The University of Manitoba

A Standardized Training Strategy vs. A Trainer's Own Personal Method in Vocational Training of the Severely Mentally Handicapped

by

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A Thesis

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Abstract

A standardized training strategy (STS) has been described for teaching vocational tasks to moderately and severely retarded persons in sheltered workshop settings (Martin & Mullen, Note 1). This research compared the STS to the personal training approach of a staff member in teaching workshop assembly tasks. Two experiments were conducted at the Manitoba School, Portage la Prairie, Manitoba. The design in Experiment 1 was a multi-element design, using a trained researcher, a workshop staff member, and two clients. The researcher was trained to use the STS to teach clients to assemble either a bicycle brake or a fishing reel. The workshop staff member used her own personal approach to teach the alternate tasks to the same clients. Thus, each client was taught two tasks, each task being taught under a different training procedure. The design in Experiment 2 was a modified multi-element design. The workshop staff member first used her own personal approach to teach Client three to assemble a fishing reel and Client four to assemble a bicycle brake. She next learned and used the STS to teach Client three to assemble a bicycle brake and Client four to assemble a fishing reel. Experiment 2 made it possible to compare a personal training approach to the STS when both were applied by a given staff to a given client. Although there was a task effect, that is, the brake was more difficult to learn than the reel, the STS appeared to be superior in both fewer errors and total training time, and was preferred by 3 out of 4 clients and the staff member.

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TABLE OF CONTENTS

TABLE OF CONTENTS (CONT'D)

LIST OF TABLES

LIST OF FIGURES

Introduction

Severely retarded adults are frequently excluded from sheltered workshop programs (Lynch & Graber, 1977). One reason for this is the absence of well-researched training programs with this population. Gold (1972) noted that almost all behavioral research with the retarded in vocational settings was concerned with production rather than training. Martin and Pallotta-Cornick (1979) indicated that this emphasis, though not quite as pronounced as in 1972, still existed. If the severely and moderately retarded are going to find meaningful employment in sheltered workshops then effective training strategies must be developed for this population.

Severely, profoundly, and moderately retarded persons have been taught complex assembly tasks such as bicycle brakes (Gold, 1972), oscilloscope cam switches (Bellamy, Peterson, & Close, 1975), and saw-chains (O'Neill & Bellamy, 1978). Two recent reviews of the literature (Bellamy, Inman & Schwartz, 1978; Martin & Pallotta-Cornick, 1979) identified four common features of successful training procedures: (1) a task analysis; (2) a training format; (3) a method of prompting and fading the prompts; and (4) a reinforcement system. In consideration of these reviews, Martin and Mullen (Note 1) described a multiple-component standardized training strategy (STS), incorporating the features common to successful training procedures.

Task analysis, breaking a task down into component responses which are arranged sequentially for training, is straightforward. Bellamy, Horner, and Inman (1979) offer an excellent description of task analysis, and their guidelines are a component of the STS. Prompting and fading procedures have received considerable attention in the behavioral literature. Guidelines and descriptions of these techniques may be found in Bellamy et al. (1979)

and Martin and Pear (1978). The three chaining formats, forward chaining (FC), backward chaining (BC), and total task presentation (TTP) have all been used to teach retarded persons a variety of tasks (e.g., self-care, vocational tasks, etc.)

Reviewing the literature available at the time, Bellamy et al. (1979, p. 33-34) concluded that while all training formats have been effective in teaching the retarded vocational tasks, none was clearly superior. They recommended TTP because of several advantages that TTP has over BC and FC: (1) it requires less trainer time in partial assembly or disassembly; (2) it appears to focus on response topography and response sequence simultaneously; and (3) it appears to maximize the client's independence early in training. Two recent research reports add data to support Bellamy et al.'s (1979) recommendations. Yu, Martin, Suthons, Koop and Pallotta-Cornick (1980) compared TTP to FC and to a modified FC (MFC). TTP required less total session time than FC, and there were minimal differences between MFC and TTP on total session time. As well, more errors were made under the MFC as compared to the TTP. A second study compared TTP to BC and to a modified BC (MBC) (Martin, Koop, Turner, & Hanel, in press). This second study clearly favored TTP to BC both in total session time and in fewer errors. The results comparing TTP to MBC were mixed and neither method was superior. Based on the clear advantages TTP has over FC and BC, the less clear advantages over MFC, mixed results with MBC, and considering the practical considerations listed by Bellamy et al. (1979), the STS used a TTP format.

It has long been established in the operant literature that certain events increase the frequency of the behavior on which they are contingent. These events are called reinforcers.

However, one of the more prominent names in vocational training of the severely retarded, Marc Gold (Gold, 1980; Levy, Pomerantz & Gold, 1976; Gold, Note 2) recommended that only minimal social reinforcement be used. Recent experiments comparing Gold's minimal social reinforcement strategy to extra social plus edible reinforcement found that the extra reinforcement condition facilitated learning the task to criterion both in terms of training time and total number of errors and was preferred by the majority of clients (Koop, Martin, Yu, & Suthons, 1980). Therefore, the STS used both extra social and edible reinforcers.

