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The Relative Difficulty of ABLA Level 2 and Two-Position Discriminations for Persons with Intellectual Disabilities: A Pilot Study

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Abstract

The Assessment of Basic Learning Abilities (ABLA) assesses the ease or difficulty with which individuals with intellectual disabilities are able to learn a simple imitation and five two-choice discriminations, referred to as levels. During ABLA Level 2, referred to as a position discrimination (Kerr, Meyerson, & Flora, 1977), the client is presented with a yellow can always on the left and a smaller red box always on the right, and the correct response is to place an irregularly shaped piece of foam into the container on the left (the yellow can). With this task a client can learn to make a correct response based on position, colour, shape, or size cues, or some combination of these. The current study evaluated the relative difficulty of ABLA Level 2 and two additional types of position discriminations. The second type of task was similar to ABLA Level 2, except that it used identical containers, and thus contained both relative and absolute position cues, but not shape, colour, or size cues. The third type of task was similar to ABLA Level 2; however, it incorporated identical containers that varied in their absolute positions, which required a relative position discrimination to arrive at the correct response. In two experiments that each used a single-subject design with replication across three participants who passed ABLA Level 2 but failed all higher levels, the results demonstrated that there was no consistent difference in difficulty between the three types of tasks.

The Assessment of Basic Learning Abilities (ABLA) was developed by Kerr, Meyerson, and Flora (1977) to assess the ease or difficulty with which individuals with intellectual disabilities (ID) are able to learn a simple imitation and five two-choice discriminations, referred to as levels. Kerr et al. observed that one or more of these basic discriminations were required for persons with ID to learn to perform a variety of typical training tasks. During an ABLA assessment a tester attempts to teach each of the levels individually to a testee using standard prompting and reinforcement procedures until a pass or a fail criterion on the level is met. The six levels were referred to by Kerr et al. as: Level 1, a simple imitation; Level 2, a two-choice position discrimination; Level 3, a two-choice visual discrimination; Level 4, a twochoice match-to-sample discrimination; Level 5, a two-choice auditory discrimination; and Level 6, a two-choice auditory-visual discrimination. Research on the ABLA with persons with ID indicates that: the levels are ordered in difficulty from one through six (Kerr et al.); the test has high test-retest and inter-tester reliability (Martin, Yu, Quinn, & Patterson, 1983); failed ABLA levels are difficult to teach using standard prompting and reinforcement procedures (Meyerson, 1977; Stubbings & Martin, 1995; Wacker, Kerr, & Carroll, 1983; Wacker, Steil, & Greenebaum, 1983; Yu & Martin, 1986); and the pass/ fail performance of individuals on the ABLA levels has high predictive validity for the ease or difficulty with which those individuals will learn a variety of other training tasks (Martin, Thornsteinsson, Yu, & Martin, 2008). As a result of these findings, the ABLA has proven to be very useful for directcare staff for matching the learning ability of persons with ID to the difficulty of various training tasks (Vause, Yu, & Martin, 2007). Research suggests that the above findings of the ABLA test also hold for children with autism (Schwartzman et al., 2009; Viel et al., 2011; Ward & Yu, 2000).

The present research focused on ABLA Level 2. To assess Level 2 (see Figure 1), on successive trials, a client is presented with a yellow can always on the left and a slightly smaller red box always on the right. Kerr et al. (1977) selected the materials so that they differed in both size and shape, which may make this discrimination easier for persons with ID. The client is required to place an irregularly shaped piece of foam into the container on the left (the yellow can) for a correct response. As described later in detail, correct responses are reinforced and incorrect responses are followed by a standardized error-correction procedure. Trials continue until the client makes eight consecutive correct responses or eight cumulative errors (the pass/ fail criteria for each level), whichever comes first.

Although Kerr et al. (1977) referred to Level 2 as a position discrimination, a correct response could be made on the basis of container colour, shape, or size cues. Correct responses on the basis of position could be controlled by relative position cues (i.e., the positions of the containers relative to one another), or absolute position cues (i.e., a container's resting spot on the table, regardless of what else is around). The availability of multiple control sources may have been intentional on the part of Kerr et al., as additional visual cues, such as shape, colour, and size, often accompany position cues in real-life situations. For example, the fact that a trash can is usually found to the left of a recycling bin in a cafeteria serves as a position cue for individuals throwing away unfinished food after a meal. However, typically there are additional shape, colour, and size cues present to make the discrimination of where to place garbage. For example, in Manitoba, Canada, the trash can is typically circular, grey, tall and wide while the recycling bin is rectangular, blue, short, and narrow.

There are also real-life examples in which additional visual cues may not be readily available, and the person must primarily rely on position cues to behave appropriately in these situations. For example, correctly entering the doorway to the bathroom located down a hallway with doorways identical in appearance on either side would require relative and/or absolute position discrimination(s). For the purposes of testing whether an individual possesses such discrimination skills, ABLA Level 2 could be modified so that identical containers are used. A correct response could then be made on the basis of relative position cues or absolute position cues (a Rel/Abs discrimination, see Figure 1). If ABLA Level 2 were modified so that the containers were identical, and in addition, on some trials the two containers were to the left of the participant, and on some trials to the right of the participant, then a correct response could be made only on the basis of relative position cues (a Rel discrimination, see Figure 1). A Rel discrimination may be required in real-life when an individual has a set place in line (for example, always behind Paul) when a group of residents from a facility for persons with ID go on a field trip. In this scenario, regardless of the absolute position of the line-up of residents (for example, a facility room vs. a park), the resident is to always line up behind Paul.

