions, and jumping reduced to 0%. During the toy fading, jumping remained at 0% in all sessions, however sitting occurred at an average of 70% of trials per session (range, 20%–100%). These results show that the intervention was successful in reducing Norman's jumping while increasing his sitting behavior when individuals enter the home.

General Discussion

The purpose of the first experiment was to determine the function of jumping behavior with a pet dog via a latency-based FA whereas the purpose of the second experiment was to determine the extent to which the results of the FA informed an effective intervention. The latency-based FA was successful in producing differentiated results for Norman's jumping behavior indicating a primary function of attention with a potential secondary function of access to tangibles. In the second experiment, Norman's jumping behavior was reduced to zero and the incompatible response of sitting increased, showing that the latency-based FA effectively identified functions of behavior which informed an effective intervention.

Another goal of this study was to address some possible limitations of the standard FA. The authors proposed that a latency-based FA could reduce the amount of time in session, reduce

the frequency of behaviors, and address the limitation of having to reset the environment during an FA. The longest condition during the FA was 5 min. Although a standard FA could have condition limits of 5 min as well, it should be noted that during the current study, these were only conditions in which Norman did not engage in the target behavior, whereas in a typical FA, all conditions would last the entirety of the time limit. Additionally, although this study did not directly compare the amount of target behavior observed in a standard FA to a latency-based FA, it can be noted that Norman only engaged in jumping seven times during the entire FA, and the FA was considered successful in producing differentiated results. As for the limitation of resetting the environment without providing unwanted attention to the subject, this study also suffered from this limitation as the individual implementing the FA had to re-gain possession of the toy during the tangible condition.

Although the first experiment was successful as producing differential results, limitations should be noted. First, during the attention condition, the duration in which Norman was exposed to the experimenter inevitably increased across conditions, and it is possible that this impacted the MO for attention for the experimenter through each session. To avoid this, the experimenter conducted the attention condition as the first condition during the next session. Although this could have caused order bias, it did accurately portray the context of the subject being exposed to an unknown person for the first time and controlled for potential abolishing operation effects during subsequent attention conditions (e.g., Hammond et al., 2013). Additionally, Norman never engaged in jumping during the attention condition with the owner. It is possible that because of frequent access to and attention from his owner on a regular basis, the MO was not as strong and did not result in high levels of jumping during the FA. In contrast, because the experimenter was novel to Norman (did not have previous exposure to the experimenter prior to the current study), a strong MO for attention for the experimenter may have evoked more jumping. Future research should explore these possibilities as well as other causes for differences in behavior across phases (experimenter versus owner implemented), including MOs, histories of punishment, and other learning histories.

Second, the demand condition was based on the interview with the owner and the cues that were normally provided to Norman. It is unclear if different demands would have impacted the results and future research should consider a dog's unique learning history when designing this condition, as previous experience with obedience training may influence responding. Next, an alone condition was not included in Experiment 1, as jumping was assumed to involve social contingencies. However, future research should consider this condition depending upon the problem behavior.

Although the results from Experiment 2 showed success with reducing jumping and increasing the incompatible behavior of sitting, several limitations should also be noted. Although sitting was observed at moderate-high levels across all sessions in the intervention conditions, and jumping was observed at low levels, all trials during these sessions were conducted with the use of a toy. Norman consistently engaged in sitting whenever the experimenter was using a toy, however during the 11 trials in which the toy was not used during the toy fading, prompts were required for Norman to sit in 55% of trials. Further, Norman did not engage in sitting at all during 27% of trials without the toy even after a prompt was delivered. This limitation was likely caused by reducing the use of the toy too quickly and/or the toy potentially functioning as an SD for sitting. However, despite this limitation, his jumping

behavior remained at zero, even when the toy was not used. Further, although the intervention successfully reduced Norman's jumping behavior within sessions, maintenance and generalization were not measured and future studies should include this.

The current study offers initial support for the use of latency-based FA with dogs. Despite limitations related to toy use and the absence of maintenance and generalization data, the intervention—differential reinforcement of sitting—effectively eliminated jumping behavior. These results highlight the potential for function-based interventions in applied animal behavior, warranting further research.

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