In addition to the above mentioned components, the STS incorporated a learning-to-learn assessment test developed by Kerr, Meyerson, Flora, Tharinger, Schallert, Casey, and Fehr (1977). This test consists of six tasks to identify whether or not an individual can imitate, make a position discrimination, make a visual discrimination, match-to-sample, make an auditory discrimination, or make an auditory-visual combined (AVC) discrimination. Their initial research with 117 retarded children and adults, and later with 42 young normal children indicated that these discriminations are hierarchical in nature. For example, if an individual cannot make a visual discrimination, then it is highly unlikely that they can match-to-sample, or make an auditory or AVC discrimination. They also found that if a retarded person could not make one of the discriminations, then 100-900 trials were required to teach a task requiring a higher discrimination. In the STS, the Kerr et al. (1977) findings were used to determine the error correction procedure, or level of prompting used with each client.

Drawing on research such as that cited above, the components of the STS have been described (Martin & Mullen, Note 1). In order to assess a program package, it is necessary to test it against alternative available

procedures (Azrin, 1977; Martin & Pallotta-Cornick, 1979). One alternative is described in the training manual titled "Try Another Way" (Gold, 1980). However, considering the recent experiments by Koop et al. (1980) that demonstrated that Gold's "Try Another Way" procedures with extra reinforcement were more effective than Gold's procedures with minimal reinforcement, and given that extra social reinforcement and edibles are a part of the STS, an approximation of a comparison of the STS against Gold's "Try Another Way" approach has already been made.

Walls, Zane, and Thvedt (1980) compared two structured training methods to trainer's personal methods. A backward chaining and a structured whole method were compared to trainer's own methods. No consistent time differences were found between methods. Fewest errors were found with the backward chaining method and preresponse prompts, and most errors were found with the whole method and postresponse prompts. However, the training format was confounded by the difference in pre vs post response prompts. Moreover, the backward chaining method of presentation had verbal instructions, modelling, and physical guidance in the initial training trial while these were absent from the whole method of presentation. These problems make it difficult to interpret the results thus obtained. Given the problems in the Walls et al. (1980) study, and the fact that, based on research available elsewhere, a TTP format was part of the STS, it also seemed inadvisable to compare our training strategy against either of the structured training procedures suggested by Walls et al. (1980).

The alternative training approach selected for comparison was the personal training approach of a regular workshop staff member. The first Experiment involved two clients, each taught a task by a trained researcher using the STS, and a task by the staff member using her personal training approach.

The second Experiment was a systematic replication of Experiment 1 and used the same two training tasks. It involved two new clients, each taught a task first by the staff member from Experiment 1 using her own personal method, and second by the same staff member from Experiment 1 using the STS. The purpose of the study was to compare the STS with the personal training method of a staff member.

Method

The information in this section applies to both Experiments 1 and 2.

Subjects

The subjects were one regular workshop staff member and one researcher. Both were females. The staff member was employed at a sheltered workshop for the mentally retarded and had received some on-the-job training in teaching retarded clients assembly-type tasks. At the time of the research she had been employed eight months. Previous to the workshop experience, she had been employed for 2½ years in a structured behavior modification program in a facility for the acute mentally ill. Although she had no formal courses in behavior modification, she had approximately 60 hours of in-service training at the institution for the mentally ill in behavioral principles and programming. The researcher was a 2nd year law student. She had no previous experience teaching the retarded, and had an undergraduate psychology background in behavior modification. The researcher was trained to use the STS. The subjects, referred to hereafter as the staff member and researcher respectively, taught four residents (clients) of the Manitoba School, Portage la Prairie, Manitoba, a provincial institute for the mentally retarded. The clients were in the severe to low-moderate range of functioning as measured by standard tests. They were able to attend to items on a table and did not have serious behavior problems. For a description of the clients, see Table 1.

Insert Table 1 about here

Table 1

A Summary of Client Characteristics Participating in Experiments 1 and 2

CLIENT	AGE	MENTAL AGE[a]	KERR-MEYERSON LEVEL	DIAGNOSIS
Karen	33	3-10	Match-to-sample	Down's syndrome
Doug (1)	22	untestable	Match-to-sample	Mute
Sandra	15	2-10	AVC	Familial problems
Doug (2)	23	2-11	AVC	Lack of oxygen at birth

[a]Mental Age computed from the Stanford-Binet Intelligence Test for Children

Tasks

The tasks were a three-speed bicycle brake and a spin-cast fishing reel. Both these tasks were modified to be seven-part assemblies that were assumed to be comparable. See Table 2 for a description of the tasks by part (Note: this is a listing of the parts only, not a suggested task analysis).

Insert Table 2 about here

Baseline

Two baseline measures were taken for all clients on each task, one for the total task and the other for individual steps. The order in which the tasks were baselined was counterbalanced across clients.

Total task baseline. The parts of the task were laid out on the table. The client was shown a completed task and asked to make one, e.g., "Make me a bicycle brake. Make one like this. Do as much as you can." The client was given one minute to respond. If the client didn't respond within one minute, the experimenter proceeded with the individual steps baseline. If the client started to respond within one minute, the experimenter recorded the steps performed until the client stopped responding for one minute or until all the parts were used.

Individual steps baseline. The experimenter tested individual steps using a TTP format. This format was used to baseline regardless of the training format used by the staff member. Starting with the first step the experimenter gave a general command, e.g., "Make me a brake." If the client didn't respond within 10 seconds, the experimenter gave specific instruction, such as "Put the screw on the axle." If the client still didn't start to respond within the next 10 seconds, the experimenter gave extra instructions and gesturing and/or modelling. If the client still

Table 2

Parts of the Tasks

Bicycle Brake	Fishing Reel
1. Housing	1. Disc
2. Center ring	2. Outer casing with two holes
3. Axle	3. Spinner
4. Dust cap	4. Spinner screw
5. Nut 1	5. Outer casing
6. Nut 2	6. Handle
7. Nut 3	7. Handle screw

didn't start to respond within 10 seconds, the experimenter gave physical guidance. In this way, performance at each step was assessed as correct or incorrect to a request, or instructions, or instructions plus modelling or gesturing, or instructions plus physical guidance.

