The Use of Adaptive Equipment to Teach Daily Living Skills

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The Judge Rotenberg Educational Center (www.judgerc.org) operates day and residential programs for children and adults with behavior problems, including conduct disorders, emotional problems, brain injury or psychosis, autism, and developmental disabilities. The fundamental approach taken at JRC is the use of behavioral psychology and its various technological applications, including behavioral education, programmed instruction, precision teaching, behavior modification, behavior therapy, behavioral counseling, self-management of behavior, and chart-sharing.

In this study, we will discuss the use of specially created adaptive equipment in teaching the daily living skill, zipping. We developed models with large scale representations of the final product. Students became fluent on the skills, using these large items, and using small, pre-determined steps, are taught to complete the skills with a regular jacket. Data will be plotted on a standard celeration chart. We will examine the generalization and long term retention of the skills taught using this adaptive equipment.

Method

Participants and Setting

There were four participants in this study. Their ages ranged from 17.6 to 24.1 years old. There were three males and one female. All four participants were diagnosed with autism or PDD and severe MR. All four participants attended school at the Judge Rotenberg Center and lived in one of JRC's group homes. Participants worked on zipping in a one to one room, with a staff that was specially trained to deliver one to one instruction.

Measures and Instruction

Participants learned the skill of zipping through backwards chaining. The skill was broken down into the following steps-

5	Using left hand student tightly holds bottom left side of the jacket and pulls the zipper all the way up using right hand.
4	Using left hand student pulls down the track to lock it into the zipper
3	Using left hand, student inserts track into

	zipper tab.
2	Using right hand, student grasps the zipper tab.
1	Using left hand, student grasps the bottom of the zipper track.

Participants worked on this task for ten minutes with a staff who would give them as many verbal and physical prompts as needed. They would then complete a one minute timing with just the initial verbal prompts. Completions and physical prompts were recorded during the timing and plotted on a standard celeration chart. Participants were moved to the next step when they were able to complete the current step with no physical prompts. During this entire process, participants were reinforced with various items, such as edible rewards or toys.

Results

All participants showed significant progress. Baseline data taken on all of the participants showed that none of them showed the ability to zipper, through positive reinforcement and backwards chaining, we were able to successfully train each of the students to engage in this behavior.

Participant 1, M.E. had a rate of 0 zipping completions during baseline, he was successfully able to master all 5 steps required during training. The final timing of the training phase required steps 1-5 to be completed; his total rate of zipping completions in one minute was 4. A retention check was completed 3 months later and Participant 1's rate continued to be 4, showing a continuous stable rate of completions.

Participant 2, B.S., had a rate of 0 zipping completions during baseline. He was successfully able to master all 5 steps required during training. His final timing of the training phase (steps 1-5) showed a rate of 4 completions in one minute. A retention check timing was taken 3 months later and Participant 2's rate of completions continued to be 4, showing a continuous stable rate of completions.

Participant 3, J.G., had a rate of 0 zipping completions during baseline, he was successfully able to master all 5 steps required during training. His final timing of the training phase (steps 1-5) showed a rate of 6 completions in one minute. A retention check timing was taken 3 months later and Participant 3's rate of completions was 4, showing a decrease in the overall rate but a continuous retention of the skill.

Participant 4, D.V., had a rate of 0 zipping completions during baseline, she was successfully able to master all 5 steps required during training. The final timing of the training phase (steps 1-5) showed a rate of 4 completions in one minute. A retention check was completed 3 months later and Participant 4's rate of zipping

completions was 2, showing a decrease in the overall rate, however, continuous retention of the skill.

Discussion

There is a clear increase in each participant's ability to zipper by using positive reinforcement (edible item or toys) and backwards chaining. All five steps of the chaining procedure were mastered during the training sessions. Each participant was also able meet the criteria previously set for them at the end of the training phase (four completions in one minute). A follow up timing was given three months after the training phase ended, all participants showed the ability to retain the skill. Also three out of the four met the criteria that were previously set for them (rate of four completions). Each student had a 1 to 1 trained aid to work with them on this skill which assured immediate feedback and reinforcement to be given. Further study could examine, ways in which to aid individuals with motor difficulties engage in these types of behaviors.