Before conducting our research we were unable to find any published studies that compared the relative difficulty of different types of position discriminations with persons with ID. The question is important because differences in the relative difficulty of the various position tasks may indicate that participants are attending to cues other than (or in addition to) position during the ABLA Level 2 task (e.g., colour, shape, and/or size cues), and that the number of available visual and position cues present may change the difficulty of a discrimination task. The relative difficulty of versions of posi-

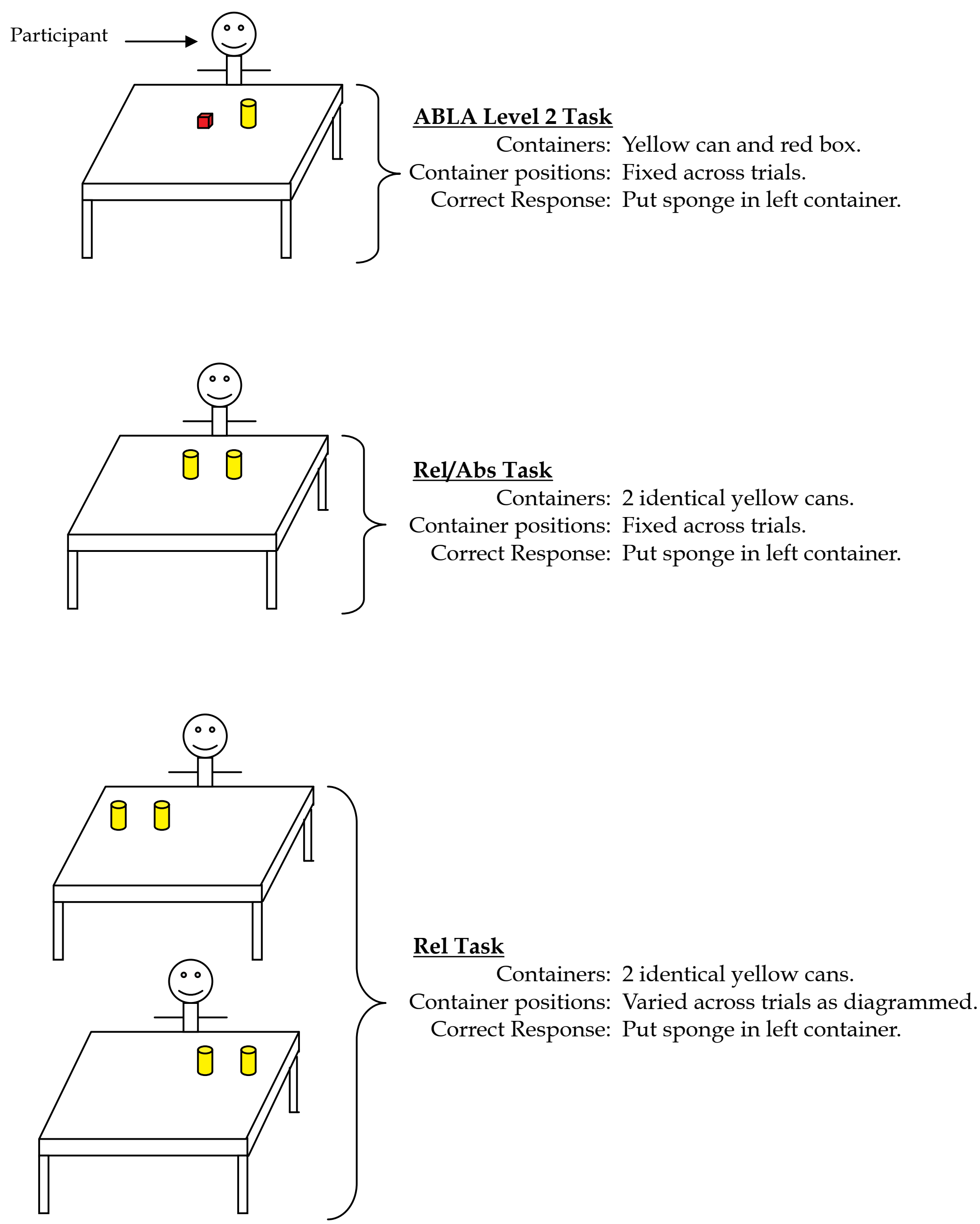

Figure 1. *Schematic of ABLA Level 2, a Rel/Abs task, and a Rel task. (Rel/Abs refers to relative and absolute position task, Rel refers to relative position task). The location of the correct response is from the participant's perspective.*

tion discrimination tasks therefore has implications for the ABLA's predictive validity and practical use by teachers and caregivers.

In this research we conducted two experiments to examine the relative difficulty of ABLA Level 2 analogue (L2A) tasks, Rel/Abs tasks, and Rel tasks, with persons with severe to profound ID. In both experiments, we used a single-subject design with replication across three participants who had passed ABLA Levels 1 and 2 and failed Level 3. The dependent variable in both experiments was the number of training trials required to master an L2A discrimination task, versus a Rel/Abs task, and versus a Rel task. Standardized training procedures were used to teach examples of all three tasks in both experiments. Because the fewest number of cues to correctly make a discrimination were available to the participant during the Rel tasks, while the most cues were available during the L2A tasks, we hypothesized that the Rel tasks would be the most difficult to learn, followed by the Rel/Abs tasks, and then followed by the ABLA Level 2 analogue tasks.

