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Increasing the reinforcing efficacy of low-preference teachers and caretakers for individuals diagnosed with developmental disabilities

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Running head: EVALUATING INHIBITORY STIMULUS CONTROL

Increasing the Reinforcing Efficacy of Low-Preference Teachers and Caretakers

for Individuals Diagnosed with Developmental Disabilities

A Thesis Presented

By

Dewey DeLisle

In Partial fulfillment of the requirements

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Acknowledgements

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An Evaluation of the Generalization of Treatment Effects Through Stimulus Control Based
Interventions

Abstract

Although research has been conducted on methods to increase the reinforcing efficacy of low-preference items such as edibles and leisure items, little research has been conducted on methods to increase the reinforcing efficacy of low-preference personnel. We first identified high-preference (HP) and low-preference (LP) personnel for two participants with developmental disabilities through a paired-stimulus preference assessment. A progressive-ratio (PR) assessment on HP and LP personnel was then conducted to determine relative reinforcing values. Through use of descriptive assessment, we then identified social interaction styles of the HP personnel and taught the LP personnel to behave similarly during the PR assessments through the use of training with video models. For both participants we demonstrated an increase in reinforcing value of the LP personnel. Implications and potential are discussed.

Increasing the Reinforcing Efficacy of Low-Preference Teachers and Caretakers

for Individuals Diagnosed with Developmental Disabilities

Although many studies have investigated preference for reinforcers such as food and leisure activities (e.g., Pace, Ivancic, Edwards, Iwata, & Page, 1985; Piazza, Fisher, Hagopian, Bowman & Toole, 1996), surprisingly little work has been directed toward examining preference for people who provide regular care and services. Individuals diagnosed with developmental disabilities often spend a great deal of time with teachers or caretakers. It may therefore be important to assess the reinforcing properties of staff that work with persons diagnosed with developmental disabilities. According to Willner et al. (1977), there are several reasons for assessing youths' preferences for social behaviors emitted by adults. First, children may be more likely to benefit from treatment if the caretaker is rewarding. Second, individuals may be more likely to participate in activities with preferred teachers or caretakers.

Sturmey, Lee, Reyer, and Robek (2003) conducted a paired-stimulus preference assessment among adults and children diagnosed with developmental disabilities in which selection between different presented pairs of personnel were examined. During each trial participants were asked to select between two personnel with whom they were familiar. The selected caretaker then interacted with the participant for 30 s by talking and providing physical contact. For five of seven participants, a clear preference for one or more caretakers was identified, showing that a paired-stimulus preference assessment can be useful in assessing preferences for caretakers. One limitation noted by the authors was that not all possible pairings of staff were analyzed, in that some of the stimuli used were not presented with other stimuli at all. Additionally, although a hierarchy for preference of personnel was obtained for most participants, it was unclear if the most preferred personnel also provided reinforcing behaviors.

One method for assessing reinforcing efficacy is through the use of a progressive-ratio (PR) schedule (Roane, Lerman, & Vorndran, 2001) In a PR schedule, schedule requirements required for the delivery of reinforcement increase until responding has terminated. The progression of schedules can vary, but an example may be FR1, FR1, FR2, FR2, FR5, FR5,… (Roane et al.). In this example of a PR schedule, the delivery of a reinforcer would initially be contingent on a single response. Following completion of the first schedule, reinforcement would then be arranged according to the second schedule, and so on. Schedules continue to become more lean until responding slows and no response occurs for a pre-specified period of time. The break-point, a common measure when using PR schedules, is the last schedule fulfilled during this progression.

Francisco, Borrero, and Sy (2008) extended past research on PR schedules through assessing reinforcing values of HP and LP non-human stimuli in people. After conducting a preference assessment, the experimenters conducted a PR assessment with the HP and LP stimuli. Results showed that for all three participants, the HP stimulus resulted in differentially higher response rates under PR schedules compared to the LP stimulus. This implies that reinforcers identified as HP served as more effective reinforcers compared to the LP counterparts.

Penrod, Wallace, and Dyer (2008) further evaluated the use of progressive-ratio schedules to determine the value of reinforcers in individuals diagnosed with developmental disabilities. The authors evaluated response rate and break-points for HP and LP stimuli from a previously conducted preference assessment. For three of four participants, differentially higher break points were obtained with the HP stimuli compared to the LP stimuli. This further established research showing that PR schedules could effectively show differential reinforcing

potencies between stimuli. PR schedules have repeatedly been found in the literature to align with preference assessment results and provide a quantitative reinforcing value for various stimuli. Few studies, however, have used PR schedules to identify the reinforcing value of teachers and caretakers for children with developmental disabilities.

Jerome and Sturmey (2008) tested the reinforcing value of various personnel. In the first phase of the study, a preference assessment was conducted using a similar procedure as that described in Sturmey et al. (2003), during which participant's preferences for particular staff were assessed using either verbal or pictorial forced-choice methods. Jerome and Sturmey then conducted a PR assessment to determine the reinforcing value of a high-five delivered by staff. For each participant, one HP and LP staff, as identified in the preference assessment, were used during the PR assessment. HP and LP conditions were randomly alternated in a multi-element design. During the PR assessment, the experimenter presented a task to the participant. Contingent upon meeting the required ratio schedule, the staff member would deliver praise and a high-five to the participant. Sessions continued until the participant ceased to emit the target response for 2 min. Results were similar across all three participants. HP staff were shown to have differentially higher break points than LP staff, showing that these personnel can provide effective reinforcement. However, it was unclear what factors might contribute to the difference in reinforcing value between the HP and LP staff. Although it may be useful to identify teachers or caretakers who serve as reinforcers, further benefits may be obtained through identifying methods for enhancing the reinforcing efficacy of LP teachers and caretakers.

One method for increasing the reinforcing efficacy of LP teachers or caretakers may be to pair them with existing reinforcers. Although Kern and Marder (1996) successfully increased the consumption by children of LP food items by pairing them with HP food items, the effects of

removing the HP stimulus from the paired presentation were not fully examined. Ardoin, Marterns, Wolfe, Hilt, and Rosenthal (2004) tested a method for increasing the reinforcing efficacy of LP, non-human stimuli, which included the removal of a HP stimulus from its paired presentation with a LP stimulus. In the study, Ardoin et al. attempted to increase the reinforcing efficacy of a LP stimulus by pairing it with a HP stimulus in the context of a concurrent operants design. The participant was allowed to choose between two identical work tasks presented concurrently. Completion of one task was not consequated, while completion of the other task was consequated with presentation of both the HP and LP stimuli. During the next condition one of the tasks was now consequated with the presentation of a moderately preferred stimulus, and the other task was consequated with the presentation of only the LP stimulus. Responding was almost exclusively allocated to the task consequated with the moderate preference stimulus showing that pairing LP stimuli with HP stimuli was ineffective in increasing the reinforcing value of the LP stimuli. Applying a similar treatment to attempt to increase the reinforcing efficacy of a caretaker or teacher, simply pairing a LP and HP teacher or caretaker together, may not therefore increase the reinforcing value of the LP teacher or caretaker.

