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The Effects of the High Probability Instructional Sequence on Compliance with Multiple Low Probability Instructions

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by

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Abstract

Title: The Effects of the High Probability Instructional Sequence on Compliance with Multiple Low Probability Instructions

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The high-probability (high-p) instructional sequence is an antecedent intervention often used to improve compliance with instructions. It typically consists of multiple high-p instructions followed by a single low-probability (low-p) instruction. The purpose of this study was to investigate the effects of the high-p instructional sequence on compliance with multiple low-p instructions and the first low-p instruction in the sequence. More specifically, this study investigated the effects of three to five high-p instructions on compliance with 1, 2, and 3 low-p instructions. Three individuals diagnosed with ASD participated. Results showed that the high-p instructional sequence was only effective for 1 out of the 3 participants. For the one participant for whom the high-p instructional sequence was effective, compliance improved for sequences with 2 and 3 low-p instructions, however the high-p instructional sequence did not consistently increase compliance with the first low-p instruction presented in the sequence.

Keywords: compliance, high-p instructional sequence, low-p instructions

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Dedication

I would like to dedicate my thesis to my grandmother and late grandfather for helping me become the person I am today. I would also like to dedicate my thesis to all the individuals that I have served. I am motivated to continuously learn to better serve you.

The Effects of the High Probability Instructional Sequence on Compliance with Multiple Low Probability Instructions

The high-probability (high-p) instructional sequence is an antecedent intervention often used to improve compliance with instructions. It involves two types of instructions; instructions with a high probability of compliance (high-p instructions), and instructions with a low probability of compliance (low-probability instructions). Procedurally, it typically consists of multiple high-p instructions, immediately followed by the presentation of a low-probability (low-p) instruction. One of the earliest studies investigating the effects of the high-p instructional sequence in the treatment of noncompliance is that of Mace et al. (1988). In this study, five experiments were conducted. The first experiment directly evaluated the effects of the high-p instructional sequence on compliance with low-p instructions, including those that involved "do" requests and "don't do" requests. Results of this experiment show that the high-p instructional sequence increased compliance for both types of requests. Mace et al. (1988) also conducted experiments investigating the effects of the high-p instructional sequence on other measures, specifically duration of task completion and latency to compliance. In

both experiments, the implementation of the high-p instructional sequence resulted in the least amount of response latency and task duration as compared to other interventions.

The authors of this study noted that the high-p instructional sequence is based on behavioral momentum theory. In its simplest form, the behavioral momentum theory posits that change in behavior rate is directly related to the magnitude of the disrupter and inversely related to reinforcement rate. By increasing the rate of reinforcement, responding persists even in the presence of a disrupter (Nevin & Shahan, 2011). Mace et al. (1988) increased the reinforcement rate by providing reinforcers in the form of descriptive praise delivered contingent on compliance with high-p instructions, and then measured the persistence of compliance in the presence of a disrupter in the form of the low-p instruction. It is important to note that this arrangement of behavioral momentum differs significantly from arrangements conducted in the laboratory. In experimental and translational arrangements of behavioral momentum, exposure to increased reinforcement rates occurs across multiple sessions prior to the introduction of a disrupter, which is usually in the form of extinction. These experimental conditions also often employ a multiple schedule of reinforcement (Nevin & Wacker, 2013). By contrast, the high-p instructional sequence is fast paced with the disrupter presented immediately after contact with frequent reinforcement. Furthermore, in

Mace et al.'s (1988) second experiment, the increase in reinforcement rate alone through non-contingent delivery of attention prior to the presentation of a low-p instruction yielded a lower percentage of compliance with low-p instructions than when the high-p instructional sequence was implemented. This may be inconsistent with behavioral momentum theory as it includes all reinforcement types, including reinforcers for alternative responses and non-contingently delivered reinforcers. Regardless of whether the high-p instructional sequence is a direct translation of behavioral momentum, the experiments conducted by Mace et al. (1988) showed that the high-p instructional sequence can increase compliance with low-p instructions.

Since publication of the series of experiments by Mace et al. (1988), several other studies have been conducted that replicated the results that these authors obtained. These replications have further extended the application of the high-p instructional sequence to different settings, response types and populations. In the academic setting, Ardoin, Martens and Wolfe (1999) used the high-p instructional sequence with fading to increase a group of students' compliance with teacher instructions related to transitions. This study is unique in that the instructions were presented in a group composed of three students. Results of this study show that this procedure was effective for two out of three of the students with results maintaining over a span of two to three weeks based on probes collected. Killu,

Sainato, Davis, Ospelt and Paul (1998) also implemented the high-p instructional sequence with three children with developmental delays in their respective classrooms. The results of this study show that this procedure increased compliance with low-p instructions without increasing the disruptive behaviors measured during the baseline condition.

Another application of the high-p instructional sequence in the classroom setting was published by Lee, Belfiore, Scheeler, Hua and Smith (2004). The authors embedded the high-p instructional sequence in an academic worksheet. Through this procedure, there was an observed increase in the rate of low-p letters copied in comparison to baseline levels. In addition, mean latency (in seconds) to initiate low-p math problems decreased with the implementation of the high-p instructional sequence. Axelrod and Zank (2012), found similar results in a general classroom setting with two typically developing students with a history of noncompliance. In this study, the high-p instructional sequence was embedded in regular reading instruction and independent seatwork which resulted in an increase in compliance with low-p instructions. Lee and Laspe (2003) used the high-p instructional sequence and verbal prompts, separately, to increase the journal writing of four students in an academic setting. Results of this study show that both antecedent procedures were effective in increasing the number of words written by the students.

The high-p instructional sequence has also been extended to the area of treatment for food selectivity. Patel et al. (2007) implemented a high-p instructional sequence procedure which consisted of three presentations of an empty spoon and a presentation of a spoon with food. Results of this study show that this procedure increased food acceptance of a child diagnosed with a feeding disorder. Furthermore, Patel et al. (2006) evaluated the effect of extinction combined with the high-p instructional sequence in the acceptance of non-preferred food items. In this study, an escape extinction procedure was already in place prior to the evaluation; however, the acceptance of a low-p food with this intervention did not yield a clinically significant result. The high-p instructional sequence was then combined with the escape extinction procedure, and this treatment package was compared with escape extinction alone. The percentage of trials with acceptance of the low-p food was measured, and it was found to be the highest in the extinction procedure combined with the high-p instructional sequence. Similar results were obtained by Meier, Fryling and Wallace (2012) in their study that evaluated the effect of the high-p instructional sequence in the acceptance of three non-preferred food items. This resulted in an increase in acceptance of all three food items. In addition, the results maintained after the intervention was systematically faded for two of the food items.

The high-p instructional sequence has also been found to be effective in increasing compliance with instructions related to medical examinations for children with autism. Riviere, Becquet, Peltret, Facon and Darcheville (2011) delivered three sets of low-p instructions related to medical examinations. The first set included instructions related to looking in the participant's mouth, the second set included instructions related to ear checks, and the third set included instructions related to toenail cutting. The implementation of the high-p instructional sequence increased compliance with the instructions mentioned above. Furthermore, the improvements in compliance were observed to generalize with medical professionals.

Despite the many studies demonstrating the utility of the high-p instructional sequence, not all applications of the high-p instructional sequence have been effective. Rortvedt and Miltenberger (1994) implemented the high-p instructional sequence and time out in the treatment of attention-maintained noncompliance. The results of this study show that time out was more effective in increasing compliance with low-p instructions than the high-p instructional sequence procedure. Zarcone, Hughes, and Vollmer (1993) conducted a functional analysis for their participant and found that the participant's self-injurious behavior was maintained by escape from specific instructions. An evaluation of the effects of the high-p instructional sequence, escape extinction, and a combination of high-p

instructional sequence and escape extinction was conducted. Results of their study found that the high-p instructional sequence alone was ineffective in increasing compliance. Compliance only increased when an escape extinction procedure was implemented. Also, Dawson et al. (2003) evaluated the effects of the high-p instructional sequence on food acceptance. The results of this study show that the high-p instructional sequence alone had no effect on food acceptance. As in Zarcone et al. (1993), food acceptance only increased upon the introduction of escape extinction.

There are several procedural variations in the implementation of the high-p instructional sequence that can influence its effectiveness. Lipschultz and Wilder (2017) recently published a review of studies conducted on the application of the high-p instructional sequence. Included in this review are studies that evaluated the effects of the various parameters involved in its implementation. Outlined in this section are the studies evaluating these parameters and procedural variations in the implementation of the high-p instructional sequence, including those that were cited by Lipschultz and Wilder.

Programmed Reinforcement

Zuluaga and Normand (2008) conducted a study comparing the effects of the high-p instructional sequence with and without programmed reinforcement. It was found that when compliance with high-p instructions was followed by a

preferred edible item, compliance with low-p instructions increased. A similar study was conducted by Pitts and Dymond (2012) in which the effects of the high-p instructional sequence with and without programmed reinforcement were evaluated for both compliance with low-p instructions and latency to compliance. The results show that programmed reinforcement increased compliance with low-p instructions and reduced overall latency to compliance. These findings were further replicated in a study conducted by Wilder, Majdalany, Sturkie, and Smeltz (2015). Overall, research suggests that programmed reinforcement for compliance with high-p instructions increases compliance with low-p instructions.