Method Common to Both Experiments

Setting and Participants

Three adults with ID were recruited from St.Amant, a residential and community treatment facility for individuals with ID in Winnipeg, Manitoba. The participants were randomly selected from individuals at St.Amant who had previously passed ABLA Level 2 and failed Level 3. Participants were reassessed on the ABLA to confirm that they passed Level 2 and failed Level 3, and all did so within the common standard of 30 test trials. Participant 1 was a 40 year-old woman diagnosed with congenital microcephaly with a severe to profound delay in functioning. Participant 2 was a 39 year-old woman admitted with fetal alcohol syndrome with a profound delay in functioning. Participant 3 was a 42 year-old woman with a profound developmental delay. Consent was obtained from the legal guardians of these individuals for them to participate, and for access to their diagnostic information from personal health records.

Sessions took place in a meeting room at St.Amant containing two tables and chairs. Participants sat at a table across from the experimenter during sessions. If at any time a participant left the table or appeared to indicate that she wished to stop a session, the session was terminated and resumed on a different day. During interobserver agreement and procedural reliability checks, a trained observer sat behind and to the left of the participant.

Materials

The materials required to administer ABLA Levels 1, 2, and 3 included a yellow cylindrical can (15 cm in diameter, 17 cm in height), a red box (14 cm × 14 cm × 10 cm) with black diagonal stripes, and an irregularly-shaped beige piece of foam (5 cm in diameter). ABLA Levels 4, 5, and 6 were not administered. Kerr et al. (1977) chose these materials for their low cost, their ease of attainment, and their practical value as common shapes and primary colours (Martin & Yu, 2000). The training materials for the experiments are described later.

Procedure

Preference Assessments

To select reinforcers prior to commencing each session for both Experiments, the experimenter conducted a preference assessment at a table, while sitting across from a participant, to assess the participant's preference among six different edibles. If the participant was uninterested or unable to consume the edibles, the experimenter presented a series of nonedible items to the participant (e.g., games, puzzles). During a preference assessment the experimenter lined up the six items from left to right in front of the participant, and would then say, "Take one." When the participant selected an item she then consumed it, or was allowed to play with it for approximately 5 seconds if it was a non-edible item. She was allowed to select and consume (or play with) an additional 1 to 2 items if desired. Those chosen items were then used to reinforce correct responses in an alternating fashion during that session.

ABLA Test Administration

ABLA test administration followed the procedures outlined by Kerr et al. (1977) and Martin and Yu (2000). The client sat at a table across from the experimenter who administered the discrimination tasks. When testing Level 1, a red box was placed in front of a participant, the experimenter modelled the placement of an irregularly placed piece of foam into the box, and then gave the foam to the participant and asked "Where does it go?." The correct response was for the participant to imitate the experimenter by placing the foam into the box. As stated previously, when testing Level 2, the client was presented with a yellow can always on the left and a red box always on the right. When testing Level 3, the box and can were presented in randomly alternated left-right positions. The testing of a level began with a demonstration, a guided trial, and an opportunity to respond independently. During the demonstration of a level, the experimenter instructed the participant "When I say 'where does it go?', it goes in here," and would then model the correct placement of the manipulandum (the piece of foam) for the participant. During the guided trial the experimenter provided the verbal cue "Where does it go?" and then prompted the participant to perform the correct response. The participant was then given the opportunity to perform the task independently following the verbal cue "Now you try. Where does it go?" Following a correct response during the independent opportunity on a level, the experimenter then began test trials at that level, which were conducted exactly as outlined above for an independent opportunity. Participants were given an edible and praise (e.g., "good job!") for correct responses. For ABLA Level 1, placing the manipulandum anywhere except inside the container constituted an error. For ABLA Levels 2 and 3, placement of the manipulandum within the incorrect container constituted an error, while no response within 10 s, or any action not involving placement of the manipulandum within a container was considered a non-trial and not scored. When an error occurred, a correction procedure was used consisting of a demonstration, a guided trial, and an opportunity to respond independently. Eight consecutive correct responses were required in order to pass a level, while eight cumulative errors constituted a fail. Correct placement of the manipulandum during the independent opportunity of the errorcorrection procedure did not count towards the passing criterion. An error during the errorcorrection procedure, however, did count towards the fail criterion.

Reliability Assessments

During approximately 25% and 80% of all training sessions for each participant for Experiments 1 and 2, respectively, a trained observer was present to independently record the responses of the participant for the purposes of assessing interobserver agreement (IOA). Trials on which an observer and the experimenter both recorded a response as correct, or both recorded a response as incorrect, were considered agreements. A trial was considered a disagreement when one recorder recorded the response as correct and the other recorder recorded it as incorrect. An IOA score for a session was calculated by dividing the number of agreements during that session by the total number of agreements plus disagreements and multiplying by 100%.

Approximately 25% and 80% of all training sessions for each participant for Experiments 1 and 2, respectively, were scored for procedural integrity (PI) and procedural reliability (PR). During such checks, a trained observer and the experimenter independently scored the steps that the experimenter followed on a procedural checklist. PI for a session was calculated by dividing the number of steps recorded by the observer as performed correctly by the total number of steps and multiplying by 100%. PR was calculated by dividing the number of agreements during a session (the observer and the experimenter both recorded a step as occurring or not occurring) by the total number of agreements plus disagreements and multiplying by 100%.