No approval or edibles were given during baseline for correct performance of a step. Approximately once a minute, the experimenter asked the client to perform an activity unrelated to the task, such as pointing to the door. These responses were followed by praise and/or edibles. This was done to maintain the client's attending.

Independent Variables

Personal training approach of staff. The staff member used her own personal approach to training. She was asked to train a client using whatever approach she would normally use to teach a client to assemble a task. Several measures of her training method were taken, as described below under the Procedure section.

Standardized training strategy (STS). The researcher was trained to follow the STS. This consisted of doing a task analysis, being able to use the results of the Kerr et al. (1977) test to determine the prompt level, using a TTP format, using social and edible reinforcers, using pacing prompts, and using massed practice for consistent client errors. For a more detailed description of the STS, see Appendix A.

Dependent Variables

Trials to task criterion. This consisted of the total number of trials to reach criterion under the different training procedures. A trial was defined as one complete assembly of all the parts of the STS. As a TTP format was also used in the staff member's personal training method, this also constituted the definition of a trial in the personal method.

Errors. This consisted of any step on which the client required a prompt, excluding pacing prompts.

Total session time. Total session time started when the client was seated at the beginning of the session and ended after social approval was given on the last trial. Time spent consuming edibles, and disassembling tasks, was included in total session time and was recorded by either a watch or a clock.

Time on task. Time on task started when the client picked up the first piece of the assembly and ended when the completed assembly was placed in the box. This time was recorded with the use of a stop-watch.

Retention. Retention tests were conducted approximately four months after each client had reached criterion on each task. During testing, the client was given three trials on a particular task by the experimenter. Errors were corrected using the particular correction method associated with each task as during training. Approval was given only at the end of each trial.

Procedure

During Experiment 1, a training area was established in the Maple Cottage workshop, one of the workshops at the Manitoba School, a provincial institution for the mentally retarded. During Experiment 2, the training took place in the day hall at Maple Cottage. A training table, chairs, and assembly tasks were provided.

The staff member was instructed to use her own personal training approach. In order not to bias her method of presentation, she was given a completed task, and asked to disassemble it, noting how the parts were arranged. She was then asked to put it together again. When she had

assembled the task three consecutive times with no errors she was considered ready to teach the task. If errors were made in assembly, the experimenter stopped the staff member and demonstrated a correct assembly of that step. It was not considered an error in assembly if the staff member put the task together in a different order than the experimenter. The criterion for correct assembly was a correctly assembled task, not a particular order of assembly.

The researcher was trained to use the STS which included a task analysis. Therefore, the researcher did her own task analysis according to the guidelines specified in the training procedure. Again, incorrect assembly was corrected by the experimenter.

Performance accuracy of the STS was calculated on one complete training session conducted with a client who was ineligible for the research. The total steps performed correctly were divided by the total number of steps performed correctly and incorrectly and multiplied by 100 to give the % performed correctly. When the researcher had achieved an 80% accuracy rate with the ineligible client, she was considered ready to train the clients involved in the research. (See Appendix B for sample data sheets per training trial.) As almost all the clients in the Manitoba School workshops had already been given the Kerr et al. (1977) test, it was decided that it was sufficient if the person using the STS knew how to use the results of the test to determine the error correction procedure.

The training sessions suggested by the STS were to be no longer than 30 minutes. The learning criterion used by the researcher was three out of four consecutive trials with no errors. In order to facilitate comparisons, the staff member was asked to keep her training sessions between 15 and 45 minutes, and to use as a learning criterion three out of four consecutive trials with no errors.

The staff member was observed continuously for her method of presentation, reinforcement system, prompts, error correction procedures, and reprimands. The researcher was observed intermittently for procedural reliability of the STS and for her recording of client performance. (See Appendix B for sample data sheets, and an instructional sheet on how they were used.)

Prompts were scored as either pre or post instructions, gestures, modelling, or physical guidance. Prompts were scored as preresponse if they were given before the client had responded in order to cue the particular response required. Prompts were scored as postresponse if given after the client had responded in order to correct a client error. A maximum of one instance of each type of pre and post prompt was scored per step. An instructional prompt told the client how to do a step. Prompts such as "What's next?" or "Carry on" were scored as pacing prompts, not as instructions.

Approval and edibles were scored when dispensed. Approval consisted of statements that praised the client but did not give information on how to do a step. Comments such as "good", "that's right", or "fine" were scored as praise. Reprimands consisted of statements such as "no", "that's wrong", and other statements that were clearly reprimanding the client, such as "Don't drop that again". A maximum of one reprimand or approval was scored per step.

Time was recorded for the total training session starting when the client first sat down at the table and ending when the last approval was given and before edibles were consumed. Disassembly of tasks was counted as part of the total session time.

Reliability

Observer reliability was assessed by a trained observer who sat so that she could observe the training procedures and the client's response but could not see the other person's (researcher or staff observer) data. The observer took both procedural observations on the STS, and inter-observer reliability (IOR) on the dependent variables and the staff's personal training method. As the researcher recorded both time and client errors as part of the STS, IORs were obtained on the dependent variables. The observer recorded both the dependent variables as well as procedural observations of the STS. However, because the researcher didn't record her training procedures and no other person observed the training procedure, there were no IORs on the procedural observations of the STS. There were IORs on the staff member's personal training method.