Quality of Reinforcers

Wilder et al. (2015) extended their investigation of programmed reinforcement by examining the relative effects of the quality of reinforcers provided in the high-p sequence. The results of this study show that the high-p sequence with lower quality reinforcers did not increase compliance with low-p instructions. This finding is consistent with the results obtained in an earlier study conducted by Mace, Mauro, Boyajian and Eckert (1997), which consisted of three experiments that systematically evaluated the influence of the quality of reinforcers provided contingent on compliance with high-p instructions. The first experiment directly evaluated the effect of the quality of reinforcement on compliance with low-p instructions of two children diagnosed with an intellectual disability. Praise

and food were the reinforcers evaluated, with the food component being the higher quality reinforcer. Compliance with the low-p instruction was found to be the highest when food was used as a reinforcer relative to praise or baseline conditions. The results of this experiment suggest that providing a higher quality reinforcer contingent on compliance with high-p instructions is more effective to increase compliance with low-p instructions than providing lower quality reinforcers. Overall, research in this area suggests that higher quality reinforcers provided contingent on compliance with high-p instructions are more effective in increasing compliance with low-p instructions.

Inclusion of the High-p Instructions

Several studies have also compared the effects of the high-p instructional sequence and the non-contingent delivery of reinforcers on compliance with low-p instructions, which raises the question of the necessity of delivering multiple high-p instructions prior to the low-p instruction. One of the earliest studies that compared these two antecedent procedures was the second experiment of Mace et al. (1988) mentioned above. The results of the experiment show that the high-p instructional sequence was more effective in increasing compliance with low-p instructions than non-contingent delivery of attention prior to the presentation of the low-p instruction.

In 2006, Bullock and Normand published a study in which they directly compared the effects of the high-p instructional sequence and a fixed-time schedule of reinforcement delivery. In the high-p instructional sequence condition, three high-p instructions were delivered every 10 s. By contrast, in the FT reinforcer schedule condition, a preferred edible item was issued every 10 s. The results of this study show that both the high-p instructional sequence and FT schedule of reinforcement were effective in increasing compliance with low-p instructions. A follow- up study was conducted by Normand and Beaulieu (2011) in which the effect of the FT delivery of reinforcement on compliance with low-p instructions was evaluated. The results of this study show that FT delivery of reinforcement alone was sufficient in increasing compliance with low-p instructions for two out of the three participants. Another study directly comparing the effects of the FT delivery of reinforcement and the high-p instructional sequence was conducted by Lipschultz, Wilder and Enderli (2017). The results of this study show that neither antecedent procedures were effective in increasing compliance with low-p instructions among the two participants of the study; compliance to the low-p instructions only increased upon the introduction of contingent access to reinforcers. The inconsistencies in the results pertaining to the necessity of the high-p instructions suggest that further studies are needed in terms of comparing

the relative effects of increasing reinforcement rate with high-p instructions vs without high-p instructions on compliance with low-p instructions.

Form of the High-p Instructions

Other recent studies have evaluated the form of the high-p instructions in the sequence, and results have been mixed. Esch and Fryling (2013) compared leisure high-p instructions and maintenance high-p instructions. The results of this study show that the leisure high-p sequence yielded higher compliance with low-p instructions than the maintenance high-p sequence. Lipschultz, Wilder, Ertel and Enderli (2018) directly compared the effects of the high-p sequence with and without topographical similarity to the low-p instruction. In this study, two types of instructions were issued. One was classified as a vocal type, and the other was a motor type. Topographical similarity was implemented by presenting vocal high-p instructions along with a vocal low-p instruction in the sequence, and motor high-p instructions along with a motor low-p instruction. It was found that the topographical similarity of the high-p instructions with the low-p instruction had no effect on compliance. In the area of treatment for food selectivity, Trejo and Fryling (2017) compared the effects of the high-p instructional sequence with and without topographical similarity with food consumption. In this study, the presentation of a spoon with water was used as the topographically similar high-p instruction, and one-step instructions such as “touch head”, clap hands” and “give me five” were

used as topographically dissimilar high-p instructions. Results show that high-p instructions with and without topographical similarity to food consumption were both effective in increasing food consumption of non-preferred food items.

Planer, DeBar, Progar, Reeve and Sarokoff (2018) compared the effects of relevant and irrelevant high-p instructions on compliance with low-p instructions. The authors first identified one low-p instruction for each of the three participants in the study. They then selected three high-p instructions that were relevant to these low-p instructions, and three that were deemed irrelevant. For the low-p instruction of "put toothpaste on toothbrush", the relevant high-p instructions were "walk to sink", "pick up toothpaste", and "pick up toothbrush". The irrelevant instructions were "clap your hands", "give me a high five", and "touch your head". For the low-p instruction of "write numbers 1-10", the relevant high-p instructions were "pick up marker", "write your name", and "write number 3". The irrelevant high-p instructions were "touch your toes", "tap the desk", and "give me a high five". The results of this study show that relevant high-p instructions yielded more compliance with low-p instructions than irrelevant high-p instructions. Results of studies conducted in this area are mixed. Further investigation on the effects of the type of the high-p instructions is required.

Interval Between Presentation of Instructions

In their third experiment, Mace et al. (1988) compared the effects of the inter-prompt time (IPT), or the time between the last high-p instruction and the presentation of the low-p instruction; 5 s and 20 s IPTs were compared, respectively. The results show that the shorter IPT was more effective in increasing the percentage of trials with compliance to low-p instructions.

Pitts and Dymond (2012) examined the differential effects of having 5 s and 10 s intervals between instructions in a high-p instructional sequence. The results of their study show that the 5 s inter-instruction interval was more effective in increasing compliance with low-p instructions than 10 s. Furthermore, it was the combination of programmed reinforcement and the 5 s inter-instruction interval that yielded the highest level of compliance with low-p instructions and lowest mean latency to compliance. Wilder et al. (2015) used a 1-2 s inter-instruction interval in their implementation of the high-p instructional sequence. There was no direct evaluation conducted for the effects of this inter-instruction interval. However, its combination with programmed reinforcement resulted in an increase in compliance with low-p instructions. While research in this area has been limited, overall research suggests the use of brief inter-instruction intervals (1 to 5 s) when implementing the high-p instructional sequence.

Stimuli Affecting Compliance

Normand, Kestner and Jessel (2010) systematically identified stimuli that affected compliance with high-p instructions of a child with a history of noncompliance. More specifically, the authors systematically evaluated the influence of the presence of a stimulus associated with the low-p instruction on compliance with high-p instructions. In this study, the low-p instruction was to put toys away in a toy box. The high-p instructions included “touch your nose”, “clap your hands”, “touch your ears”, “give me high five” and “pat your tummy”. Initially, the authors presented three high-p instructions followed by the low-p instruction to determine the effect of the high-p instructional sequence on compliance with the low-p instruction. However, this condition resulted in a decrease in compliance with the high-p instructions. The authors then examined the effect of the presence of the low-p stimuli on compliance with the high-p instructions by comparing the level of compliance with the high-p instructions in conditions with and without the toy box associated with the low-p instruction. The low-p instruction was not presented in either condition. The results of this study show that the removal of the stimulus associated with the low-p instruction yielded a higher percentage of compliance with the high-p instructions than when the low-p associated stimulus was present. Overall, very little research has been conducted in

this area. Further research on the stimuli correlated with the high-p instructional sequence is needed.

Variations with High-p Instructions

Planer et al. (2018) compared the effects of a fixed and variable number of high-p instructions presented in a sequence. For the fixed high-p request sequence, the authors presented three high-p instructions prior to the presentation of a low-p instruction. For the variable high-p request sequence, the authors presented an average of three high-p instructions prior to the presentation of a low-p instruction. The variable high-p request sequence was found to be more effective in increasing compliance with low-p instructions for two out of three of the participants in the study.

Several studies have also examined the high-p to low-p instructional ratio as a parameter in procedural variation by increasing or decreasing the high-p instructions presented in a sequence. Ardoin, Martens, and Wolfe (1999) gradually faded the number of high-p instructions in a sequence. The following ratios were implemented; 3:1, 2:1, and 1:1. Increases in compliance were maintained across ratios of high-p to low-p instructions.

A more recent study conducted by Ertel, Wilder, Hodges, and Hurtado (2018) directly compared three ratios of high-p to low-p instructions (5:1, 3:1, and 1:1). In this study, the low-p and high-p instructions were assessed by presenting

each caregiver-nominated high-p and low-p instruction 10 times. The instructions that occasioned 30% or less compliance were classified as low-p instructions, and the instructions that occasioned at least 80% compliance were classified as high-p instructions. The results of this study show that the high-p instructional sequence was effective in increasing compliance with low-p instructions for two out of three of the participants. For the participants whose compliance improved with the implementation of the high-p sequence, the 5:1 ratio was the most effective among the three instruction ratios. This finding is consistent with the implications of behavioral momentum theory. That is, by increasing the reinforced high-p instructions in the sequence, the reinforcement rate increased, which created more persistent responding in the presence of the low-p instruction. The authors also included a choice probe condition towards the end of their study. It was found that for the two participants for whom the high-p instructional sequence was effective, compliance occurred across all trials of the chosen condition regardless of variations in the instructional ratio.

In summary, these studies show that more high-p instructions included in the sequence is more effective in increasing compliance with low-p instructions. In addition, varying the number of high-p instructions included in the sequence was found to be more effective than having a fixed number of high-p instructions.

Variations with Low-p Instructions

One study incorporated multiple presentations of low-p instructions. The second experiment of Mace et al. (1997) examined the effects of the quality of reinforcers on the persistence of compliance across repeated low-p instructions. The results of this study showed that higher quality reinforcers yielded more persistent compliance across repeated presentations of low-p instructions than lower quality reinforcers. However, no study has directly compared the effects of the high-p instructional sequence on varying numbers of low-p instructions.