Experiment 1

The purpose of Experiment 1 was to compare the number of trials required for persons with ID to master three discrimination tasks: L2A, Rel/Abs, and Rel tasks.

Training Materials

The materials used to administer the three tasks to a participant differed from the original ABLA test and from each other within a comparison with respect to shape and colour cues. Containers for the three comparisons included a blue octagon-shaped container, a purple triangle-shaped container, a red heart-shaped container, an orange starshaped container, a dark green clover-shaped container, and a lime green hexagon-shaped container. The relative size of the containers for L2A tasks was similar to the ABLA test. Container type was counterbalanced across task types and across comparisons for each participant in order to minimize the likelihood that experimental effects could be attributed to the container type. For example, for comparison 1 for P1, the L2A containers were the blue octagon-shaped container and the purple triangle-shaped container, the Rel/Abs task used two orange star-shaped containers, and the Rel task used two green clover-shaped containers. The container positions for the tasks were as illustrated in Figure 1. The manipulandum was an irregularly shaped brown piece of rubber. However, for P1 and P2, the piece of brown rubber was replaced by a crumpled up piece of paper towel on several occasions due to frequent mouthing of the rubber piece by P1, and difficulty grasping the rubber piece by P2.

Within a comparison, across each of the three types of training sessions, surrounding visual stimuli including the experimenter's clothes and the table cloth differed. These stimuli included a beige table cloth and a bluish beige apron and a beige hat for the L2A task; a brown table cloth and a brown apron and a black hat for the Rel/Abs task; and a red table cloth and a red apron and hat for the Rel task. The purpose of varying such visual cues across the three treatment conditions, and comparing the Rel and Rel/Abs tasks to L2A task rather than the original ABLA Level 2, was to maximize the difference between discrimination cues, so that performance on one type of discrimination task was less likely to influence performance on another type of discrimination task.

Research Design

A single-subject alternating-treatments design was used to compare the relative difficulty of the three types of tasks within a participant. There were three sequential replications of the comparison within a participant, repeated across three participants. Within a comparison, all three task types were taught concurrently to a participant, but were alternated across sessions. An average of two training sessions per participant per week were conducted. The presentation order of the three types of sessions were counterbalanced for each participant. Correct container placement (right or left position) was also systematically balanced across comparisons for each participant.

Procedure

The training procedure used to teach participants the three different position discrimination tasks was the ABLA Level 2 testing procedure described previously (also see Kerr et al., 1977, and Martin and Yu, 2000). The participant sat at a table across from the experimenter. A training session for a task lasted up to 40 min, or 50 trials, whichever came first. Following a preference assessment to select edible or non-edible reinforcers (as described previously), each session began with a demonstration, a guided trial, and an opportunity to respond independently as described previously for the ABLA test administration. Following a correct response on the independent opportunity, training trials began. Training trials were conducted exactly as described previously for an independent opportunity. Participants were given an edible or non-edible reinforcer and praise (e.g., "good job!") for correct responses. Placement of the manipulandum within the incorrect container constituted an error, while no response within 10 s, or any action not involving placement of the manipulandum within a container was considered a non-trial and was not scored. When an error occurred, a correction procedure was used consisting of a demonstration, a guided trial, and an opportunity to respond independently.

The pass criterion for each discrimination task was eight consecutive correct responses, not counting correct placement of the manipulandum during the independent opportunity of the error-correction procedure. This was likely to represent mastery of a task due to the low probability of such an occurrence by chance. The fail criterion was 110 completed trials without reaching the pass criterion. The selection of 110 trials as a fail criterion allowed participants much practice with the task such that a failure was likely to represent difficulty in mastering the skill (97% of individuals tested on the ABLA typically reached the ABLA pass or fail criterion in under 30 trials, Martin & Yu, 2000). A trained research assistant conducted the training sessions for Comparisons 1, 2, and 3 for P3, and Comparisons 2 and 3 for P2, while the first author conducted the IOA, PR, and PI checks for these sessions. All other training sessions were conducted by the first author.

Results

The IOA scores across comparisons were 99.5%, 100%, and 100% for the L2A, Rel/Abs, and Rel tasks, respectively. For the L2A, Rel/Abs, and Rel tasks, the PI scores across comparisons were 100%, 99.8%, and 100%, respectively. Finally, the PR scores across comparisons were 98.8%, 92.4%, and 98.3% for the L2A, Rel/Abs, and Rel tasks, respectively.

Visual inspection was used to determine whether there was indeed a difference in the number of trials required to reach criterion for the three tasks for each individual. It was predicted that the fewest number of trials to mastery would occur for the L2A tasks, then the Rel/Abs tasks, and then the Rel tasks. The results for each participant will be reviewed in turn.

P1 passed all three tasks in very few trials during Comparison 1 (see Figure 2), suggesting no difference in the difficulty of the three tasks. However, during Comparison 2, P1 required the fewest number of trials to complete the L2A task, somewhat more trials to pass the Rel/Abs task, and failed the Rel task, supporting the hypothesized level of difficulty of the three tasks. During Comparison 3, P1 failed the L2A task, and passed the Rel/Abs and Rel tasks in few trials, suggesting that the L2A task was the most difficult, with the Rel/Abs and Rel tasks being easier and similar in their level of difficulty. Thus, across the three comparisons there was no consistent order of difficulty of the three tasks relative to one another for this participant. P1's error rate was usually much greater during tasks where the correct response required placement of the manipulandum into the container on the left (from the perspective of the participant). Indeed, across all three comparisons, P1 passed 5 out of 5 tasks that required placement of the manipulandum into the right container in 12 trials or less. However, during the 4 times that the correct container was on the left, P1 failed the task (110 trials) twice, and required 38 trials to master the task another time. These findings suggest that for P1, the three tasks may be relatively equal in difficulty, and that variability in performance may be due primarily to the interaction between handedness (with P1 being right-handed) and the location of the correct response.