Another method for increasing preference for a familiar person may be to modify the behaviors emitted by the LP person. Willner et al. (1977) showed children video tapes of teachers interacting with students, and asked the children to rate interaction styles of various teachers. Teachers whose interactions were rated as low were then trained to interact with the children based on the interactions rated highly by each child. After training, teachers then interacted again with the children. The children then rated the teacher's interaction a second time. Ratings increased for teachers who modified their behavior to match preferred styles of interactions.   While the study conducted by Willner and colleagues (1977) showed that

preference for teachers can change with training, the authors did not directly assess the reinforcing value of interacting with the teachers. In the current study we conducted two experiments. During experiment 1, a preference assessment and reinforcer assessment was conducted to see if progressive ratio schedules could be used to identify the reinforcing efficacy of preferred or non-preferred staff in individuals diagnosed with developmental disabilities. In Experiment 2, we tested a method to see if the reinforcing value of behavior emitted by a LP staff could be increased through modifying the social interaction style of LP teachers and caretakers.

<div align="center">**Method - Experiment 1**</div>

Participants and Settings

Two individuals diagnosed with developmental disabilities participated. Don was a 17year-old male diagnosed with Fragile-X Syndrome attending a school and residential facility for children with developmental disabilities. He communicated using 3-5 word sentences and had about 18 teachers that might work with him over the course of each week. Sessions for Don took place in his classroom during the preference assessment phase and an empty 5m x 2m room during the reinforcer assessment phase. Ted was a 40-year-old male diagnosed with mental retardation attending an adult residential facility. He communicated using a combination of 1-2 word sentences and vocal approximations and had about 7 caretakers that might work with him over the course of each week. Sessions for Ted took place at his residence during the preference assessment phase, and in his bedroom at his residence during the reinforcer assessment phase.

Response Measurement and Reliability

During the preference assessments, experimenters collected data on which stimulus was selected during each trial. Interobserver agreement (IOA) data were collected simultaneously and

independently by a secondary observer, and was calculated by dividing the total number of

agreements by the total number of agreements and disagreements, and multiplying by 100%. For

both participants, IOA was collected on 100% of trials and was 100%.

Two sets of data were collected during the reinforcer assessments, which were recorded

with a video camera. IOA data for participant responding were collected independently by two

separate observers watching sessions on video, and was calculated by dividing the total number

of agreements by the total number of agreement plus disagreements, and multiplying by 100%.

For Don, IOA was collected during 30% of sessions and was 97.0% (range, 91.0%-100%). For

Ted, IOA was collected during 35.7% of sessions and was 97.8% (range, 93.8%-100%). The

second set of IOA data was also collected on teacher and caretaker responding during the 2-min

interaction periods. A 10s partial interval recording system was used, and IOA was calculated by

dividing the total number of agreements by the total number of agreements plus disagreements

and multiplying by 100%. For Don, IOA was collected on teacher behaviors during 30% of

sessions and was 88.5% (range, 81.3%-95.8%). For Ted, IOA was collected during 35.7% of

sessions and was 98.3% (range, 93.8%-100%).

Procedure

Preference Assessment

We initially conducted an indirect assessment in which teachers and caretakers were

interviewed to identify HP and LP staff for each student. Relative preference for the identified

teachers was then assessed using a paired-stimulus preference assessment (Fisher et al., 1992).

During the preference assessment, a clipboard was used to present photographs of staff to the

participant. Only two staff pictures were presented at a time, approximately 2 inches apart from

each other. An experimenter would then establish attending with the participant, hold the

clipboard in front of them, and asked the participant to choose. The participant would respond by

pointing to a picture of one of the staff. Contingent upon the selection of one of the pictures, the

participant would then gain access to the staff person from the selected picture for 10-15 min.

Staff were instructed to interact with the student as they normally would and to also follow

typical scheduling guidelines. Each permutation of staff was used twice. The preference

assessment was identical for both participants, with the exception that eight teachers were used

for Don, and four caretakers were used for Ted.

Progressive Ratio Reinforcer Assessment

The reinforcer assessment consisted of HP and LP staff conditions alternated in a multi-

element design. The reinforcer assessment was similar to the reinforcer assessment conducted by

Jerome and Sturmey (2008). Participants started each session seated at a desk. At the desk were

leisure items and materials necessary for participating in the target responses. One criticism of

using PR assessments with humans has been the sometimes excessive duration of sessions (see

Poling, 2010). To limit the duration of sessions, leisure items were provided across both HP and

LP sessions in order to compete with responding for HP and LP teachers. For Don, the leisure

items were small toy trains, and the materials necessary for the target response were envelopes

and folded pieces of paper. His target response was taking a piece of paper, placing it in an

envelope, and then placing the stuffed envelope to the side. For Ted, the leisure item was a tin

box of dominos, and the materials for the target response were paper, a hole punch, and a 3-ring

binder. His target response was taking a piece of paper, punching holes in it, and placing it into

the binder. In addition, to aid in discrimination between conditions, a picture was placed on or

near the desk during each session of the teacher or caretaker associated with the current

condition.

During the HP staff condition, the HP teacher or caretaker started each session outside of the room. The experimenter would then seat the participant at the desk. After establishing attending, the experimenter stated, "You can do your work and then play with (name of staff), or you can play with your toys". The experimenter then stood behind the participant. If at any point during the session the participant did not complete one response for 2 min, the session terminated. If the required reinforcement schedule was met, the experimenter stated, "You did your work, so you get to play with (name of teacher)". The experimenter then left the room, and the HP staff would enter, closing the door behind them. The participant was then free to interact with the teacher or caretaker for 2 min. The only instructions given to the teacher or caretaker was to interact with the student as they normally would in a leisure setting. After 2 min expired, the teacher or caretaker would leave the room and the experimenter would re-enter the room. The experimenter would then place more work on the desk, and the number of responses required for reinforcement (interaction with the teacher) would increase. This cycle repeated until the participant chose not to respond for 2 min, or the maximum session length was met. The maximum session lengths for Don and Ted were 60 and 30 min, respectively.