Purpose of the Current Study

The purpose of the current study is to extend the research on varying ratios of high-p to low-p instructions by investigating the effects of instructional ratios which hold the number of high-p instructions constant while varying the number of low-p instructions presented. More specifically, the purpose of the present study is to compare the effects of a high-p instructional sequence with three different ratios of high-p to low-p instructions, 5:1, 5:2 and 5:3, on overall compliance with multiple low-p instructions and compliance with the first low-p instruction presented in a sequence for individuals diagnosed with intellectual disabilities.

Methods

Participants and Settings

Three individuals with a history of noncompliance, between the ages of 6 and 9, participated in this study. All participants had a diagnosis of Autism Spectrum Disorder. The participants were recruited from schools in the central Florida area, and were recruited based on teacher, therapist and parental reports of frequent noncompliance. Sessions for two of the participants were conducted in their respective classrooms with no more than one other student present during the conduct of the study. Sessions for the other participant were conducted in a small room with tables, chairs, and toys for young children.

Dependent Variable

The primary dependent variable for this study was compliance with low-p instructions. Compliance was defined as the initiation of a response with a low-p instruction within 3 seconds of instruction delivery and completion of the task. For Paul, an additional criterion of 5 seconds of task engagement was added in the definition for compliance due to the nature of the low-p instructions taking up more than 5 seconds to complete. For each session, overall compliance with multiple low-p instructions and compliance with the first low-p instruction given in a sequence were measured separately. Each session consisted of 3 or 5 trials. A trial consisted of a series of high-p and low-p instruction presentation. The number of

low-p instructions with compliance were converted to a percentage. For overall compliance with multiple low-p instructions, the total number of responses initiated upon the delivery of low-p instructions were divided by the total number of low-p instructions issued in a session. The quotient was then multiplied by 100. Similarly, the number of trials in which the delivery of the first low-p instruction in a sequence resulted in compliance were divided by the total number of high-p instructional sequence trials. This quotient was also multiplied by 100. Table 1 provides a summary of the dependent variables and their respective measures.

To identify the low-p instructions included in this study, a preassessment was conducted. Except for John, the preassessment procedure for the low-p instructions was similar to the preassessment procedure conducted by Ertel et al. (2018), wherein therapists/parents were asked to list 10 instructions with which participants were least likely to comply. Each nominated instruction was presented 10 times. The order of presentation of the instructions was randomized, and there was a minimum 30 second inter-instruction interval. In total, there were 100 randomized trials during the assessment. Brief praise was provided for compliance. There was no programmed consequence for noncompliance. Five instructions with which George and Paul complied in fewer than 30% of the trials were included in this study as low-p instructions.

For John, low-p instructions were selected based on a list of 3 instructions that were provided by his parents and teachers. These instructions were those which John was least likely to comply. An assessment probe consisting of the presentation of each instruction three times was conducted. Similarly, praise was provided for compliance, and there was no programmed consequence for noncompliance. The inclusion criteria for low-p instructions for John was 33.33% of compliance with instructions.

Instructions were only presented three times for John to prevent a potential artificial decrease in responding as a result of fatigue from having 100 total instructions presented back-to-back. In addition, this modification was conducted to prevent escape-maintained challenging behaviors from occurring, which John had exhibited in the past.

Trial-by trial interobserver agreement (IOA) data were collected for 41% of George's sessions, 36% of Paul's sessions, and 36% of John's sessions. Trial-by-trial IOA was calculated by dividing the number of trials with agreement by the total number of trials and multiplying the result by 100. Agreement was defined by the observers having the same record of whether compliance or noncompliance occurred upon the delivery of a low-p instruction. Overall agreement was 98.89% for George, 97.7% for Paul, and 100% for John.

Independent Variable and Experimental Design

The high-probability instructional sequence was the main independent variable in this study. This intervention consisted of the presentation of 3 to 5 high-p instructions, which was immediately followed by the presentation of 1-3 low-p instructions. The high-p instructions were selected through a preintervention assessment identical to that conducted for low-p instructions described above. More specifically, for George and Paul, a list of 10 caregiver-nominated instructions with which participants were most likely to comply were presented 10 times each, with a minimum 30 second intertrial interval, in no particular order. Brief praise was provided for compliance. No programmed consequence was provided for noncompliance. Five high-p instructions with at least 80% compliance were included in the study. For John, a list of 4 instructions from teachers and parents that were observed to evoke compliance were included in a probe assessment. Each instruction was presented three times. Compliance was consequated with brief praise. There was no programmed consequence for noncompliance. The inclusion criteria for high-p instructions for John was 100%.

Withdrawal designs were utilized to evaluate the effects of the high-probability instructional sequence on compliance with multiple low-p instructions. For George, the experimental design was ABACAC withdrawal design where A is baseline, B is the 5 high-p instructions to 1 low-p instruction (5:1) condition, and C

is the high-preference contingent access condition. For Paul, the experimental design was ABACADAEAE withdrawal design where A is baseline, B is the 5:1 condition, C is the 3 high-p instructions to 1 low-p instruction (3:1) condition, D is the 3 high-p instructions to 2 low-p instructions (3:2) condition, and E is the high-preference contingent access condition. For John, the experimental design was ABACADABACADAE withdrawal design where A is baseline, B is the 3:1 condition, C is the 3:2 condition, D is the 3 high-p instructions to 3 low-p instructions (3:3) condition, and E is the choice condition.

Procedure

For George and Paul, each session consisted of 5 trials. For John, each session consisted of 3 trials only. Prior to each session, a multiple stimulus without replacement preference assessment (MSWO; DeLeon & Iwata, 1996) was conducted for edible items. The MSWO involved the presentation of an array of edible items. Each participant was asked to select one of the edible items. The selected edible item was then removed from the array and the same procedure was repeated until there were no more edible items left in the array. In this procedure, the first item selected was considered the high-preference edible item, and the last item selected was considered the low-preference edible item. With the exception of the high-preference contingent access condition, a high-preference edible item was provided for compliance with high-p instructions, and a combination of brief praise

and a low-preference edible item were provided for compliance with low-p instructions across all the conditions in this study. This mimicked the procedures in many clinical settings in which compliance to low-p instructions often results in the delivery of praise, a small edible item, other tangibles or a combination thereof.

Baseline. During each baseline trial, three low-p instructions were presented. For George and Paul, the instructions were randomly selected from the list of identified low-p instructions. For John, the low-p instructions were presented in the order of the naturally occurring behavior chain (i.e. “Put your sock on”, “Put your shoe on”, “Stand up” (from the bed). Each low-p instruction was delivered every 15 s during a trial. Brief praise and a low-preference edible item were delivered for each occurrence of compliance, and there was no programmed consequence for noncompliance. Baseline sessions were conducted for a minimum of three sessions, or until stable responding was observed.

High-p to low-p ratio evaluation. Each condition was associated with a colored 8.5” x 11” card (red for 5:1, pink for 3:1, green for 3:2, and orange for 3:3) to facilitate the participants’ discrimination of the different conditions. The high-p instructions included in each trial were randomly selected from the lists of identified high-p instructions. The inter-instruction interval was no longer than 3s. On occasions wherein the participant did not comply with a high-p instruction in a given trial, the trial was terminated. The experimenter waited 15 seconds and began

a new trial. Each edible item was pre-cut into small pieces for immediate consumption to prevent interference with the sequence of instructions. The low-p instructions included in each trial were randomly selected for George and Paul. For John, the selection of the low-p instruction in each trial was based on the naturally occurring sequence of getting up from the bed, putting his sock on, and putting his shoe on. As an example, if the first trial ended with a low-p instruction of "Put your sock on", the second trial would have been the low-p instruction "Put your shoe on"

In the *five high-p to one low-p instructional sequence (5:1)*, a red card was presented at the beginning of each session. Participants were instructed to point to and tact the red card. Each trial was comprised of 5 high-p instructions followed by 1 low-p instruction. Since there was only one low-p instruction issued in this condition, measures of overall compliance and compliance to the first low-p instruction in the sequence were the same.

The results from the first two participants indicate that the five high-p instructional sequence was ineffective. Thus, a modification was made; the five high-p sequence was changed to a three high-p instructional sequence.

In the *three high-p to one low-p instructional sequence (3:1)*, a pink card was presented at the beginning of each session. Participants were prompted to point to and tact the pink card. Each trial was comprised of only 3 high-p instructions

followed by 1 low-p instruction. Similarly, since there was only one low-p instruction issued in this condition, measures of overall compliance and compliance to the first low-p instruction in the sequence were the same.

For the *three high-p to two low-p instructional sequence (3:2)*, a green card was presented at the beginning of each session. Participants were prompted to point to and tact the green card. Procedures for this condition was the same as the 3:1 condition described above except that there were two low-p instructions presented after compliance with three high-p instructions. Both percentage of overall compliance and compliance to the first low-p instruction in the sequence were calculated for each session.

The *three high-p to three low-p instructional sequence (3:3)* began with the presentation of an orange card. Participants were prompted to point to and tact the orange card. Steps for this condition were identical to the previous two conditions described above except that there were 3 low-p instructions presented after compliance with 3 high-p instructions. Both percentage of overall compliance and compliance to the first low-p instruction in the sequence were calculated for each session.

A *high-preference contingent access* condition was added for George and Paul because the high-p instructional sequence was not effective in increasing compliance with low-p instructions. This will be discussed further in the results and

discussion sections. Each trial in this condition consisted of the presentation of 3 low-p instructions every 15 s. A high-preference edible item was held by the experimenter, making sure that it was within the participants' line of sight during instruction delivery. Compliance with the low-p instruction resulted in the delivery of a high-preference edible item. There was no programmed consequence for noncompliance during this condition.