P2 passed all three tasks in very few trials during Comparisons 1 and 3 (see Figure 2), suggesting no difference in the difficulty of the three tasks. In comparison 2, P2 failed the Rel task, and passed the L2A and Rel/Abs tasks, though requiring more trials to pass L2A and Rel/Abs tasks relative to Comparisons 1 and 3. While the tasks in Comparisons 1 and 3 required placement of the manipulandum in the left-hand container, Comparison 2 required placement of the manipulandum in the right-hand container. This suggests that for P2, like P1, the observed differences across comparisons may be due to the interaction between handedness (with P2 being left-handed) and the location of the correct response, rather than being related to differences in the relative difficulty of the three tasks.

The number of trials required by P3 to reach the pass or fail criteria for the three tasks differed notably across the three comparisons (see Figure 2). Indeed, each comparison appears to suggest a different relationship with respect to the relative difficulty of the tasks. Comparison 1 suggests that the Rel/Abs task is most difficult and the L2A task is least difficult. Comparison 2 suggests that the Rel task is the most difficult, with little difference in difficulty between the L2A and Rel/Abs tasks. Comparison 3 suggests that the L2A and Rel/Abs tasks are much more difficult than the Rel task. Therefore, across the three comparisons, no clear relationship was found concerning the difficulty level of the three tasks relative to one another.

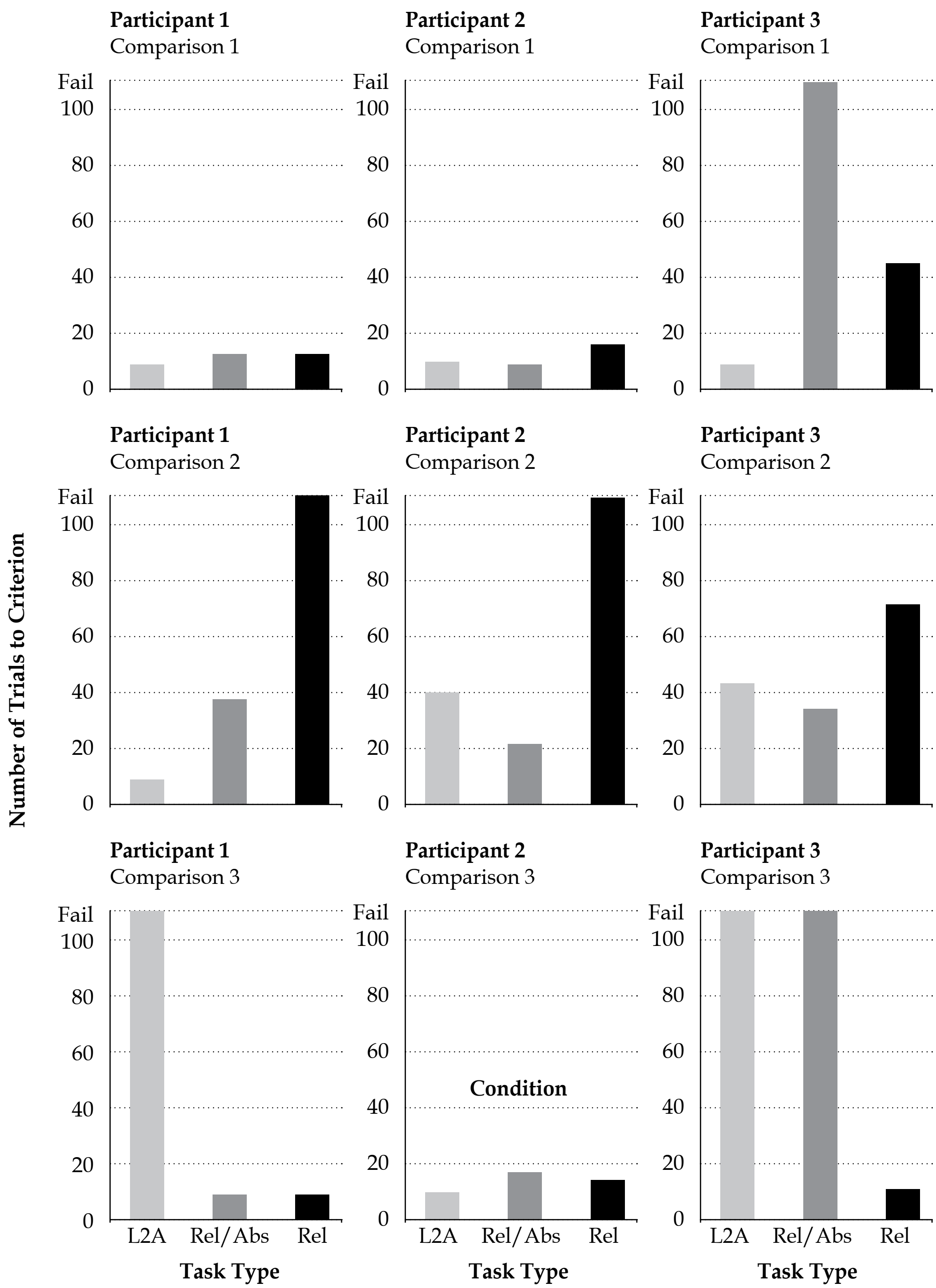

Figure 2. *The number of teaching trials administered before participants reached the pass or fail criterion per task for each of three comparisons during Experiment 1. L = Correct container on the left from the perspective of the participant. R = Correct container on the right from the perspective of the participant. L2A = ABLA Level 2 analogue task, Rel/Abs = a relative/absolute position discrimination task, and Rel = a relative position discrimination task.*