The number of responses required for reinforcement increased progressively according to a pre-determined schedule. At the start of the session, the schedule was a FR 1, meaning that only 1 response was required to contact the contingency of the interaction with the teacher or caretaker. After each schedule was fulfilled and the participant accessed interaction time, the number of responses required for the next interaction doubled. In other words, the schedules were set at FR 1, FR 2, FR 4, FR 8, FR 16, FR 32, FR 64, and FR 128.

The LP staff condition was identical to the HP staff condition, with the exception that the LP staff, as identified in the preference assessment, would interact with the participant

contingent upon meeting the required reinforcement schedule. The picture placed on the participant's desk also reflected this change.

Results and Discussion

The results of the teacher preference assessment for Don are shown in Figure 1 and the results of the caretaker preference assessment for Ted are shown in Figure 2. Teachers and caretakers included in the preference assessment are shown along the horizontal axis, and percentage of trials each staff person was selected is shown along the vertical axis. For Don, CM was identified as the HP teacher, being selected in 78% of trials, and CW was identified as being the LP teacher, as he was not selected during any trials. For Ted, caretaker DD and AH were identified as being the HP and LP stimuli, respectively. DD was selected in 100% of trials and AH was not selected during any trials.

The results of the PR reinforcer assessments can be found in Figure 3 for Don and in Figure 4 for Ted. The horizontal axis represents sessions, and the vertical axis represents responses per min on the top graphs, while it represents break-point on the bottom graphs. For Don, both break-point data and responses per min were differentially higher across 10 sessions with the HP teacher compared to the LP teacher. For Ted, responding was initially variable, but then stabilized. Across 14 sessions, responses per min and break-points were differentially higher in the HP condition compared to the LP condition.

These results replicated the findings of Jerome and Sturmey (2008), in showing that a PR schedule can show differential reinforcing efficacies in the behaviors emitted by HP and LP staff. We then moved onto Experiment 2, to analyze if we could increase the effectiveness of behaviors as reinforcers in the LP caretaker and teacher.

Method – Experiment 2

The purpose of Experiment 2 was to attempt to increase the reinforcing efficacy of the behaviors emitted by LP teachers or caretakers by modifying the behaviors emitted by the LP personnel to match those most commonly seen with the HP personnel.

Participants and Setting

The participants and setting were identical to Experiment 1.

Response Measurement and Reliability

Two sets of data were collected during the reinforcer assessments. IOA data were collected on participant responding. It was viewed independently by two separate observers, and was calculated by dividing the total number of agreements by the total number of agreement plus disagreements, and multiplying by 100%. For Don, IOA was collected during 36.4% of sessions during the reinforcer assessment and was 94.5% (range, 83.8%-100%). For Ted, IOA was collected during 30.8% of sessions during the reinforcer assessment and was 97.2% (range, 88.6%-100%). The second set of IOA was collected on teacher and caretaker responding during the 2-min interactions periods. A 10s partial interval recording system was used, and IOA was calculated by dividing the total number of agreements by the total number of agreements plus disagreements and multiplying by 100%. For Don, IOA was collected on teacher behaviors during 38.5% of sessions and was 93.3% (range, 84.3%-100%). For Ted, IOA was collected during 30.8% of sessions and was 98.2% (range, 92.6%-100%).

Procedure

Descriptive Assessment of HP and LP Teacher Interactions

Once differentiated levels of reinforcing values were determined for HP- and LP-emitted behaviors, the interaction styles of the two different staff were examined. Two independent

observers examined videos of all 2-min interactions that each staff engaged in with the

participant. These observers then took narrative data on those interactions. For example, the

observers may have written, "Staff doesn't talk much, gives lots of high-fives, and stands far

away from participant". Afterwards, the descriptive data were examined to identify two to three

behaviors that appeared to be occurring most frequently or with greater duration with the HP

staff that weren't occurring as often with the LP staff.

LP Staff Training

After two to three behaviors were identified as being emitted by the HP staff that weren't

being emitted as frequently by the LP staff, the LP staff for each participant was trained to emit

these behaviors more frequently. The LP teacher was given descriptions of these behaviors by

the lead experimenter, and then also shown videos of the HP teacher interacting with the

participant. The LP staff then practiced these new interactions in mock sessions in which the

participant was not present.

Trained LP Staff Exposure

During the exposure sessions, the participant started the session seated at the desk. The

leisure materials were present, but work materials were removed. The experimenter started in the

room, and told the participant they were free to play with their toys. After 2-min, the

experimenter left the room, and the trained low-preference (TLP) staff entered. The TLP staff

then interacted with the participant, but emitted behaviors on which they had been trained. After

2-min, the TLP staff left the room, and the experimenter entered the room. This process repeated

for a total of 5 TLP exposures over 20 min, and the session then terminated.

Reinforcer Assessment

The reinforcer assessment consisted of HP and Trained Low-Preference (TLP) staff conditions, which were randomly alternated in a multi-element design. The TLP staff condition was identical to the LP staff condition in the PR reinforcer assessment described in Experiment 1, with the exception that the staff associated with this condition would modify their behaviors to emulate those of the HP staff, as they were previously trained to do. For Ted, a reversal design was implemented, in which the LP-staff would not emit the behaviors shown by the HP-staff. The HP staff condition was identical to the HP staff condition from the PR reinforcer assessment in Experiment 1.

Results and Discussion

The results for Experiment 2 can be seen in Figure 5. The horizontal axis shows session number, and the vertical axis represents responses per min. For Don, the procedure used had some success in increasing the reinforcing efficacy of the behaviors emitted by the LP-teacher. Initially, responses per min and break-points during the TLP Staff conditions were similar to those obtained during Experiment 2. However, responding did gradually increase to similar levels seen in the HP-staff conditions. After another drop to low levels of responding, responding again increased to high levels in the final session run with the participant.

For Ted, responding and break-points immediately increased during the TLP-staff conditions to similar levels obtained during the HP-staff conditions. Once responding was stable, another exposure session was conducted, during which the LP-staff no longer emitted the behaviors they had been trained to emit. During this reversal phase, the LP-staff participated in a LP-staff condition, in which they no longer emitted the HP-staff behaviors. Response rates and break-points immediately decreased to lower levels than seen during the TLP condition. Finally,

treatment was again implemented, in which the LP-staff again began to emit behaviors seen by the HP-staff. Responding again increased to a similar level seen with the HP-staff.