A *choice probe condition* was conducted for John. The purpose of this condition was to assess any existing preferences in the ratios that resulted in an increase in compliance with low-p instructions. The choice condition was not implemented for George and Paul due to the high-p instructional sequence being ineffective in increasing compliance with low-p instructions for the said participants. The results will be discussed further in the results section. In this condition, the colored cards were presented at the beginning of the session. John was instructed to select one out of the three colored cards. The condition associated with the colored card selected was implemented according to the procedures described above.

Treatment integrity. Treatment integrity data were collected for 41% of George's sessions, 36% of Paul's sessions, and 36% of John's sessions. A task analysis of each condition was conducted. A checklist was created specifying the different steps that needed to be accurately implemented by the experimenter. A

second observer evaluated the implementation of the procedures based on this checklist; a check mark was placed for each step performed accurately in the session. Mean treatment integrity data values were 98.89% for George's sessions, 98.75% for Paul's sessions, and 100% for John's sessions.

Results

Figure 1 shows the result of the assessment of low-p instructions for George. There were seven instructions that met the inclusion criteria for low-p instructions (30% or less compliance). The experimenter selected the 5 instructions that had the lowest level of compliance: "Take a bite of *lunch food*" (20%), "Open the book" (10%), "Read *CVC word*" (0%), "Give *preferred item* to *peer*" (0%), and "Come to the table" (10%). These instructions were targeted for compliance across all the experimental conditions except for "Open the book" which was excluded in session 30 due to the observation that George's behavior of opening the book only occurred in the context of group instruction in which peers modeled the behavior. This exclusion ensured that the instructions that were presented pertained only to behaviors that George could do but wouldn't do.

Figure 2 depicts the results of the assessment of high-p instructions for George. There were nine instructions that met the inclusion criteria for high-p instructions (80% or more compliance). The experimenter selected the five instructions that had the highest level of compliance: motor imitation of touching

the nose (90%), motor imitation of clapping the hands (90%), intraverbal response to “What’s your mom’s name?” (90%), listener responding to “Give me high-five!” (100%), and tact/intraverbal response of “green” to the question “What color?” when presented with a green colored card (100%). These instructions were included in the high-p instructional sequence intervention.

Figure 3 shows the results of the evaluation of the effects of the high-probability instructional sequence on George’s compliance with low-p instructions. In the first baseline phase, overall compliance (i.e., the percentage of low-p instructions with compliance out of all low-p instructions presented in the session) ranged from 0% to 20% and mean overall compliance was 10%. In the same phase, compliance to the first low-p instruction issued in the sequence, as measured by calculating the percentage of compliance with the first low-p instruction presented in each trial out of all the first low-p instructions in all trials in a session, ranged from 0% to 40% with a mean compliance of 15%. During the 5:1 condition, overall compliance ranged from 0% to 60% with a mean compliance of 20%. Since there was only 1 low-p instruction presented in each sequence, the recorded data for overall compliance and compliance with the first low-p instruction were the same. During the second baseline phase, overall compliance ranged from 0% to 13.33% and mean overall compliance was 4.44%. Compliance with the first low-p instruction during this phase ranged from 0% to 40% with a mean of 6.66%.

During the first phase of the high-preference contingent access condition, overall compliance ranged from 6.66% to 100% and mean overall compliance was 55.24%. During this phase, compliance with the first low-p instruction ranged from 20% to 100% with a mean of 60%. An upward trend in both overall compliance and compliance with the first low-p instruction was observed during this phase. During the third baseline phase, overall compliance ranged from 20% to 100% and mean overall compliance was 60.83%. In the same phase, compliance with the first low-p instruction in the sequence ranged from 0% to 100% with a mean of 67.5%. A downward trend in the data paths of overall compliance and compliance with the first low-p instruction was observed during this phase. During the second phase of the high-preference contingent access condition, mean overall compliance was 100%. Similarly, mean compliance with the first low-p instruction in the sequence was 100%.

Figure 4 shows the results of the assessment of low-p instructions for Paul. There were three instructions that met the inclusion criteria for low-p instructions: "Color in the shape" (0%), "Put toy on the shelf" (10%), and "Cut the oval" (20%). These low-p instructions were included in the evaluation of the high-p instructional sequence on compliance with multiple low-p instructions.

Figure 5 shows the results of the high-p instructions assessment for Paul. Seven instructions met the inclusion criteria for high-p instructions, but only five

instructions that had the highest level of compliance were selected by the experimenter to include in the high-p instructional sequence: “What’s your mom’s name?” (100%), “high five!” (100%), “clap hands” (90%), motor imitation of touching the head (100%), and motor imitation of touching the shoulders (100%).

Figure 6 shows the results of the evaluation of the effects of the high-probability instructional sequence on compliance with multiple low-p instructions for Paul. During the first baseline phase, overall compliance ranged from 46.67% to 66.67%, and mean overall compliance was 60%. Compliance with the first low-p instruction ranged from 40% to 100% with a mean of 73.33%. During the 5:1 phase, the range of overall compliance was between 20% to 60% with a mean of 33.33%. Since there was only one low-p instruction presented in a sequence during this condition, measures for compliance with the first low-p instruction is the same as the measures for overall compliance. During the second baseline phase, overall compliance ranged from 60% to 73.33% with a mean of 67.88%. Compliance with the first low-p instruction ranged from 20% to 80% with a mean of 60%. During the 3:1 phase, overall compliance ranged between 60% and 80% with a mean of 64%. The same values were obtained for compliance with the first low-p instruction. During the third baseline phase, overall compliance ranged from 26.66% to 80% with a mean of 50.48%. Compliance with the first low-p instruction ranged from 0% to 80% with a mean of 42.86%. During the 3:2 phase, overall

compliance ranged between 10% and 50% with a mean overall compliance of 50%. Compliance with the first low-p instruction ranged between 20% and 60% with a mean of 30%. During the fourth baseline phase, overall compliance ranged from 20% to 60% with a mean of 37.33%. Compliance with the first low-p instruction during this phase ranged from 20% to 40% with a mean of 28%. In the first high-preference contingent access phase, an increasing trend was observed in overall compliance, with a range between 60% and 93.33%, and a mean of 76.66%. A similar trend was observed for compliance with the first low-p instruction with compliance levels between 40% and 100%, and a mean of 70%. In the fifth baseline phase, overall compliance had a range of 26.66% and 60% with a mean of 46.66%. Compliance with the first low-p instruction was 40% across all sessions with a resulting mean of 40%. The last high-preference contingent access phase also had an increasing trend for overall compliance with a range of 73.33% and 86.66%, with a mean of 82.22%. An increasing trend was also observed for measures of compliance with the first low-p instruction with a range of 40% and 100%, and a mean of 80%.

Figure 7 shows the results of the low-p instructions assessment for John. Three instructions were assessed: “Put your sock on”, “Put your shoe on” and “Stand up (from bed)”. All instructions yielded 0% compliance and were all

included in the evaluation of the effects of the high-p instructional sequence on compliance with multiple low-p instructions.

Figure 8 shows the results of the high-p instructions assessment for John. All instructions in the assessment met the inclusion criteria, but the experimenter selected only the three instructions that yielded the highest level of compliance to include in the evaluation. The selected instructions were the following: motor imitating of touching the nose (100%), motor imitation of touching the head (100%), and motor imitation of clapping the hands (100%).

Figure 9 shows the results of the evaluation of the effects of the high-probability instructional sequence on compliance with multiple low-p instructions for John. During the first baseline phase, overall compliance and compliance with the first low-p instruction were at 0% across all sessions in the phase. In the first phase of the 3:1 condition, the range of overall compliance was between 0% and 100% with a mean of 60%. The same measures were obtained for compliance with the first low-p instruction. During the second baseline phase, overall compliance ranged between 0% and 77.77% with a mean of 18.52%. Compliance with the first low-p instruction ranged between 0% and 100% with a mean of 27.77%. In the first phase of the 3:2 condition, overall compliance ranged between 50% and 100% with a mean of 76.19%. Compliance with the first low-p instruction ranged between 33.33% and 100% with a mean of 71.43%. During the third baseline phase, overall

compliance ranged between 0% and 55.55% with a mean of 23.61%. Compliance with the first low-p instruction during this phase ranged between 0% and 100% with a mean of 45.83%. In the first phase of the 3:3 condition, overall compliance ranged between 44.44% and 77.77% with a mean of 53.70%. Compliance with the first low-p instruction during this phase ranged between 0% and 66.66% with a mean of 22.22%. During the fourth baseline base, overall compliance ranged between 11.11% and 55.55% with a mean of 25%. The range of compliance with the first low-p instruction was 0% and 66.66% with a mean of 33.33%. In the second phase of the 3:1 condition, overall compliance was between 66.66% and 100% with a mean of 91.67%. The same measures were obtained for compliance with the first low-p instruction during this phase. In the fifth baseline phase, overall compliance ranged between 0% and 22.22% with a mean of 11.11%. Compliance with the first low-p instruction ranged between 0% and 33.33% with a mean of 22.22%. During the second phase of the 3:2 condition, measures for overall compliance was between 33.33% and 100% with a mean of 70%. Compliance with the first low-p instruction ranged between 33.33% and 100% with a mean of 66.66%. In the sixth baseline phase, overall compliance ranged between 0% and 22.22% with a mean of 14.81%. Compliance with the first low-p instruction ranged between 0% and 33.33% with a mean of 22.22%. During the second phase of the 3:3 condition, overall compliance ranged between 22.22% and 100% with a mean

of 55.55%. Compliance with the first low-p instruction was between 0% and 100% with a mean of 66.66%. During the seventh baseline phase, overall compliance was between 0% and 33.33% with a mean of 20%. Similarly, compliance with the first low-p instruction was between 0% and 33.33% with a mean of 20%. During the choice condition, John selected the card associated with the 3:1 condition in the first session, and then selected the card associated with the 3:2 condition in the second and third sessions. Overall compliance and compliance with the first low-p instruction was 100% across all the sessions in the phase. Table 2 depicts the means for John across phases.