Overall, the results from Experiment 1 did not demonstrate the predicted relationship of difficulty among the three tasks. No consistent difference in difficulty level of the three tasks was found across three comparisons within each of the three participants.

Experiment 2

Based on the results obtained during Experiment 1, the purpose of Experiment 2 was to further compare the relative difficulty among the L2A, Rel/Abs, and Rel tasks, and to determine whether correct container location, left (L) versus right (R) may influence responding to position discrimination tasks. The same three participants involved in Experiment 1 participated in Experiment 2.

Research Design

For this experiment, a within-subject design was used in which a participant was taught one of the tasks (to the pass or fail criterion) with the correct container on the right from the perspective of the participant, and then was taught that same task with the correct container on the left. This was repeated for the second task, and then for the third task. Only after a participant reached the pass or fail criterion on a task did we move on to administering the next task. Thus, with respect to the right-left position of the correct container, this design was an ABABAB within-subject design. Regarding the order of the three tasks (L2A, Rel/Abs, and Rel), it was counterbalanced across the three participants.

Based on the results obtained in Experiment 1, it was hypothesized that there would be no difference in difficulty between the three position tasks. In other words, all three tasks would require a similar number of trials to reach pass/fail criteria. Furthermore, it was hypothesized that correct container position would influence responding for Participants 1 and 2.

Materials

Training on the L2A task was done using the star and octagon containers. Training on the Rel/Abs and Rel tasks was done using two star containers. The purpose of using only the two container types across all three tasks was to minimize possible effects of using different types of containers across treatment conditions. Furthermore, among each of the three types of training sessions, surrounding visual stimuli, including tablecloth type and the experimenter's clothes, also differed (i.e., a beige table cloth and a bluish beige apron and a beige hat for the L2A tasks; a brown table cloth and a brown apron and a black hat for the Rel/Abs tasks; and a red table cloth and a red apron and hat for the Rel tasks) just as in Experiment 1.

Procedure

The training procedures for a task were the same as those utilized in Experiment 1. Training sessions for a task lasted up to 40 min, or for 50 trials, whichever came first. The pass criterion for each discrimination task was eight consecutive correct responses, while the fail criterion was 110 completed trials without reaching the pass criterion. An average of two training sessions per participant per week were conducted. Time separation between administering two different task types was always at least 24 hours.

Results

The IOA scores across comparisons were 100%, 100%, 99.7%, 100%, 100%, and 100% for the L2A-L, L2A-R, Rel/Abs-L, Rel/Abs-R, Rel-L, and Rel-R tasks, respectively. The PI scores across comparisons were 100% for all tasks. Finally, the PR scores across comparisons were 99.7%, 98.7%, 100%, 100%, 97.4%, and 100%, for the L2A-L, L2A-R, Rel/Abs-L, Rel/Abs-R, Rel-L, and Rel-R tasks, respectively.

P1's performance on the position tasks of Experiment 2 was as predicted (see Figure 3). P1 passed all three tasks in very few trials when the correct container was on the right. However, P1 required many trials to meet the pass or fail criteria on the three tasks when the correct container was on the left. These results suggest that for P1, the L2A, Rel/Abs, and Rel tasks are approximately equal in their level of difficulty, and errors are due mainly to the correct container being on the left.

P2 quickly learned the L2A and Rel/Abs tasks, regardless of whether the correct response was