Data for teacher behaviors for Don can be found in Figure 7. The horizontal axis represents the HP or LP teacher, and the vertical axis represents the percentage of intervals during which each identified behavior occurred. Pre-training refers to behaviors emitted by the teachers and caretakers during the initial PR reinforcer assessment during Experiment 1, while the post-training represents the behaviors emitted during Experiment 2. For Don, the two behaviors identified were *funny voice* and *story-telling*. *Funny voice* was defined as any modification of the sound-frequency of the teacher's voice that wasn't considered a normal conversational tone. *Story-telling* was defined as any vocal acknowledgement by the teacher of the toy or object that the participant was interacting with. For example, Don often played with his toy trains, during which a teacher may have said, "Look out, they're going to crash!" or "What is the name of that train?" During Experiment 1, the HP teacher emitted funny-voice and story-telling behaviors during 46.9% and 51.9% of intervals, respectively. The LP teacher only emitted these same behaviors during 18.3% and 15.8% of intervals. After training the LP teacher during Experiment 2, the LP teacher increased their emitting of funny-voice and story-telling behavior to 99.4% and 41.0% of intervals, respectively.

Data for caretaker behaviors for Ted can be found in Figure 8. For Ted, three behaviors were identified in the HP caretaker. *High-fives* were defined as the caretaker's hand making contact with the hand of the participant from a distance of 6 inches or more. *Head scratches* were defined as the caretaker making contact with the participant's head with their hand. *Chases* were defined as the caretaker running or quickly walking towards or after the participant. During Experiment 1, the HP caretaker emitted high-five, head scratching, and chase behaviors during

19.0%, 31.5%, and 16.5% of intervals, respectively. The LP caretaker emitted these behaviors during 0%, 0%, and 0% of intervals during Experiment 1. After training the LP teacher during Experiment 2, the LP teacher increased their emitting of high-five, head scratch, and chase behavior to 49.0%, 62.1%, and 30.1% of intervals, respectively.

General Discussion

The results obtained during Experiment 1 replicated those obtained by Jerome and Sturmey (2008). PR schedules showed differentiated reinforcing values when comparing HP- to LP-staff emitted behaviors. In addition, Experiment 2 extended research conducted by Jerome and Sturmey (2008) by increasing the reinforcing efficacy of the LP-staff to meet or exceed responding obtained with the HP-staff. This was done by obtaining descriptive data on the interaction style of the HP staff, and then training the LP staff to engage in the same interaction style. Although the method was only somewhat effective with Don, the method showed strong effectiveness with Ted. This experiment showed that it is possible to change the effectiveness of teacher or caretaker emitted behaviors for an individual with developmental disabilities.

This study showed that through training new behaviors, the reinforcing efficacy of a teacher or caretaker behaviors could be raised. Although this could potentially be a tool assisting for assisting with behavioral modification, the benefits of increasing reinforcing potency of behaviors emitted by personnel still need to be examined. It also needs to be mentioned that while this could be a beneficial tool, it may only need to be used under the right circumstances. In some cases, it may not be beneficial to change the behaviors emitted by personnel working with individuals diagnosed with developmental disabilities.

There were several limitations in the current study. First, identification of teacher behaviors by independent observers was arbitrary. The observers listed behaviors from the staff

that stood out to them. While the data showed that these behaviors were occurring more often with the HP-staff compared to LP-staff, it is entirely possible that these were not the behaviors that were reinforcing to the participants. With RB, data that more strongly supported the effectiveness of our methodology may have been obtained if different behaviors had been identified.

Second, all sessions had a terminal time limit on them, in which sessions ended even if the participant was still engaging in responding. Some of these sessions did go the maximum length, particularly during Experiment 2 with Ted. It is possible that if sessions were allowed to continue infinitely until responding ceased for 2 min, there may have been differentially higher break-points obtained with the HP caretaker compared to the LP caretaker. Despite this, the reinforcing efficacy of the LP caretaker was still increased when comparing it to data obtained during Experiment 1.

Third, while LP-staff were trained to emit HP-staff behaviors during the TLP-staff conditions, they were not given a strict schedule of when to do so. For example, we did not have the staff emit these behaviors on a fixed-time schedule, nor did we give strict instructions on when to emit the behaviors (i.e., we never stated, "Use a funny voice every 10 seconds," nor "give a high-five when the participant greets you"). If the consistency or contingencies during which these behaviors were emitted were too dissimilar, the results may have been confounded.

Finally, we did not account for non-behavioral traits of staff that may have affected reinforcing potency. It is possible that reinforcing potency of the staff may have been affected by physical characteristics that couldn't be changed, such as hair color or sex.

Future research could extend the current study in a few ways. First, researchers could look at effectiveness of the methodology by either looking at a stricter schedule of behaviors

emitted by the HP-staff, such as if they are occurring on a variable-time or variable-ratio schedule, and then training the LP-staff accordingly. Finally, researchers may want to look at other methods of increasing reinforcing efficacy of behaviors emitted by LP-staff, such as pairing HP- and LP-staff together, or pairing LP-staff with another HP stimulus. Finally, future researchers may also want to examine the benefit of increasing the reinforcing value of behaviors emitted by teachers or caretakers. It may not always be necessary to increase the reinforcing efficacy of behaviors emitted by teachers or caretakers, but there could be potential benefits that may be worth researching further. These include potentially leading to higher compliance rates, faster skill acquisition, or more positive affect in individuals diagnosed with developmental disabilities.