IORs were calculated by dividing the number of agreements by the total number of agreements plus disagreements per trail and multiplying by 100. Procedural observations of the STS were calculated by dividing the number of correct responses by the total number of correct plus incorrect responses per trial and multiplying by 100. In all cases the researcher's and staff observer's data was used to analyze the results.

EXPERIMENT 1

Experimental Design

The design was a within-subject, multi-element design with counterbalancing of training procedures and tasks across clients (for descriptions of this design, see Kazdin & Hartmann, 1978; and Martin & Pear, 1978). Each client was taught two tasks, each task being taught under a different training procedure. See Figure 1 for the arrangement of training procedures and tasks.

Insert Figure 1 about here

Experiment 1

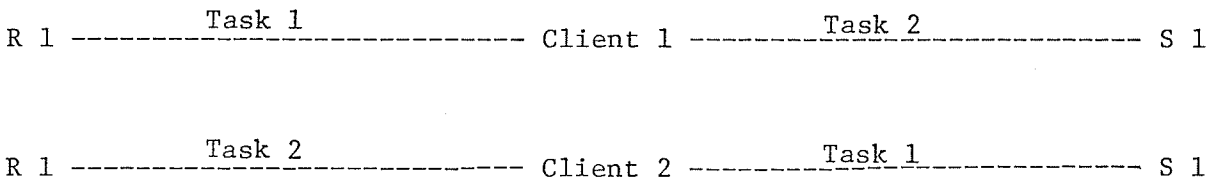

Figure 1. The arrangement of training procedures and tasks in Experiment 1. R = researcher trained to use the standardized training strategy and S = the staff member using her own personal training approach. Task 1 is the fishing reel and Task 2 is the bicycle brake.

Results

The task analysis of both the brake and reel were different for the researcher and staff. See Table 3 for the task analyses and a listing of the ones used in Experiments 1 and 2. After observing the clients learning

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Insert Table 3 about here

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both tasks, it appeared to the experimenter that task analyses No. 1 and 4 were the easiest for the clients to manipulate.

During baseline, neither of the clients could perform the total task. The individual steps baseline was summed together and divided by 21 (i.e., 7 steps each with scores of 3) and multipled by 100 to gain an indication of the percent of the task that the client could perform before training began. The percentage scores for the brake and reel were respectively: Karen, 38, 29; Doug (1), 19, 29. After training, both clients reached criterion.

Interobserver reliability (IOR) was assessed on the dependent variables of trials to task criterion, errors, total session time, and time on task for both clients under each condition. Under the STS, 50% of the trials with Karen, and 63% of the trials with Doug (1) were observed. Under the personal method, 41% of the trials with Karen, and 40% of the trials with Doug (1) were observed. The average IOR on trials to task criterion was 100%. The average IOR on errors was 98.5% with a range from 71.4-100%. The average IOR on time was 97% with a range from 90.9-100%. Procedural reliability of the STS was taken on 50% of the trials with Karen and 63% of the trials with Doug (1). Scoring each opportunity that the researcher had to make a response as correct or incorrect even if no response occurred, the average procedural reliability was 95.9% with a range from 85.5-100%. Using a more conservative estimate, that is, only

Table 3

Task Analyses for the Bicycle Brake and Fishing Reel

Bicycle Brake		Fishing Reel	
No.		No.	
1	1. Screw the center ring into the housing 2. Put short end of axle through housing 3. Screw nut 1 all the way down on short end of axle 4. Drop dust cap into center 5. Screw nut 2 all the way down on long end of axle 6. Screw nut 3 on top of Nut 2 7. Put brake in box	3	1. Place spinner in outer casing with two holes 2. Place disc on spinner 3. Screw disc onto spinner with spinner screw 4. Screw cone-shaped outer casing onto outer casing with two holes 5. Place handles on crank shaft 6. Screw handle screw onto crank shaft 7. Put reel into box
2	1. Put short end of axle through housing 2. Screw nut 1 on all the way down on short end of axle 3. Screw center ring into housing 4. Drop dust cap into center 5. Screw nut 2 all the way down on long end of axle 6. Screw nut 3 on top of nut 2 7. Put brake in box	4	1. Put disc on spinner 2. Screw disc onto spinner with spinner screw 3. Put disc/spinner unit into outer casing with two holes 4. Screw cone-shaped outer casing onto outer casing with two holes 5. Put handle on crank shaft 6. Screw handle screw onto crank shaft 7. Put reel in box

1 = EXP 1, STS, KAREN
EXP 2, STS, DOUG (2)

2 = EXP 1, PERSONAL, DOUG (1)
EXP 2, PERSONAL, SANDRA

3 = EXP 1, STS, DOUG(1)

4 = EXP 1, PERSONAL, KAREN
EXP 2, STS, SANDRA
EXP 2, PERSONAL, DOUG(2)

seen from Figure 2, more errors were made on the brake regardless of the training procedure used. However, far fewer errors were made when the

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Insert Figure 2 about here

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brake was taught under the STS. As well, although both clients learned the reel in approximately the same number of trials, 27 and 29, the brake took 57 trials when taught by the staff member and only 38 when taught by the researcher.