Discussion

The high-probability (high-p) instructional sequence was found to be effective in increasing compliance with low-p instructions for one out of three of the participants in the study. More specifically, the high-p instructional sequence only increased compliance with low-p instructions for John. Furthermore, for the said participant, this procedure increased overall compliance for sequences with more than one low-p instructions. However, in sequences with more than one low-p instructions, the high-p instructional sequence did not consistently increase compliance with the first low-p instruction that was presented in the sequence. These results suggest that the high-p instructional sequence may increase compliance for two or even three low-p instructions when it is effective in

increasing compliance with one low-p instruction. And, in sequences with multiple low-p instructions, compliance may occur on the second and/or third instructions in the sequence regardless of compliance with the first low-p instruction.

In order to evaluate whether the high-p instructional sequence was effective to increase compliance with multiple low-p instructions, the experimenter had to first test whether this procedure increased compliance with one low-p instruction. For George, the 5:1 high-p instructional sequence was ineffective in increasing compliance with low-p instructions, and the resulting mean compliance was 20%. Compliance with low-p instructions increased when the high-preference contingent access procedure was implemented. The highest level of compliance observed for George was during the second phase of the high-preference contingent access condition wherein the mean overall compliance was 100%. Similarly, for Paul, the 5:1 condition was found to be ineffective in increasing compliance with low-p instructions. During this condition, mean compliance was 33.33%. These data are inconsistent with previous research (Ertel, Wilder, Hodges, & Hurtado, 2018) suggesting that the 5:1 high-p instructional sequence can be effective to increase compliance with low-p instructions. Of course, previous studies have reported idiosyncratic effects of the high-p instructional sequence; the results of this study are consistent with this previous research.

One hypothesis as to why the 5:1 high-p instructional sequence was ineffective is satiation. With the participants having had access to the high-preference edible item for a total of five times within the trial, the value of the edible item may have decreased over time, contributing to the observed lack of compliance with the last instruction in the sequence, which is the low-p instruction.

Since the 5:1 high-p instructional sequence was ineffective for Paul, the experimenter modified the ratio and implemented a 3:1 high-p instructional sequence. During this condition, the mean compliance was 64%. While the mean compliance was higher in this condition relative to the 5:1 condition, this is not significantly higher than the level of compliance obtained in the second baseline phase wherein the mean overall compliance was 68.88%, and the mean compliance with the first low-p was 60%. The experimenter then tested the effects of the high-p instructional sequence on compliance with multiple low-p instructions by implementing a 3:2 high-p instructional sequence. During this condition, the mean overall compliance was 30% and the mean compliance with the first low-p was 30%. These results suggest that, for Paul, the high-p instructional sequence was ineffective in increasing with multiple low-p instructions. Compliance levels for Paul increased upon the implementation of the high-preference contingent access condition. The highest level of compliance observed was in the second phase of the

high-preference contingent access condition wherein mean overall compliance was 82.22% and mean compliance with the first low-p was 80%.

Since the 5:1 condition was found to be ineffective in increasing compliance with low-p instructions for both George and Paul, the experimenter only included 3 high-p instructions in the sequence for John. There was an immediate increase in compliance observed in the first phase of the 3:1 condition, as shown in Figure 9. However, the data path was variable with a range between 0% and 100%, and a mean compliance of 60%. The highest level of compliance was observed in the second phase of the 3:1 condition wherein the mean compliance was 91.66%. In addition, results also indicate that overall compliance for John was higher in the 3:2 high-p instructional sequence condition than in the 3:3 high-p instructional sequence condition. It is important to note that in these conditions, compliance with the first low-p instruction was not consistent across sessions. This indicated that compliance may occur for the succeeding low-p instructions in the sequence despite noncompliance with the first low-p instruction. In summary, for John, the high-p instructional sequence increased compliance with multiple low-p instructions. However, overall compliance was lower in high-p instructional sequence conditions having more than one low-p instruction.

As described above, there are documented cases of the high-p instructional sequence being ineffective. In 1994, Rortvedt and Miltenberger found that the high-

p instructional sequence was ineffective in increasing compliance with low-p instructions for attention-maintained noncompliance. Similarly, Zarcone et al. (1993) found the high-p instructional sequence to be ineffective to increase compliance with low-p instructions of a participant who engaged in escape-maintained self-injurious behavior. For both studies, the intervention that increased compliance was related to the function of noncompliance in the first place. Rortvedt and Miltenberger (1994) implemented a time out procedure, and Zarcone et al (1993) implemented an escape extinction procedure. This suggests that an analysis of the function of noncompliance, and the addition of consequence-based treatments that address the function of noncompliance are important and can be more effective than implementing an antecedent intervention alone. The function of noncompliance for any of the participants in the present study was not assessed. For both George and Paul, compliance with low-p instructions increased only upon the contingent delivery of the high-preference edible item. One possible reason for this could be that the high-preference edible item was a more powerful reinforcer than the naturally occurring reinforcer maintaining noncompliance in baseline conditions. A suggestion for future research is to assess the function of noncompliance to low-p instructions first and to evaluate whether a consequence-based intervention related to the function of noncompliance can increase compliance with multiple low-p instructions.

For John, while the high-p instructional sequence increased overall compliance with multiple low-p instructions, it was the 3:1 high-p instructional sequence that yielded the highest level of compliance, and the 3:3 condition yielded the lowest level of compliance. Of course, there are limitations to this interpretation. First, there was only one replication conducted for the 3:1, 3:2 and 3:3 conditions. Also, the order of implementation of the conditions was not varied. Future studies should include more replications of each condition as well as counterbalance the order for which each condition is implemented to further assess whether levels of compliance are highest in the 3:1 condition in comparison with the 3:2 and 3:3 conditions.

One hypothesis for this result occurring can be due to the delivery of the low-preference edible item contingent on compliance with the low-p instructions. The low-preference edible item was provided contingent on compliance with low-p instructions to mimic the procedures in clinical settings wherein an edible item or some form of consequence is usually provided for complying with low-p instructions. In addition, this controlled for the possible effects of reinforcement confounding the evaluation of the effects of the high-p instructional sequence on compliance with low-p instructions. However, without a preferred stimulus being provided contingent on compliance with low-p instructions, compliance with the

low-p instructions may have been subjected to extinction, contributing to that decrease in compliance levels for sequences with two or three low-p instructions.

The delivery of the low-preference edible item contingent on compliance with low-p instructions in the present study is in contrast with some studies conducted in the past that showed that the high-p instructional sequence increased compliance with low-p instructions. The procedures differed in that some earlier studies included the delivery of a high-preference edible item contingent on compliance with low-p instructions, or the delivery of the same consequence as that provided contingent on compliance with high-p instructions. One such study was that conducted by Zuluaga and Normand (2008) wherein the high-p instructional sequence with programmed reinforcement was shown to increase compliance with low-p instructions. The authors delivered the most-preferred edible item contingent on compliance with low-p instructions. Another example was the study conducted by Riviere et al. (2011) wherein the high-p instructional sequence was used to increase compliance with medical examination procedures. In this study, the authors provided a preferred stimulus contingent on compliance with low-p instructions. The differences in results between the present study and the studies mentioned suggest that the effectiveness of the high-p instructional sequence may be tied to the consequences provided for compliance.

One important question that these differences in results and procedures of studies that evaluated the effects of the high-p instructional sequence raises is the mechanism by which the high-p instructional sequence works. One potential mechanism by which the high-p instructional sequence works is that it serves as a discriminative stimulus, signaling the availability of reinforcement for compliance with low-p instructions. In a study published in 2006 by Bullock and Normand, a direct comparison of the effects of the high-p instructional sequence and fixed-time delivery of reinforcement on compliance with low-p instructions was conducted. In this study, compliance with the low-p instructions resulted in the delivery of a preferred item. Both antecedent interventions were found to be effective in increasing compliance with low-p instructions. This implies further that the effectiveness of any antecedent interventions aimed at increasing compliance possibly lies in its relation to the consequences provided for compliance with low-p instructions. Suggestions for future research include further investigation of the mechanism responsible for the high-p instructional sequence effects. More specifically, a direct investigation as to whether the high-p instructional sequence serves as a discriminative stimulus or as an establishing operation is recommended.

Another interesting observation from the results obtained from John was that the high-p instructional sequence was ineffective in consistently increasing compliance with the first low-p instruction presented in the 3:2 and 3:3 conditions.

One potential explanation for this is that there were differences in the evocative effect on compliance with each instruction, as evidenced by the differences in percentage of compliance in each low-p instruction based on the results of the preassessment. It would be hard to rule out whether the results obtained during the evaluation were directly due to the high-p instructional sequence alone or the differences in the evocative effect on compliance of each instruction. A recommendation for future research is to include the same set of instructions in each trial. And, instead of randomly selecting instructions, future researchers should counterbalance the order in which instructions are presented and measure the percentage of trials with compliance for each low-p instruction separately.

A choice condition was implemented for John. In the first session, John selected the colored card associated with the 3:1 condition. In the second and third sessions, John selected the colored card associated with the 3:2 condition. Compliance during this condition was 100% across all sessions. The purpose of this condition was to assess any existing preferences in ratios. While John selected from the colored cards presented to him, the assumption of selection by preference based on accurate association of the colored card with the corresponding ratio is limited. This could be addressed in future studies by conducting additional training sessions wherein the colored cards are reassigned to different ratios in addition to running

another choice condition to confirm that the selection is based on preference and not color bias.