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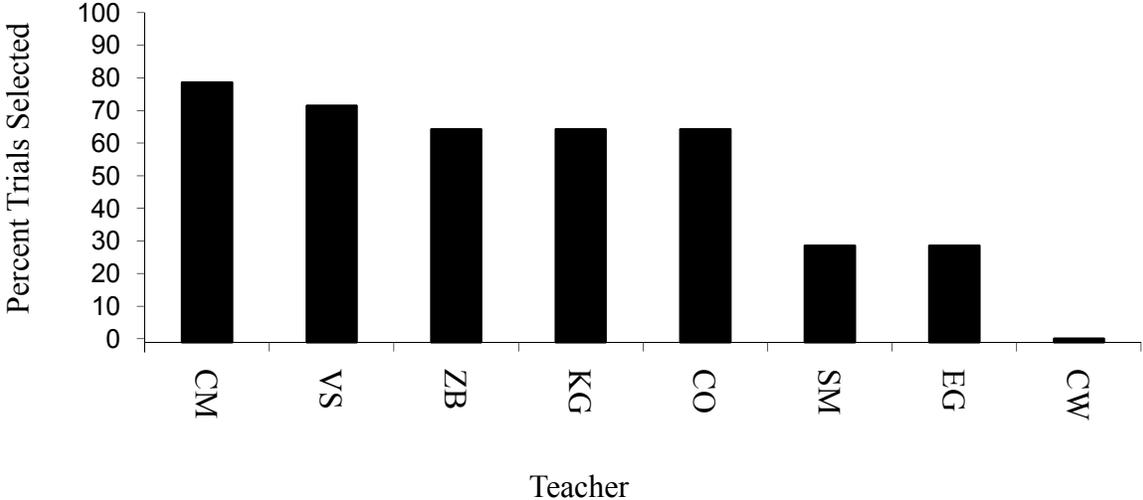
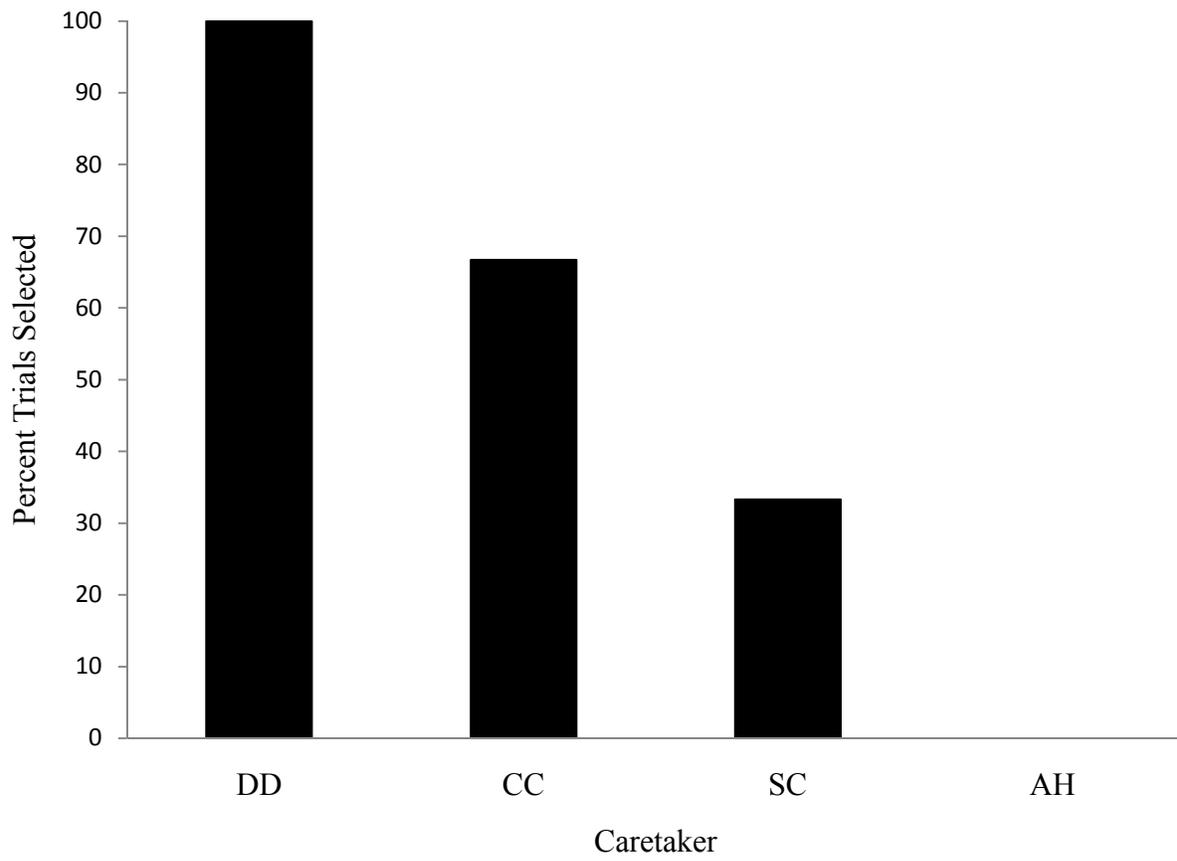Figure 1. Results of the preference-assessment for Don.

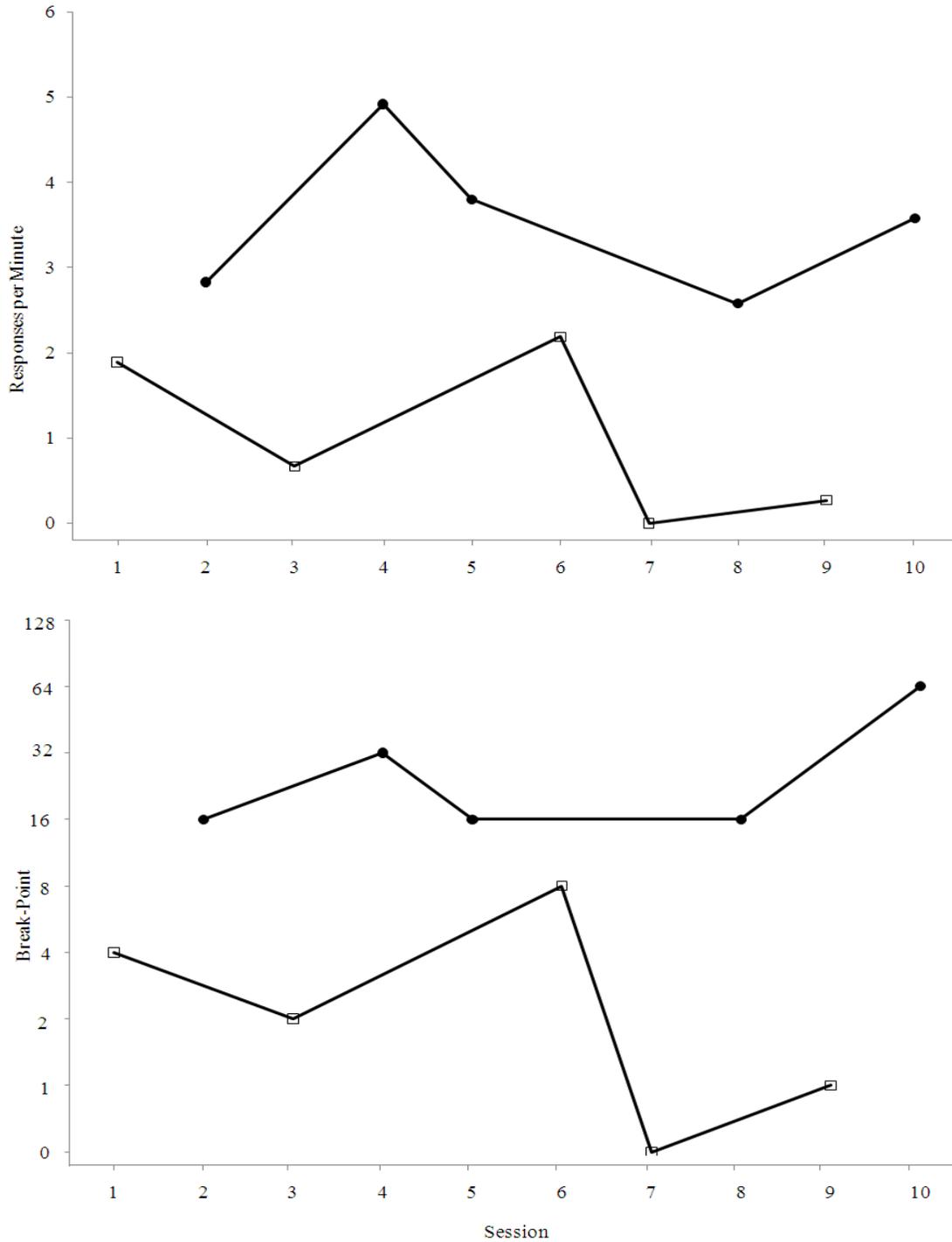Figure 2. Results of the preference-assessment for Ted.