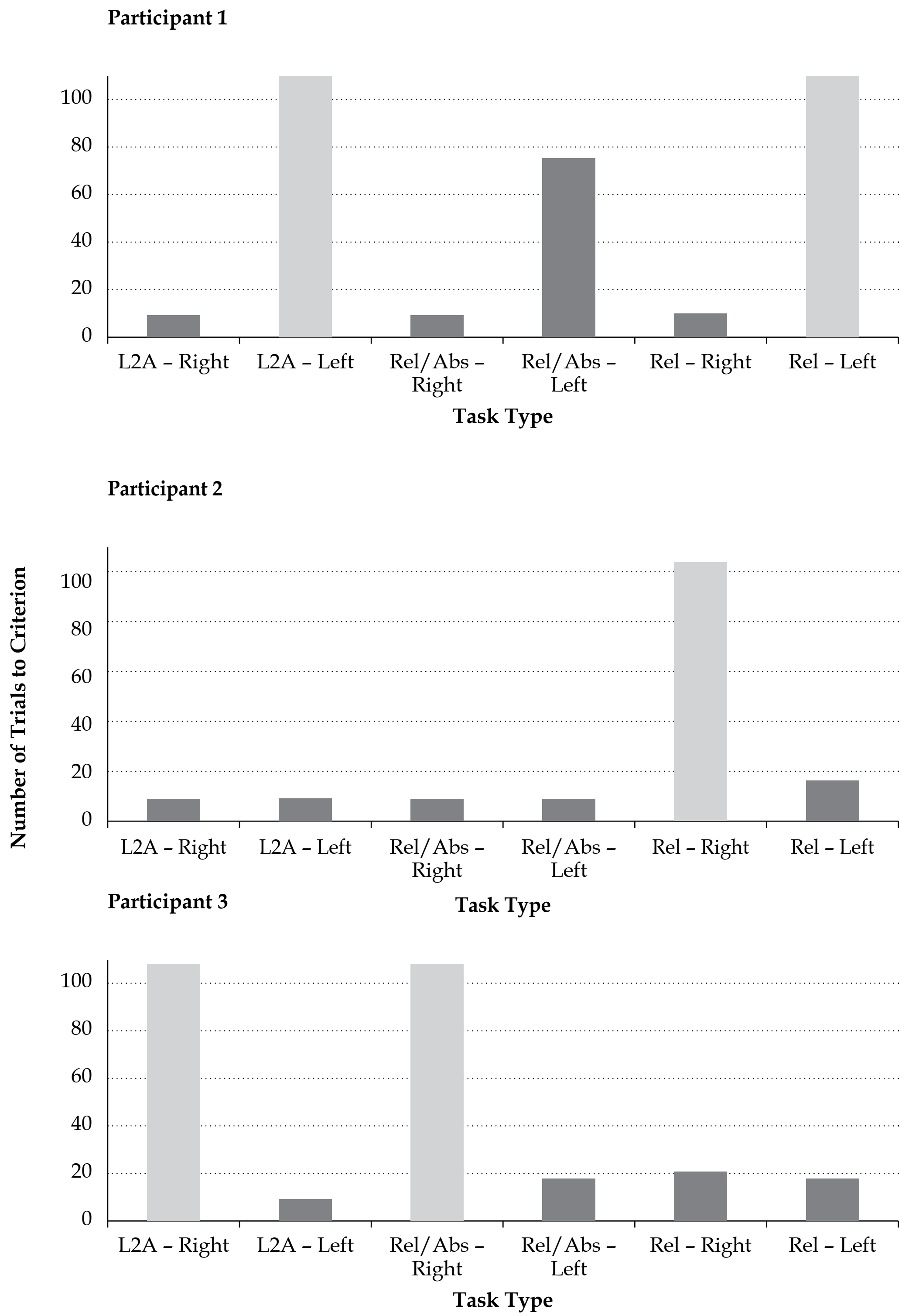

Figure 3. *Number of teaching trials administered before participants met the pass or fail criterion per task for Experiment 2. Speckled bars indicate failed tasks. L2A = ABLA Level 2 analogue task, Rel/Abs = a relative/absolute position discrimination task, and Rel = a relative position discrimination task.*

placement of the manipulandum in the left or the right container (see Figure 3). P2 quickly learned the Rel task when the correct container was on the left; however, P2 failed the Rel task when the correct container was on the right. For the L2A and Rel/Abs tasks, placement of the manipulandum in either the left or right container appeared to be relatively easy. However, for the Rel task, because the absolute positions of the containers changed across trials (see Figure 1), placement of the manipulandum in the right container required much more effort than would right container placement in either the L2A or Rel/Abs tasks. This difference across the three task types might explain why P2 failed the Rel task when the correct container was on the righthand side, considering that P2 was left-handed.

For P3, the number of trials to reach pass criterion was similar for the Rel task when the correct container was on the right versus the left (see Figure 3). Also, P3 passed the L2A task and the Rel/Abs task with relative ease when the correct response was placement of the manipulandum in the left container, but failed both tasks when the correct container was the one on the right. P3 was righthanded. Thus, like in Experiment 1, P3 showed no consistent pattern to suggest any particular relationship among the relative difficulty of the three position tasks, or left versus right correct container placement.

General Results and Discussion for Both Experiments

We attempted to teach three exemplars of each type of task to each participant in Experiment 1, and two exemplars of each type of task to each participant in Experiment 2. One way of determining the relative difficulty of the three types of tasks within each participant (an assessment of internal validity) would be to examine the number of exemplars (maximum of 5 of each type of task) that were learned rapidly, and the number that were learned slowly. In a review of research on the ABLA, Martin and Yu (2000) reported that 97% of testees who achieved either the pass criterion of eight consecutive correct responses or the failure criterion of eight cumulative errors typically did so in 30 trials or less. However, if a client fails an ABLA level, that level is typically difficult to teach, sometimes requiring in excess of 100 training trials to achieve mastery. Based on this research, learning in 30 trials or less was used as a definition of rapid learning. P1 rapidly learned three exemplars of each type of task; P2 rapidly learned an average of four exemplars of each type of task, + or –1; P3 rapidly learned an average of two exemplars of each type of task, + or –1; and across the three participants, the mean number of exemplars of each type of task that were learned rapidly was three per task. Thus, an examination of the number of exemplars of each type of task that were learned rapidly, within and across participants, suggests that there is little difference in the difficulty of the three types of tasks for these participants.