It is also interesting to note that the mean compliance during the choice condition was 100%, raising the question as to whether preferences in ratio has an influence on compliance. Hence, another recommendation for future research is to evaluate the effects of a preferred high-probability instructional ratio or intervention on compliance with low-p instructions.

It is important to note that this is the first study that has evaluated the effects of the high-p instructional sequence on compliance with multiple low-p instructions, and so it is not without limitations. One limitation of the study is the procedures for preassessment for high-p and low-p instructions. For George and Paul, the preassessment procedures involved ten presentations of ten instructions. This preassessment procedure involved 100 trials in total that were presented in quick succession. This procedure may have resulted in an artificial decrease in compliance during preassessment due to fatigue. That is, repeated presentation of instructions could have decreased compliance in general, resulting in an inaccurate selection of low-p instructions. This potentially explains the high level of compliance to low-p instructions during the baseline condition for Paul. A recommendation for future studies is to utilize a preassessment procedure that involves less than 100 repeated trials.

Another recommendation for future research is to evaluate the effects of a treatment package that combines the high-probability instructional sequence and contingent access to a high-preference item on compliance with multiple low-p instructions. Regarding the potential abolishing effect of the delivery of the lowest preferred edible item contingent on compliance with low-p instructions, a moderately preferred edible item may be utilized in future research. This could potentially accomplish the intended effect of mimicking the conditions in the clinical setting while controlling for the potential reinforcing effects of providing a highly preferred edible item.

Another limitation is that the duration of a trial in the 3:1 condition was inherently shorter than the duration of a trial in a 3:3 condition. The differences in session durations could have influenced the results of compliance in the present study. Suggestions for future research include controlling for the durations of the sessions for each condition.

Another limitation of the study is the number of participants. Since there were only three participants involved, and the high-p instructional sequence was effective for only one, the extent to which these results apply to others is limited. More evidence is needed to support whether the high-p instructional sequence can increase compliance with multiple low-p instructions. Future research should

include more than three participants in the evaluation of the effects of the high-p instructional sequence.

With the current challenges in getting therapeutic services and hours approved by the existing healthcare system, it is becoming more important for researchers to evaluate interventions that target more than one response, whether that might be a high-preference contingent access intervention, high-p instructional sequence intervention or escape extinction. In addition, it is important to evaluate the efficiency of interventions that may be more preferred by stakeholders (parents or caregivers of individuals with developmental disabilities). The high-p instructional sequence might be an example of a more preferred intervention since the procedures for this intervention might be seen as less intrusive or more acceptable than other interventions such as escape extinction. This study serves as a preliminary assessment of the efficiency of the high-p instructional sequence for noncompliance. While there are limitations, the results of this study show that the high-p instructional sequence was effective in evoking compliance with multiple low-p instructions for one out of the three participants. When the high-probability instructional sequence was effective in evoking compliance with one low-p instruction, it was also found that the procedure increased compliance for two and three low-p instructions presented in a sequence. For some children, the inclusion

of multiple low-p instructions in the high-p instructional sequence may save a lot of time; this deserves further investigation.

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Table 1:

Summary of Dependent Variables

Dependent Variable	Measured by
Overall Compliance	(# of all low-p instructions issued for which compliance occurred/# of all low-p instructions issued) x 100
Compliance to the first low-p instruction	(# trials for which compliance occurred on the first low-p instruction issued/# of trials for which the high-p instructional sequence was delivered) x 100

Table 2:

Summary of Means Across Phases for John.

Condition	Overall Mean
Baseline	0%
3:1	60%
Baseline (2)	18.52%
3:2	76.19%
Baseline (3)	23.61%
3:3	53.70%
Baseline (4)	25%
3:1 (2)	91.66%
Baseline (6)	11.11%
3:2 (2)	70%
Baseline (8)	14.81%
3:3 (2)	55.55%
Baseline (10)	20%
Choice	100%

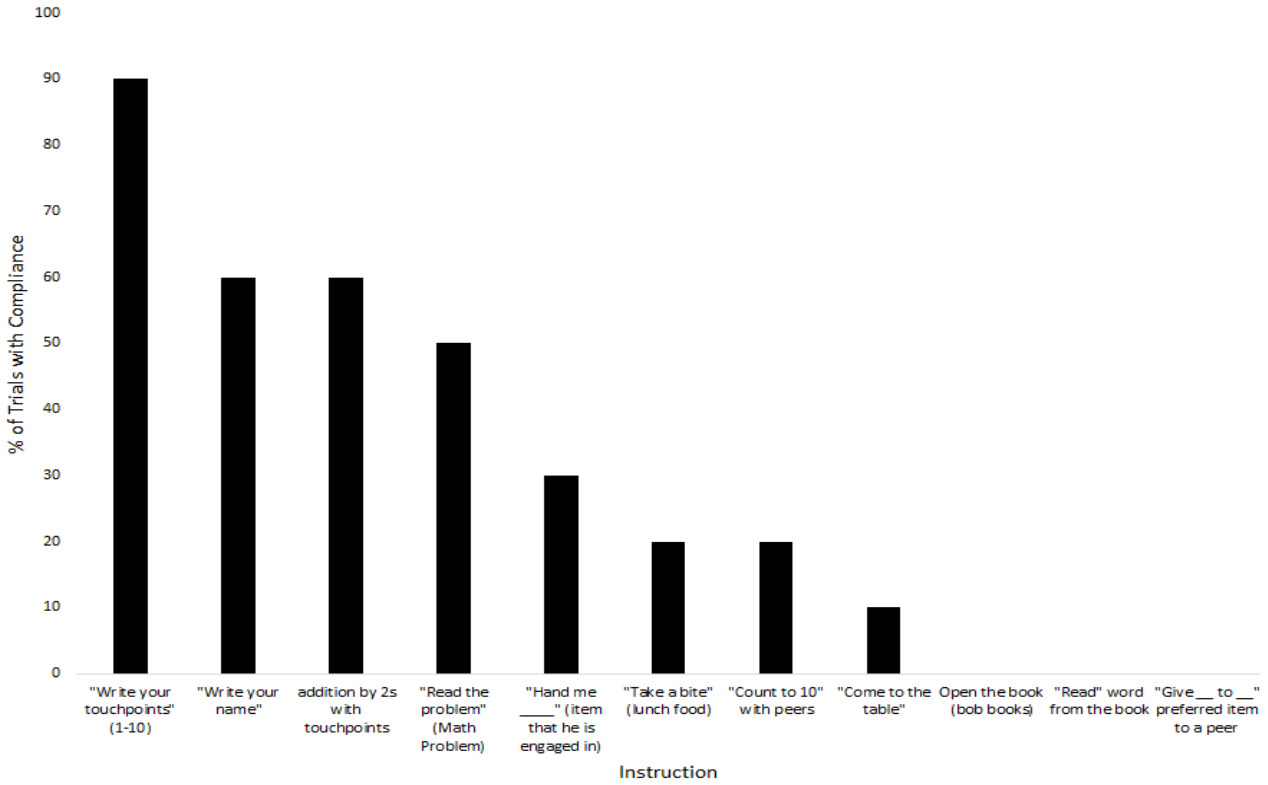

Figure 1: Results of the assessment of low-p instructions for George.

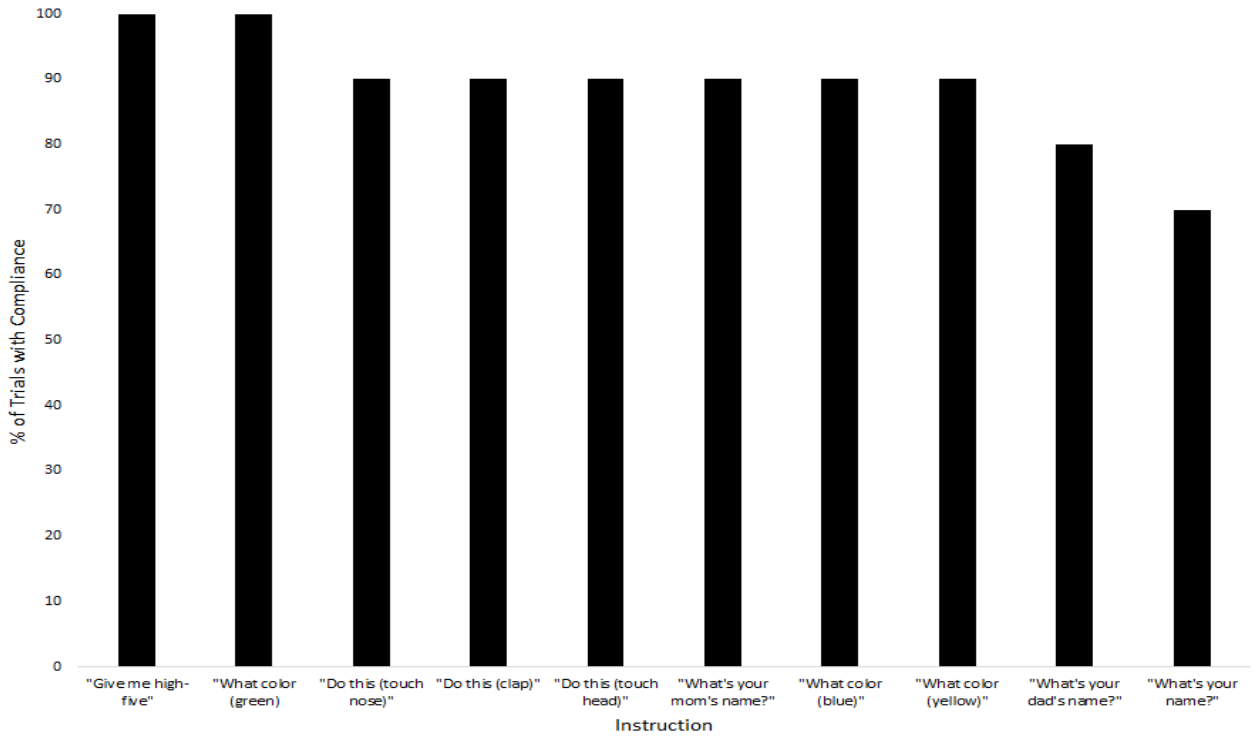

Figure 2: Results of the assessment of high-p instructions for George.