Time on-task and total session time are shown in Table 4. Both time on-task and total session time were greater for the brake than for the

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Insert Table 4 about here

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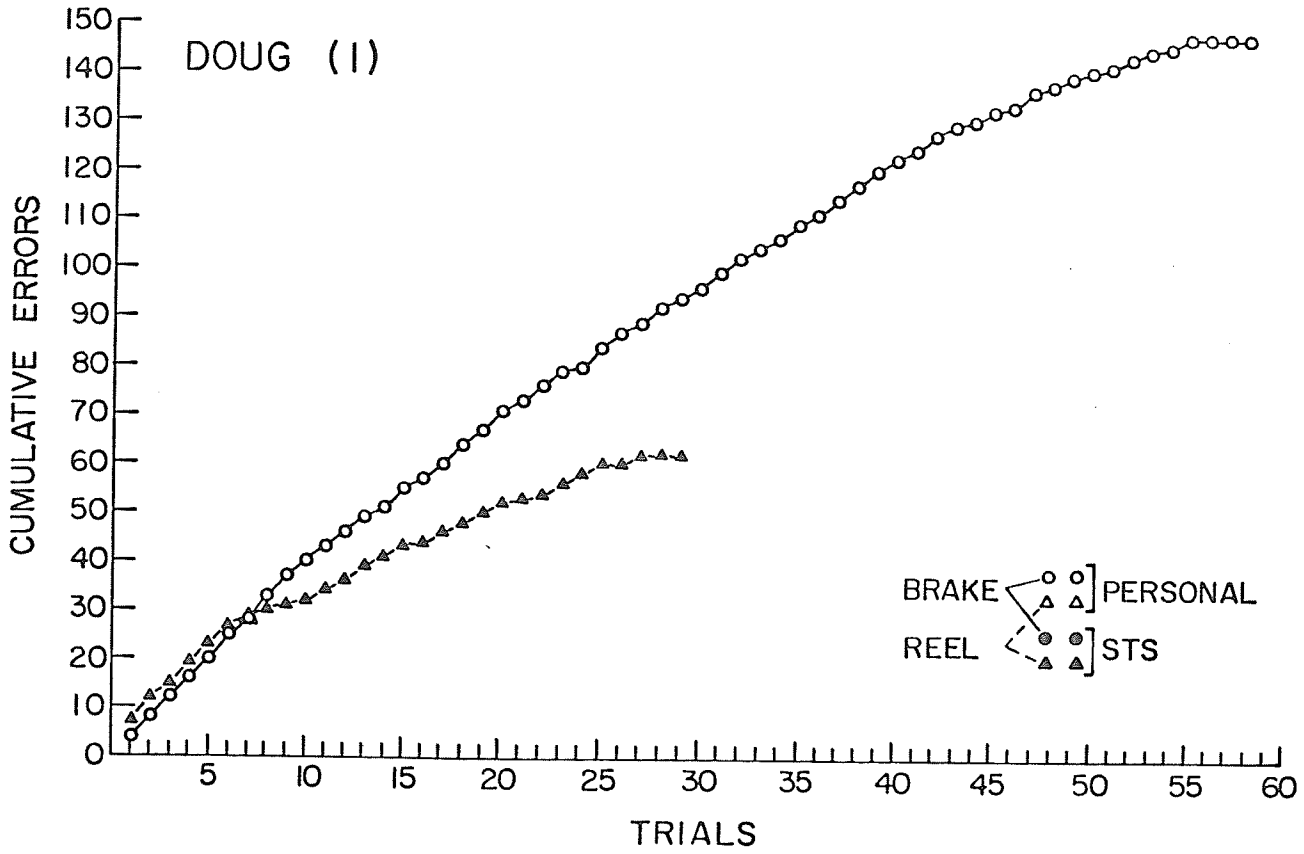
reel for both clients, indicating the task effect. However, this difference was greatly reduced when the brake was taught under the STS. The total time on-task for both clients under the different training procedures was 305 and 471 minutes respectively for the STS and personal method.

The retention tests showed little difference between the tasks learned under the different training procedures except for Doug(1) who made 6 errors on the brake (personal) versus 2 errors on the reel (STS).

IORs on the staff member's training procedure were taken 40% of the time and averaged 86.8% with a range from 50-100%. The staff member's personal training approach used a TTP format. She did not use edibles, but gave praise 326 times in 85 trials with 42% of these social reinforcements being delivered for error correction. A few pre-response prompts were used, but mainly she gave post-response prompts. In the 85 scoring events that occurred, the average procedural reliability was 86.7% with a range from 66.7-100%.

Although the tasks were assumed to be equal, a task effect was evident; that is the brake was more difficult to learn than the reel. As can be



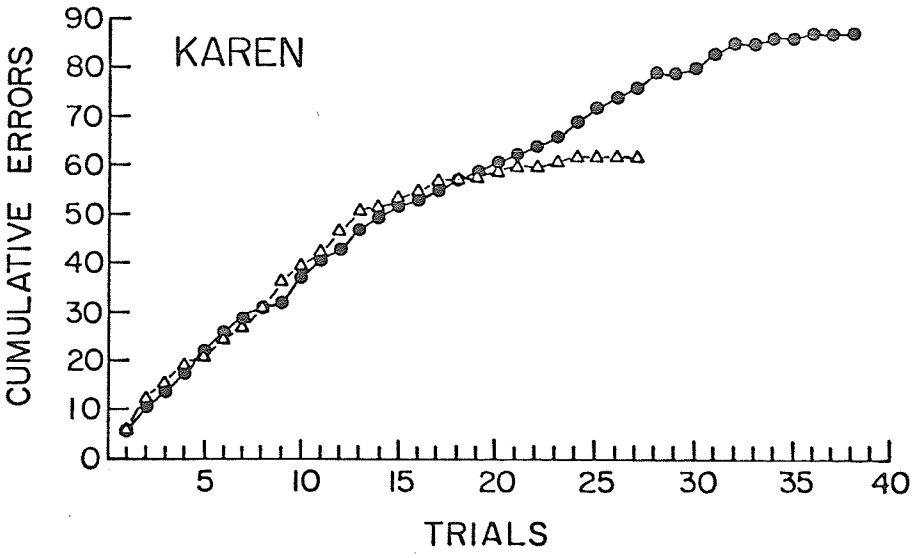


Figure 2. Cumulative errors to task criterion with the personal training approach (personal) and with the standardized training strategy (STS) for Experiment 1.