Now, let's examine the number of exemplars (maximum of five) of each type of task that were learned slowly. As indicated previously, when an ABLA level is failed, it typically takes considerably more than 30 trials for that level to be mastered. Thus, one possible criterion of slow learning would be a task that requires greater than 70 trials (a number more than twice the criterion for rapid learning), or not learned within 110 trials (the definition of task failure in Experiments 1 and 2). Using this criterion, P1 showed slow learning on one or two exemplars of each type of task, P3 showed slow learning on an average of two exemplars of each type of task, + or –1, and P2 had difficulty only with the Rel task. However, as expressed earlier, the difficulties experienced by P1 and P2 can be accounted for entirely by an interaction between the right-left location of the correct response and handedness. Across the three participants, the mean number of exemplars of each type of task that were difficult to teach was 1.4 for L2A and Rel/Abs tasks, and 1.7 for RE tasks, which is very similar for each task. Across comparisons for L2A tasks, for Participants 1 and 3, there were no differences in size cues between containers for tasks that were passed versus those that were failed.

To consider another summary statistic, across both experiments and all three participants, there were 15 attempts to teach the L2A task, 15 attempts to teach the Rel/Abs task, and 15 attempts to teach the Rel task. The mean number of trials to criterion was very similar for all three tasks (see Figure 4). Nevertheless, as shown in Figure 4, the average number of trials to meet a pass or fail criterion across all three participants was slightly more for the Rel task. It may very well be that, across a large sample of participants, this difference in task difficulty, although small, might be statistically significant. Nevertheless, across these two experiments, with three participants, a large effect clearly did not emerge.

These two studies are the first to be reported that compared the relative difficulty of an L2A task, a Rel/Abs task, and a Rel task. The results suggest that none of the position tasks was consistently more difficult than the others, and if there is a difference in the relative difficulty of the three tasks, then such an effect was so small that it could not be clearly demonstrated within or across the three participants. However, individual single-subject experiments are weak on external validity (Martin & Pear, 2011). Future studies are necessary to replicate this research, and they might also include an examination of variations of the Rel task. For example, future researchers might explore whether increasing the number of locations of the absolute positions for container placement during the Rel task might affect participant performance. That is, instead of just two different absolute position locations for the Rel task (see Figure 1), a researcher might incorporate six or eight absolute position locations. One might also examine whether the orientation and the distance between sets of absolute positions of the containers within the Rel task relative to the participant might alter task difficulty. That is, will the number of trials required for the participant to reach criterion be affected if one set of absolute locations is on one table within the testing room while the other set of absolute locations is on a different table within the testing room? Such a task may be more representative of real world situations, where relative position discriminations are required across a greater space than that occupied by a 0.91 × 1.52 m table. An analogous real-world example of such a task is an individual who locates her correct place in line on the way to a group activity (for example, always behind Paul) regardless of where the line is located within a treatment facility for persons with ID.

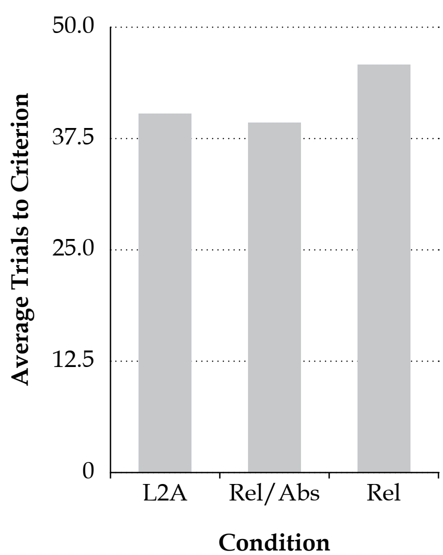

Figure 4. *Mean number of trials to meet pass or fail criterion for the L2A, Rel/Abs, and Rel tasks across all 15 teaching attempts of each task across Experiments 1 and 2 for all participants. L2A = ABLA Level 2 analogue task, Rel/Abs = a relative/absolute position discrimination task, and Rel = a relative position discrimination task.*

A finding of this study is that the performance of at least two of the three participants was influenced by whether the correct container was on the left- versus the righthand side during the position discrimination tasks. Future research needs to examine the extent to which handedness affects performance on position discrimination tasks, including ABLA Level 2. In particular, is this a widespread phenomenon for people with ID? Might individuals with autism also display this phenomenon? Also, can the generalization be made that when there is an interaction between handedness and correct container location, then the most difficult tasks will be those where the correct container is the one furthest from the dominant hand? Another concern is that it may be possible that the counter-balanced presentations of the procedures either prohibited learning discrimination or resulted in generalization. These are but some of the research questions that might extend the literature on position discriminations and the ABLA test.

Persons with ID living in the community and at residential treatment facilities are likely to encounter tasks requiring Rel/Abs and Rel discriminations in their daytoday lives. The present research suggests that analogous ABLA Level 2 tasks, Rel/Abs tasks, and Rel tasks are approximately of equal difficulty. These results need to be replicated to convincingly establish external validity. However, the present research suggests that the addition of prototype Rel/Abs and Rel tasks to the ABLA test is not necessary for the ABLA test to have acceptable predictive validity for performance on variations of position discrimination tasks. This is an important clinical finding for practitioners charged with the responsibility of teaching basic skills to persons with ID.

Key Messages From This Article

People with disabilities: The part of the ABLA test that examines position discriminations does a good job of helping your caregivers to understand how well you do these types of tasks in every day life.

Professionals: ABLA Level 2 is an adequate predictor of a person?s performance on a variety of daily living tasks involving position discriminations.

Policymakers: The addition of levels is unnecessary for the ABLA test to have acceptable predictive validity for performance on variations of position discrimination tasks. The ABLA test is widely used to design teaching programs; therefore, continuing research in this area is paramount.

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