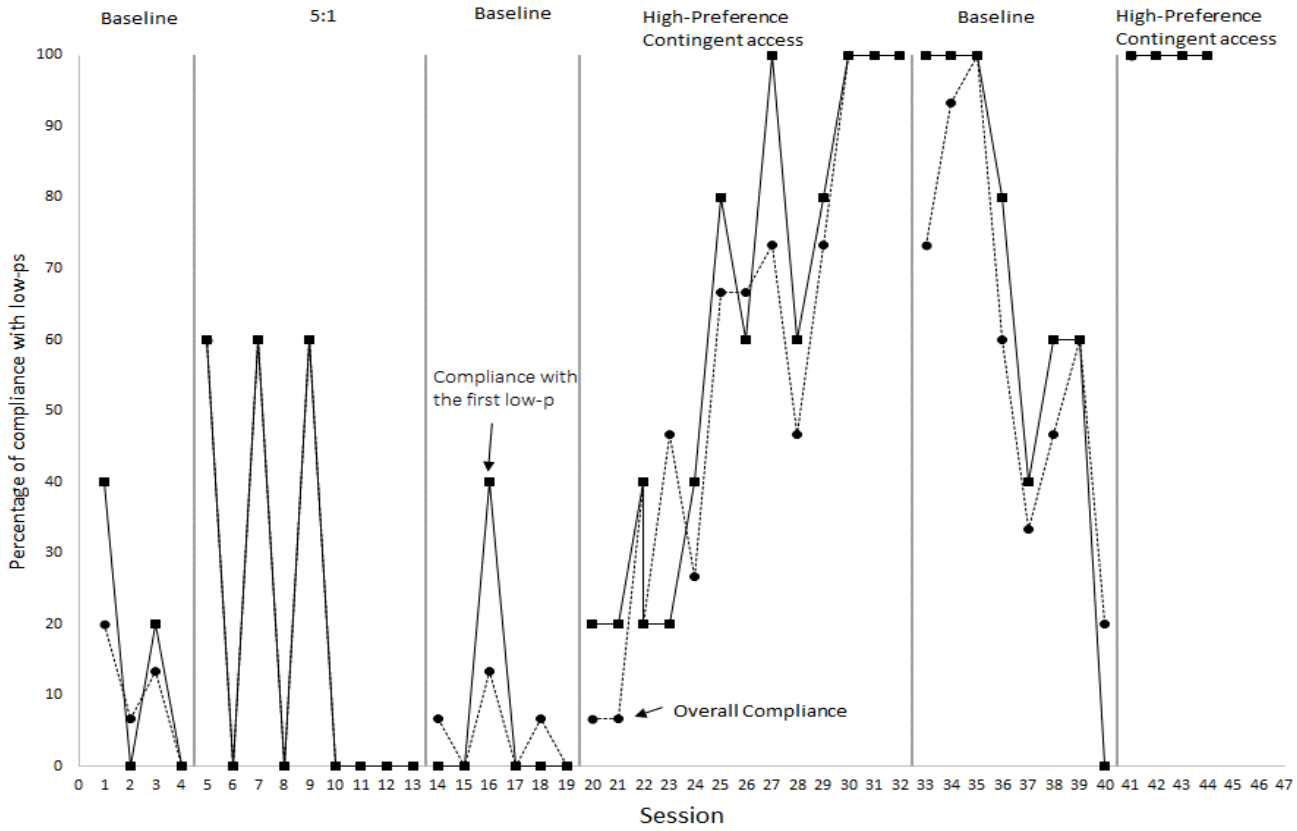

Figure 3: Results for George's compliance with low-p instructions across baseline, 5 high-p instructions to 1 low-p instruction, and high-preference contingent access conditions.

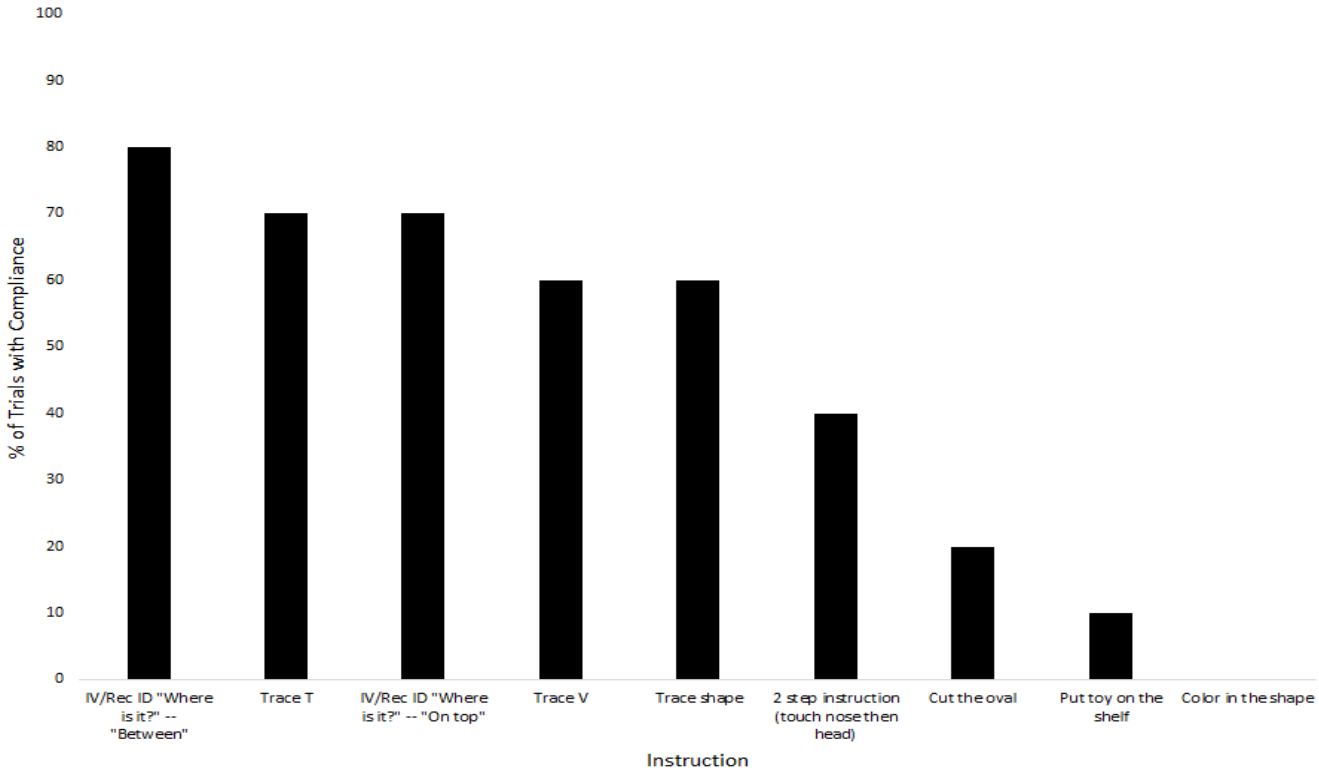

Figure 4: Results of the assessment of low-p instructions for Paul.