Table 4

Total Time on Task (TOT) and Total Session Time (TST)[a]

	Experiment 1				Experiment 2			
	STS		Personal		STS		Personal	
	TOT	TST	TOT	TST	TOT	TST	TOT	TST
Karen	211[b]	260[c]	122[d]	131				
Doug (1)	94[d]	131	349[b]	395				
Sandra					158[d]	173	375[b]	429
Doug (2)					53[b]	61	20[d]	27

a = Minutes

b = Brake

c = 21 Minutes Estimated

d = Reel

trials it required for both clients to reach criterion, the staff member used instructions 197 times, gave 99 gestures, modelled 29 times, gave physical guidance 111 times, used 67 pacing prompts, and reprimanded the clients 79 times. Usually instructions were followed with physical guidance, then gestures or modelling or back to instructions. Physical guidance was usually minimal, and often didn't assist the client in completing the step. This led to the client often continuing to work on a step even after some physical guidance had been given.

The researcher using the STS also used a TTP format. She used edibles for the correct performance of selected steps. In the 39 trials observed, she gave praise 103 times with 11% of these social reinforcements being delivered for error correction. Giving praise for error correction constituted an error on the researcher's part. Mainly post-response prompts were used. In the 39 trials observed, the researcher used instructions 22 times, gave 30 gestures, modelled 60 times, gave physical guidance 32 times, used 68 pacing prompts, and reprimanded the clients 17 times. Instructions were followed by gestures and/or modelling, then by physical guidance. When physical guidance was used, enough assistance was given in order to allow the client to complete the step, and thus go on to the next step in the assembly. (See Table 5 for a comparison of the first five trials per client under each training method.)

Insert Table 5 about here

EXPERIMENT 2

Experiment 2 was a systematic replication of Experiment 1 and used the same two training tasks and two new clients. Each client was taught a task first by the staff member from Experiment 1 using her own personal method, and second, the alternate task by the same staff member using the STS. Thus,

Table 5

A Comparison of the STS and the Personal Method during the First Five Trials Observed Per Client in Experiment 1

	REINFORCEMENT				PROMPTS*									
	Total		Error Correction		I		G		M		PG		Pacing Prompt	Reprimands
	Social	Edible	Social	Edible	Pre	Post	Pre	Post	Pre	Post	Pre	Post		
STS - DOUG(I)	3	1	3	1						7		5	4	2
	2	2		1			1	1		5		2	2	3
	5	2	1							3		2	1	5
	6	2	3	2		3				3		1	3	3
	3	2								3		2	1	1
PERSONAL - DOUG(1)	5		2		1	4	1	3		1	1	3	2	1
	2		1		1	4	1	1		3		3	2	2
	2					3	1	1		2		1	4	
	1					4		3		2		2	2	3
	4		3			5		3		1		3	2	1
STS - KAREN	2	1	1	1		2		3		5		2	7	1
	2	1								4	1	3	4	1
	3	1				1				2			3	
	3	2	2	1				3		4		2	3	
	4	1						3		2		1	2	
PERSONAL - KAREN	4		4		4	6	2	6		2		3	3	3
	6		5		2	4	1	3			1	3	4	1
	4		2			3		2		2		1	2	2
	2					3		3					1	2
	4		1			2		2					1	2

*I = Instructions M = Modeling

G = Gestures PG = Physical Guidance

Experiment 2 made it possible to compare the STS to a personal training method when both were applied by a given staff to a given client.

Experimental Design

In Experiment 2, the staff member from Experiment 1 taught two new clients using her own personal training method. One client was taught the brake, the other the reel. After both clients had reached criterion, the staff member learned the STS to a 96% accuracy as judged by one training session. She then taught these same two clients the opposite task using the STS. See Figure 3 for the arrangement of training procedures and tasks.

Insert Figure 3 about here

In Experiment 2, the criterion for fading praise was changed from six consecutive correct trials to eight consecutive correct trials.

Results

See Table 3 for the task analyses used in Experiment 2. During baseline, neither of the clients could perform the total task. The individual steps baseline percentage scores for the brake and reel were respectively: Sandra, 33, 24; Doug (2), 22, 43. After training both clients reached criterion.

Interobserver reliability (IOR) was assessed on the dependent variables of trials to task criterion, errors, total session time, and time on-task for both clients under each condition. Under the STS, 100% of the trials with Sandra and Doug (2) were observed. Under the personal method, 42% of the trials with Sandra, and 50% of the trials with Doug (2) were observed. The average IOR on trials to task criterion was 100%. The average IOR on errors was 99.9% with a range from 99.4-100%. The average IOR on time was 97.6% with a range from 80-100%. Procedural reliability of the STS was taken on 100% of the trials. The conservative estimate of procedural reliability had an average of 99.3% with a range from 94.7-100%.