Figure 3. Results of the reinforcer assessment during Experiment 1 for Don. Top panel represents

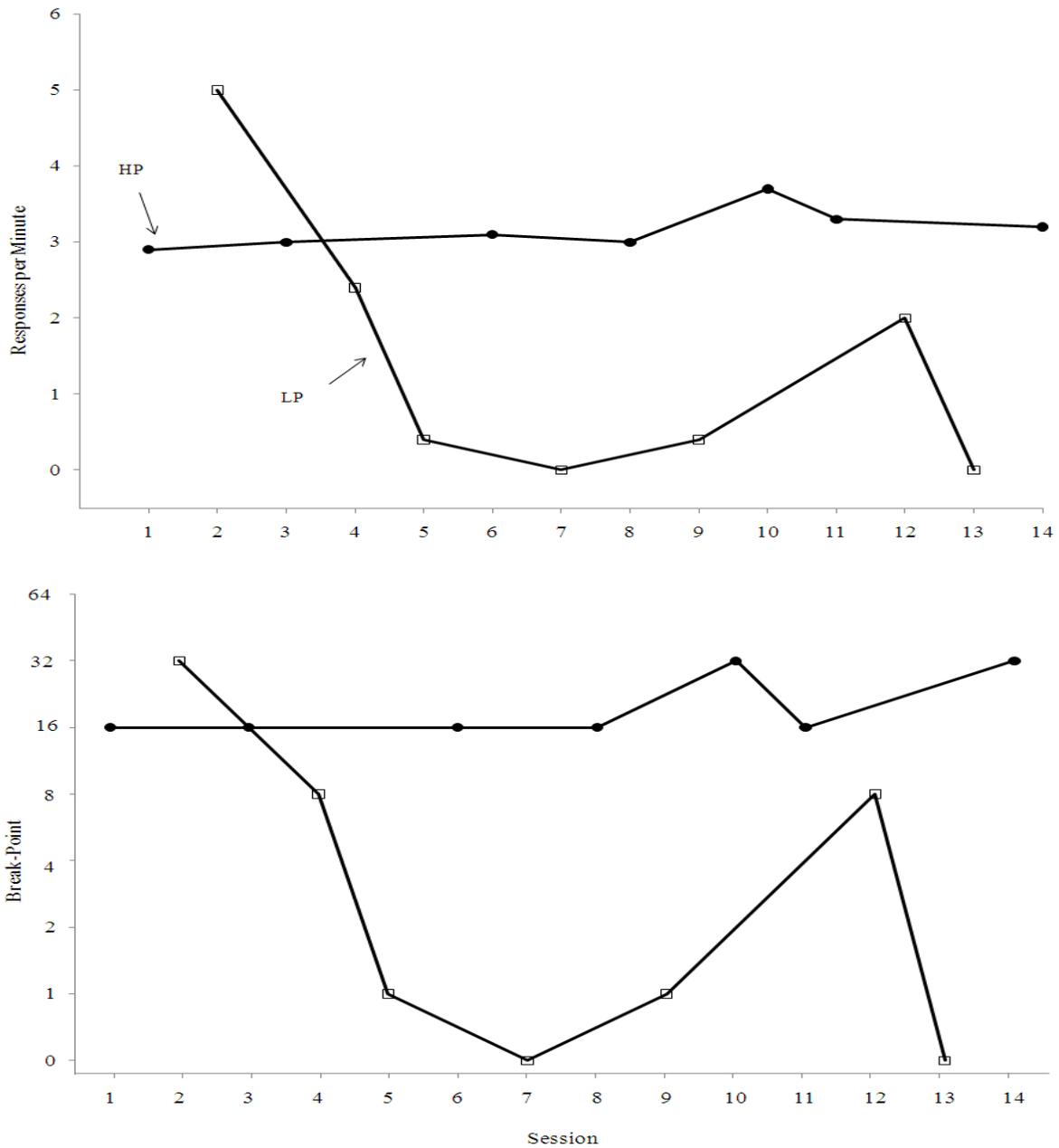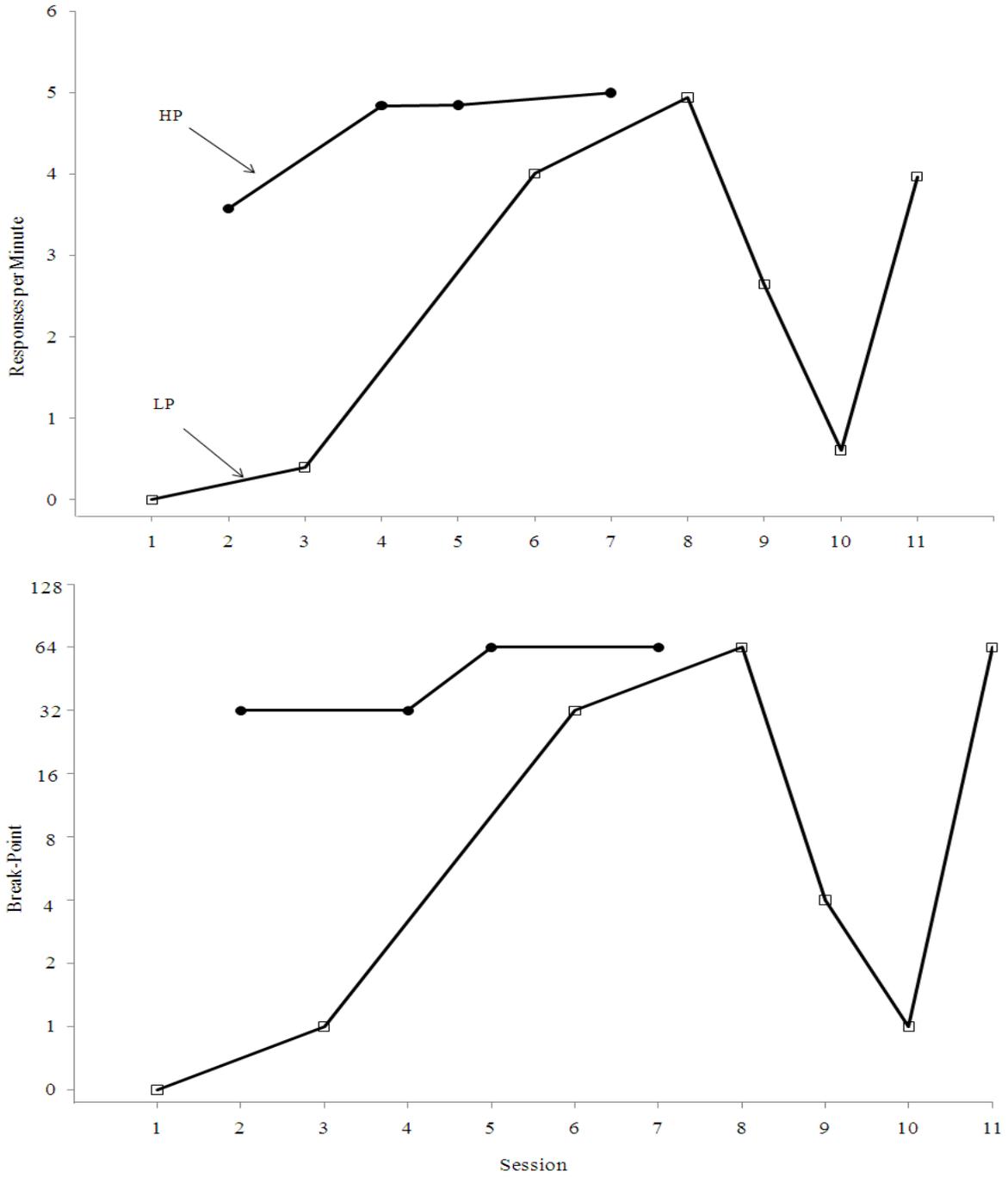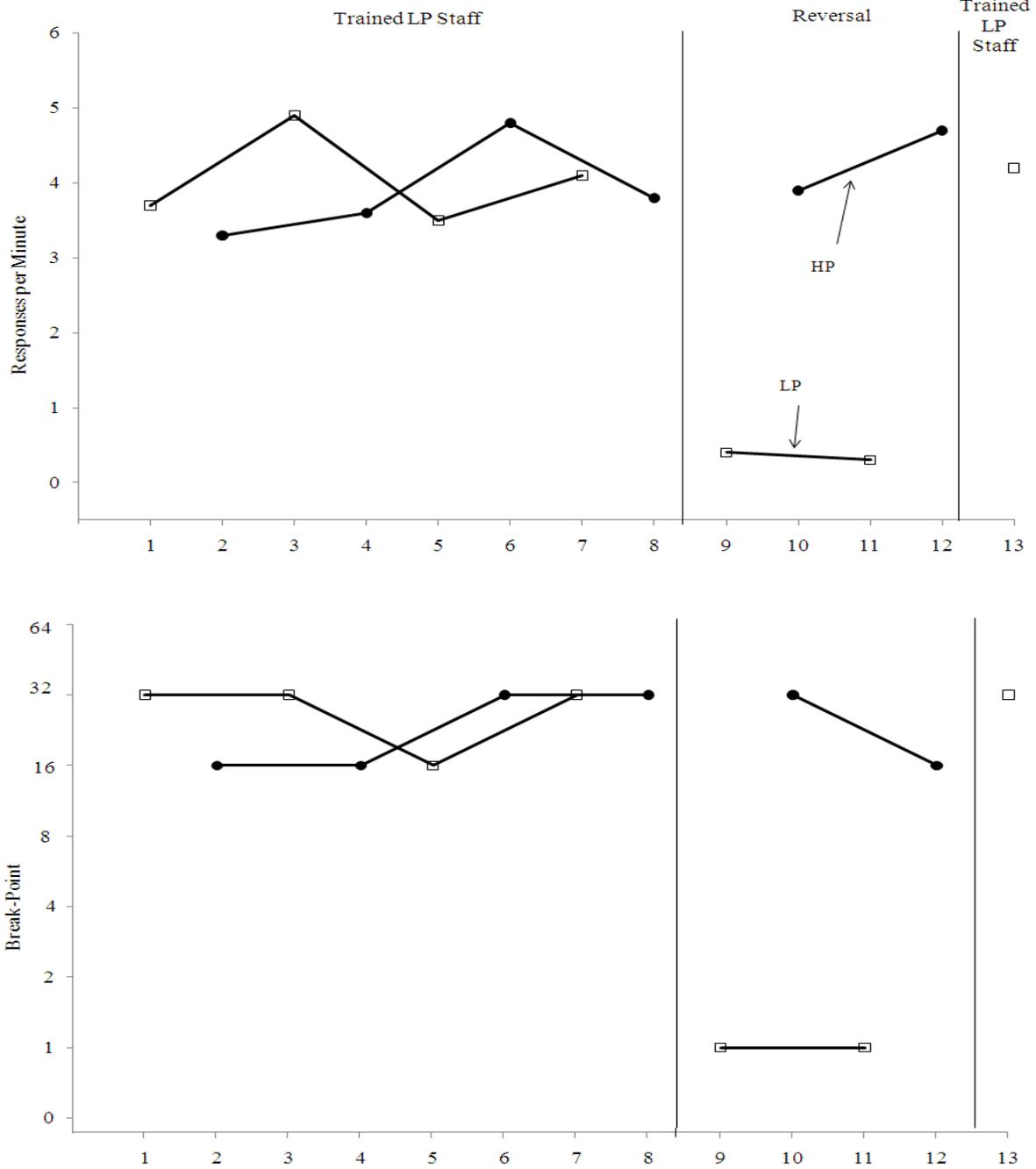response rate, while the bottom panel represents break-point data for the same sessions.

Figure 4. Results of the reinforcer assessment during Experiment 1 for Ted. Top panelh
represents response rate, while the bottom panel represents break-point data for the same
sessions.

Figure 5. Results of the reinforcer assessment during Experiment 2 for Don. Top panel represents response rate, while the bottom panel represents break-point data for the same sessions.