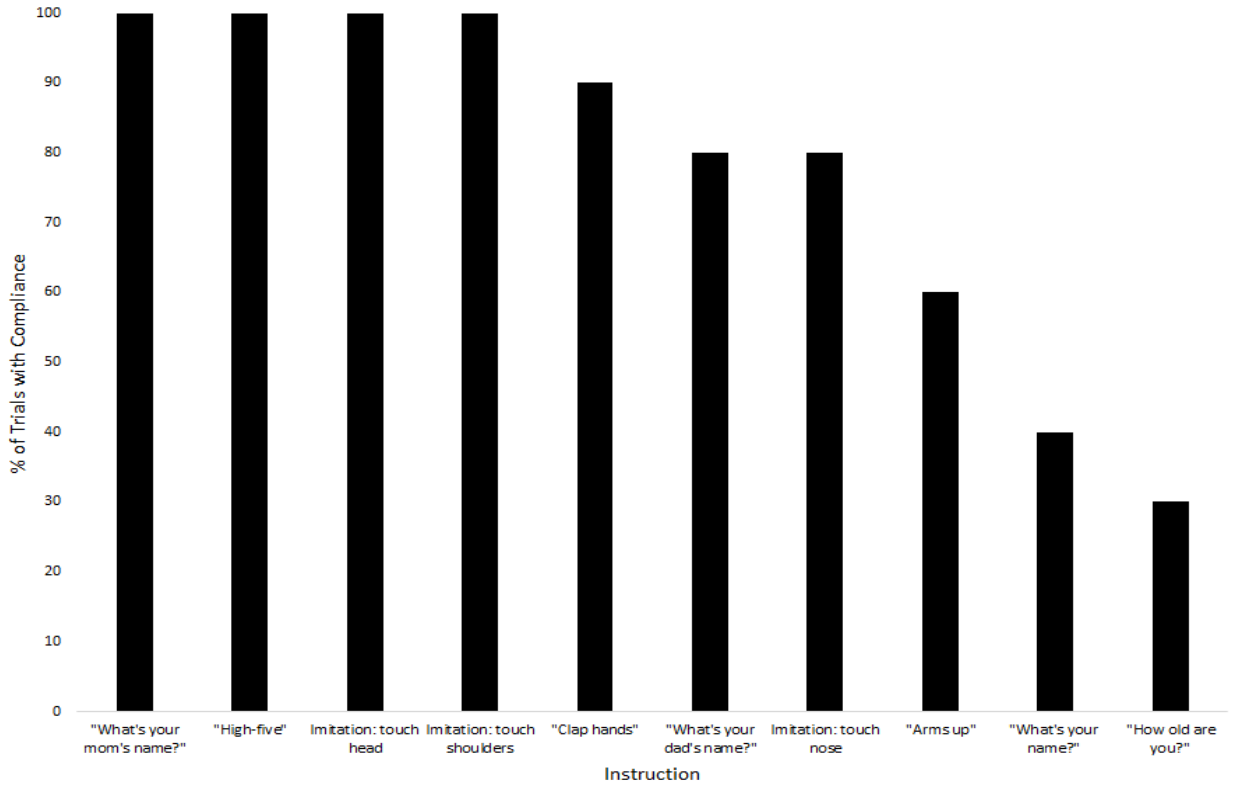

Figure 5: Results of the assessment of high-p instructions for Paul.

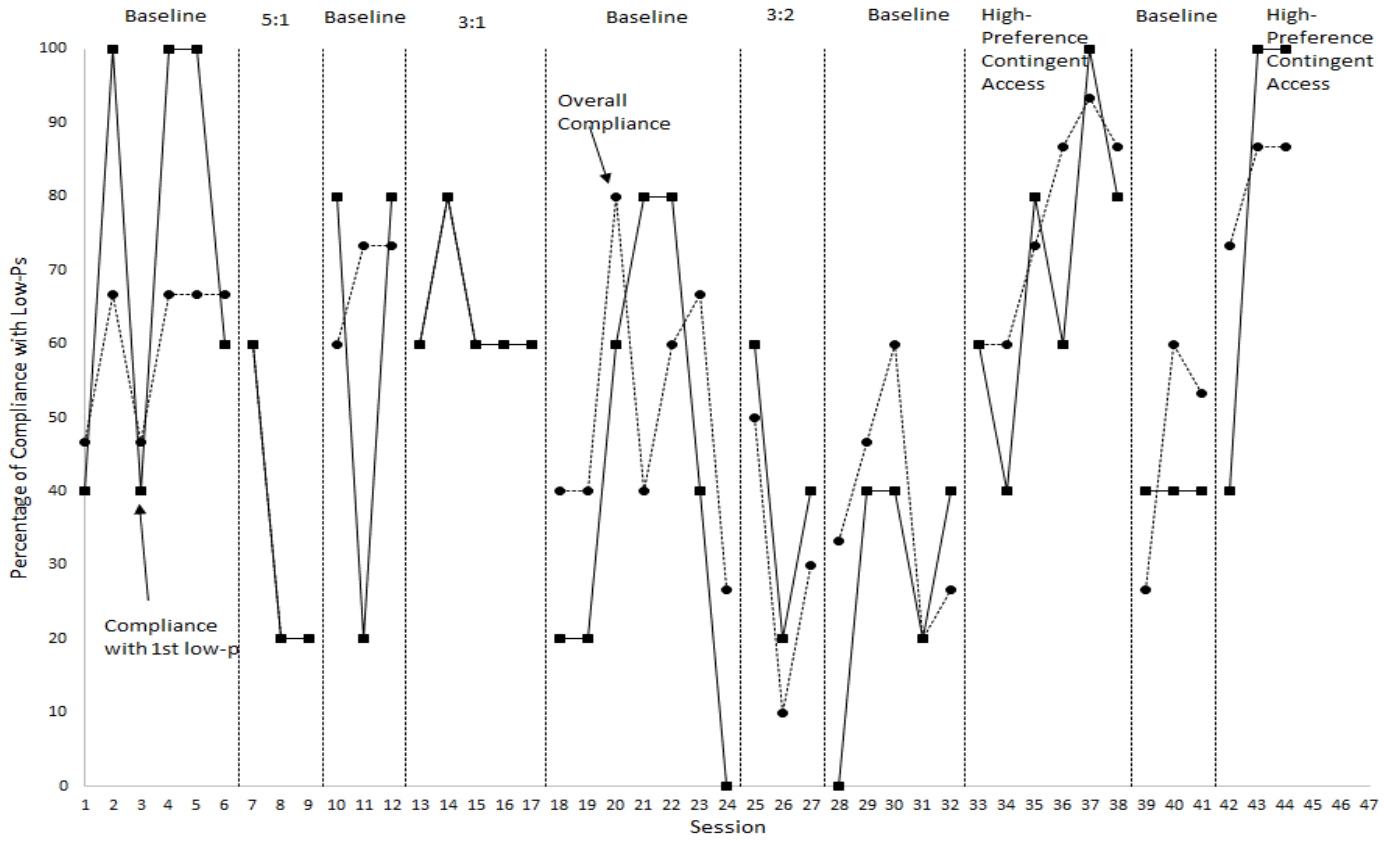

Figure 6: Results for Paul's compliance with low-p instructions across the baseline, 5 high-p instructions to 1 low-p instruction, 3 high-p instructions to 1 low-p instruction, 3 high-p instructions to 2 low-p instructions, and high-preference contingent access conditions.

Figure 7: Results of the assessment of low-p instructions for John.

Figure 8: Results of the assessment of high-p instructions for John.

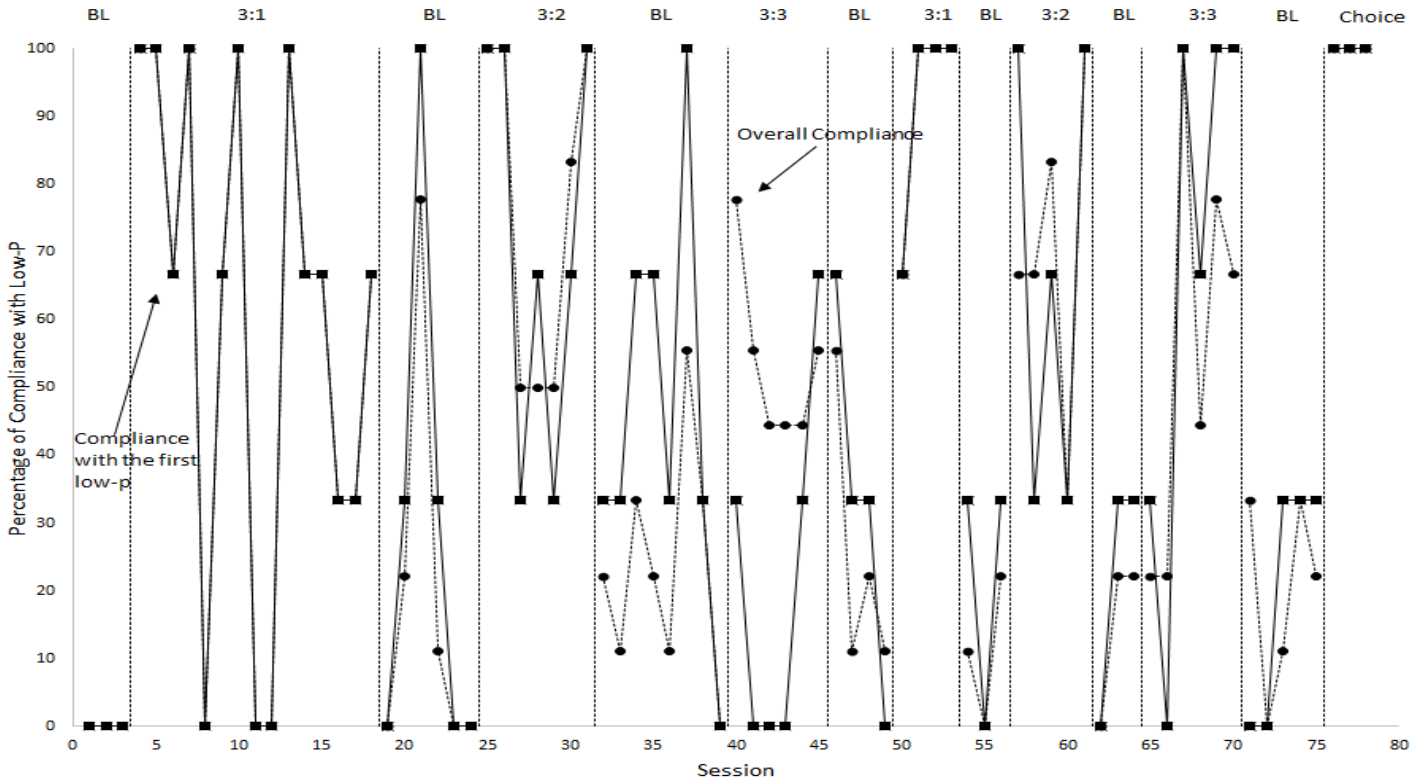

Figure 9: Results for John's compliance with low-p instructions across baseline, 3 high-p instructions to 1 low-p instruction, 3 high-p instructions to 2 low-p instructions, 3 high-p instructions and 3 low-p instructions, and choice conditions.