EXPERIMENT 2

S 1 Personal ---------- Task 2 ---------- Client 3 - reaches criterion

S 1 Personal ---------- Task 1 ---------- Client 4 - reaches criterion

S 1 STS ---------- Task 1 ---------- Client 3

S 1 STS ---------- Task 2 ---------- Client 4

Figure 3. The arrangement of training procedures and tasks in Experiment 2. S = staff member. Task 1 is the fishing reel and Task 2 is the bicycle brake.

The task effect evident in Experiment 1 was also found in Experiment 2; that is, the brake was more difficult to learn than the reel. As can be seen from Figure 4, more errors were made on the brake

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Insert Figure 4 about here

---

regardless of the training procedure used. The pattern of errors from Experiment 2 closely parallels those from Experiment 1 (see Figures 2 and 4).

Again, both time on-task and total session time are greater for the brake than for the reel for both clients (see Table 4). However, this difference was reduced when the brake was taught under the STS. The total time on-task for both clients under the different procedures was 211 and 395 minutes respectively for the STS and personal method.

The retention tests showed little or no differences between the tasks learned under the different training procedures.

IORs on the staff member's training procedure were taken on 42% of the trials with Sandra, and 50% of the trials with Doug (2). The average IOR was 93.2% with a range from 72.7-100%. The personal method was quite similar to Experiment 1 except that Sandra was given more pre-response prompts and more pre-trial instructions than the other clients had received from the staff member. In the 61 trials it required for both clients to reach criterion, the staff member used pre-instructions 36 times and post-instructions 112 times, gave 26 gestures, modelled 3 times, gave physical guidance 25 times, used 46 pacing prompts, and reprimanded the clients 55 times. She again did not use edibles, but gave praise 375 times in 61 trials with 34% being delivered for error correction.

The STS was also the same except that no social reinforcement was given for error correction. In the 22 trials observed, the staff member using the STS gave praise 96 times, edibles 26 times, used instructions 56 times, gave 22 gestures, modelled 26 times, gave physical guidance 15 times, used 45

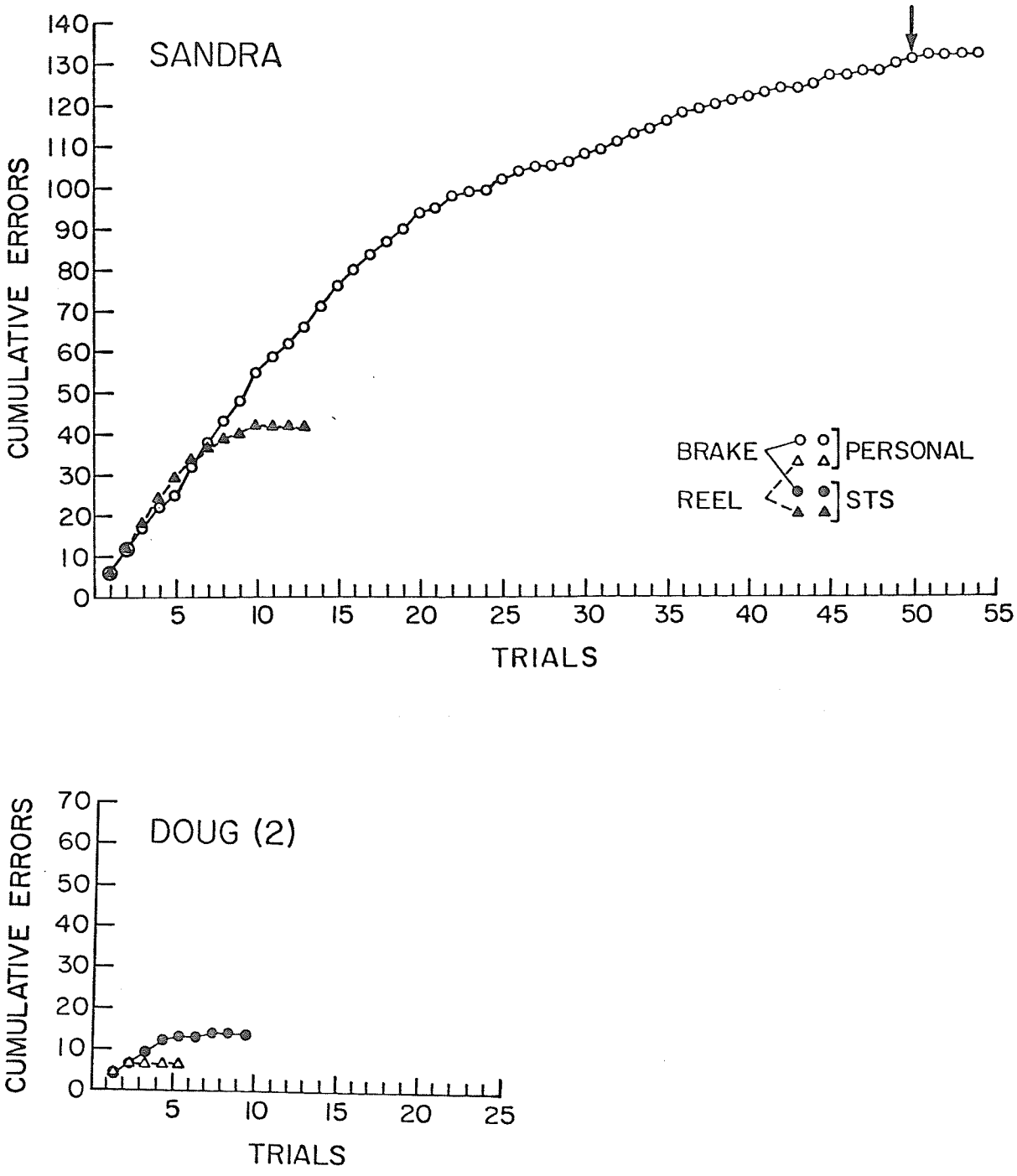

Figure 4. Cumulative errors to task criterion with the personal training approach (personal) and with the standardized training strategy (STS) for Experiment 2. The arrow indicates where one step was color-coded.

pacing prompts, and reprimanded the clients 12 times. (See Table 6 for a comparison of the first five trials per client under each training method.)