Figure 6. Results of the reinforcer assessment during Experiment 2 for Ted. Top panel represents

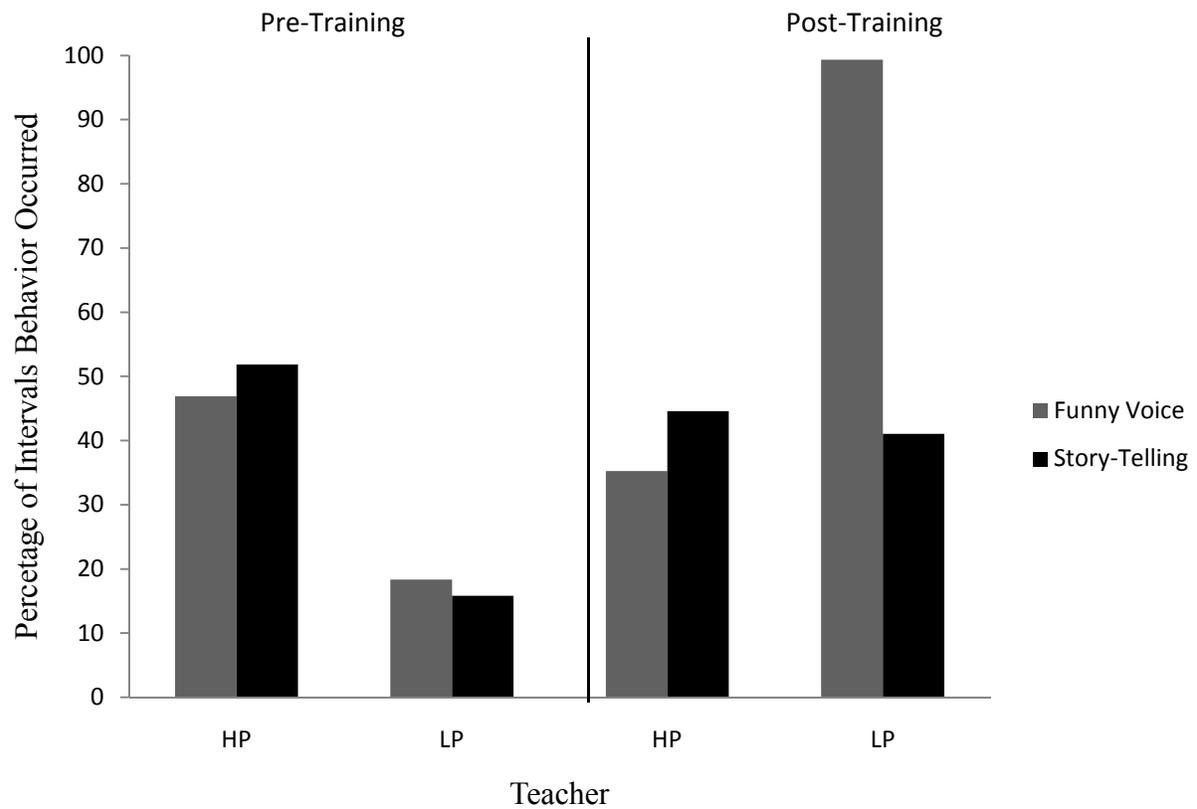response rate, while the bottom panel represents break-point data for the same sessions.

Figure 7. Percentage of intervals during which teacher behaviors occurred during 2-min
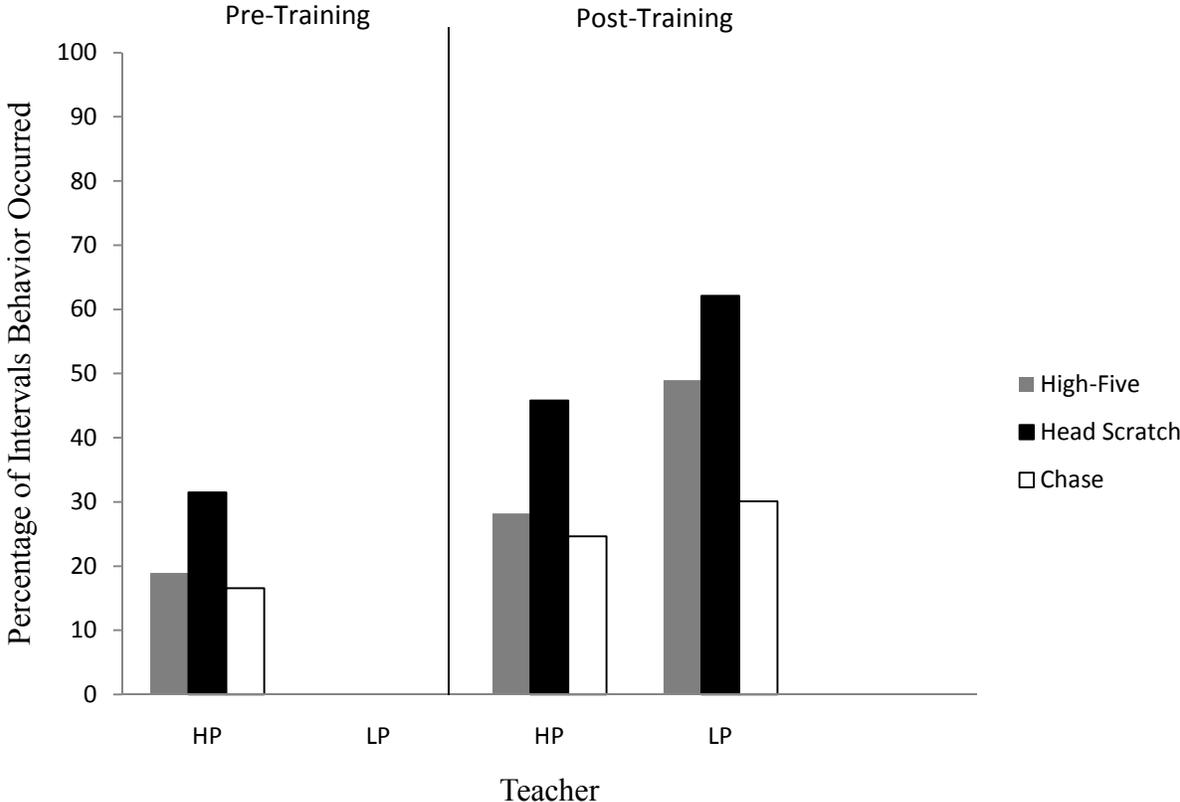
interactions with participant.

Figure 8. Percentage of intervals during which caretaker behaviors occurred during 2-min interactions with participant.