Dpmin-11EC

DAILY per minute CHART ™

7 | 1 | 08 (DAY | MO | YR)
3 | 2 | 08
2 | 3 | 08
30 | 3 | 08
24 | 4 | 08

0 4 SUCCESSIVE 8 CALENDAR 12 WEEKS 16 20

M W F SUN

Baseline
Steps 5
Step 4
Steps 3
Steps 2-1
Steps 1-5
Retention check

COUNT PER MINUTE: 1000 500 100 50 10 5 1 .5 .1 .05 .01 .005 .001 0

COUNTING TIMES: 10" sec, 15", 20", 30", 1' min, 2', 5', 10', 20', 50', 100', 200', 500', 1000', hrs 1°, 2°, 4°, 8°, 16°, 24°

Standard celeration
X16 X 4 X 2 X 1.4 X 1.0 / 1.4 / 2 / 4 / 16
per week ™

0 14 28 42 56 70 84 98 112 126 140
SUCCESSIVE CALENDAR DAYS

SUPERVISOR	ADVISER	MANAGER			PERFORMER	COUNTED
					M.E.	zippering Completions
ORGANIZATION	**DIVISION**	**ROOM**	**TIMER**	**COUNTER**	**CHARTER**	
JRC					J. Hunt	Participant 1

Figure 1

Dpmin-11EC

DAILY per minute CHART ™

14 | 1 | 08 (DAY | MO | YR)
3 | 2 | 08
2 | 3 | 08
30 | 3 | 08
24 | 4 | 08

0 4 SUCCESSIVE 8 CALENDAR 12 WEEKS 16 20

M W F SUN

Baseline Steps
Step 4
Step 3
Step 2-1 Step 1-5
Retention Check

COUNT PER MINUTE
1000 500 100 50 10 5 1 .5 .1 .05 .01 .005 .001 0

COUNTING TIMES
10" sec
15"
20"
30"
1' min
2'
5'
10'
20'
50'
100'
200'
500'
1000'
hrs 1° 2° 4° 8° 16° 24°

Standard celeration
X16 X4 X2 X1.4 X1.0 /1.4 /2 /4 /16
per week ™

0 14 28 42 56 70 84 98 112 126 140
SUCCESSIVE CALENDAR DAYS

SUPERVISOR	ADVISER	MANAGER			PERFORMER	COUNTED
					B.S.	zippering Completions
ORGANIZATION	DIVISION	ROOM	TIMER	COUNTER	CHARTER	
JRC					J. Hunt	participant 2

Figure 2

Dpmin-11EC

DAILY per minute CHART ™

7 DAY 1 MO 08 YR

3 DAY 2 MO 08 YR

2 DAY 3 MO 08 YR

30 DAY 3 MO 08 YR

24 DAY 4 MO 08 YR

DAY MO YR

0 M W F SUN 4 SUCCESSIVE 8 CALENDAR 12 WEEKS 16 20

COUNT PER MINUTE

1000 500 100 50 10 5 1 .5 .1 .05 .01 .005 .001 0

Baseline
Step 5
Step 4
Step 3
Step 2
Step 1
Step 5
Retention Check

COUNTING TIMES

10" sec
15"
20"
30"
1' min
2'
5'
10'
20'
50'
100'
200'
500'
1000'
hrs 1° 2° 4° 8° 16° 24°

Standard celeration

X16 X 4 X 2 X 1.4 X 1.0 / 1.4 / 2 / 4 / 16

per week ™

0 14 28 42 56 70 84 98 112 126 140

SUCCESSIVE CALENDAR DAYS

SUPERVISOR	ADVISER	MANAGER	J. G. PERFORMER	Zippering Completions COUNTED
JRC ORGANIZATION	DIVISION	ROOM	TIMER	COUNTER	J. Hunt CHARTER	Participant 3

Figure 3

Dpmin-11EC

DAILY per minute CHART ™

7 / 1 / 08 (DAY / MO / YR)

3 / 2 / 08

2 / 3 / 08

30 / 3 / 09

24 / 4 / 09

0 4 SUCCESSIVE 8 CALENDAR 12 WEEKS 16 20

M W F SUN

Baseline Steps 5

Step 4

Step 3

Steps 2-1 Steps 1-3

Retention Checks

1000 500 100 50 10 5 1 .5 .1 .05 .01 .005 .001 0

COUNT PER MINUTE

COUNTING TIMES

10" sec 15" 20" 30" 1' min 2' 5' 10' 20' 50' 100' 200' 500' 1000'

hrs 1° 2° 4° 8° 16° 24°

Standard celeration

X16 X 4 X 2 X 1.4 X 1.0 / 1.4 / 2 / 4 / 16

per week ™

0 14 28 42 56 70 84 98 112 126 140

SUCCESSIVE CALENDAR DAYS

SUPERVISOR ADVISER MANAGER D.V. PERFORMER Zippering Completions COUNTED

JBC ORGANIZATION DIVISION ROOM TIMER COUNTER JHunt CHARTER Participant 4

Figure 4