Insert Table 6 about here

Social Validation

Recently, the need to socially validate behavioral procedures has been noted (Kazdin, 1977; Wolf, 1978). Therefore, the client's choice of training procedures was assessed after training. Two tables were set up with either the brake or reel. The appropriate task was matched to the training method under which it was taught. Each client was given four trials and the position of the training tasks was alternated for each trial. At the beginning of each trial, the client was positioned equidistant from the tables, and told by the experimenter, who always stood on the client's right, "_____(client's name), you can work here (pointing to the table on the right), or you can work here (pointing to the table on the left). Please sit where you want to work." The client completed one assembly under the training condition she/he had chosen. The training was conducted by the experimenter.

The IORs on 50% of the social validation choices were 100%. The frequency of choices for the STS vs. the personal method are, respectively, as follows: Karen, 4, 0; Doug (1), 4, 0: Sandra, 2, 2; and Doug (2), 4, 0. Overall, the STS was chosen on 87.5% of all opportunities and the personal method on 12.5% of all opportunities.

The staff member was also asked several questions regarding which method she preferred (see Appendix C for the questionnaire). She found the STS easy to use and preferred using it to her own method. She stated that in future training she would use the STS because it was "less frustrating". One reason she gave for this was that she felt the STS was a more systematic approach than her own training method.

Table 6

A Comparison of the STS and the Personal Method during the First Five Trials Observed Per Client in Experiment 2

	REINFORCEMENT				PROMPTS*									
	Total		Error Correction		I		G		M		PG		Pacing Prompt	Reprimands
	Social	Edible	Social	Edible	Pre	Post	Pre	Post	Pre	Post	Pre	Post		
STS - SANDRA	1					6		1		2		2	6	1
	1					6		4		2		2	5	
	1					6		4		3		2	6	
	1					6		1		3		2	5	
	2					5		2		3		3	4	1
PERSONAL - SANDRA	7		6			6		3		1		3	3	3
	6		5			6		3				3	4	
	7		6		1	3		5				4	5	4
	7		5		3	2		1				1	4	2
	7		3		3									
STS - DOUG(2)	3	1				4		1		4		1	3	1
	5	1				2		2						2
	4	1				3		1		1				
	4	1				3				2				
	6	2				1				1				2
PERSONAL - DOUG(2)	6		4			4		3		1		2	2	1
	5		2			2								
	5													
	5													
	5													

*I = Instructions

G = Gestures

M = Modeling

PG = Physical Guidance

Discussion

The data indicate that the STS was a more effective procedure for training than was the personal method of the staff member. The results need to be interpreted in light of the strong task effect; that is, regardless of training procedure, the brake required more trials to reach criterion, and the clients made more errors. However, fewer trials were required and the clients made fewer errors when the brake was taught under the STS than when it was taught under the staff's own personal method. The brake also required more total session time, and more time on task regardless of the training procedure. However, less total session time and less time on task was required when the brake was taught under the STS than when it was taught under the staff's own personal method. In addition, the total training time for both tasks under the same condition was much less for the STS than for the personal method. Thus, based on this limited evaluation, the STS appears to be more efficient and to produce fewer errors when compared to a trainer's own personal method. As well, the STS was preferred by three of the four clients and by the staff member.

Because doing a task analysis is an important part of training, each trainer did a task analysis of both the brake and reel. From observations of the clients manipulating the tasks, it appeared that task analysis No. 1 for the brake and task analysis No. 4 for the reel were the most efficient (see Table 3). This may have caused the researcher in Experiment 1 to take more trials to reach criterion on the reel than if the more efficient task analysis had been used. As well, it may have contributed to the staff in both Experiments taking more trials to reach criterion on the brake than if the more efficient task analysis had been used. However, after considering the specific steps on which the majority of client errors occurred on the brake, this difference does not appear

personal method. First, the staff gave praise for error correction while the person using the STS usually did not. This may have contributed to the clients continuing to make errors when the staff was teaching. Second, although the staff used instructions, gestures, some modelling, and physical guidance these were not used in a consistent manner, whereas the person using the STS used these methods systematically. The staff used no discriminative stimulus for going to a higher level of guidance whereas the person using the STS did. It appears that the STS was more effective because the person using it reinforced the client for correct performance of a step only, and applied a systematic,consistent system of error correction. From observations of the client's behavior during training, the STS also appears to have been less frustrating for the client, and was preferred by the majority of the clients over the staff's own personal method.

A practical consideration for workshop supervisors and staff is the time necessary to learn to use the STS. Informal observations in this study suggest that the STS can be mastered in less than a day, and may contribute significantly to time-saving when considering the training of several clients. In addition, the training experience should be as positive as possible for both clients and staff. According to the social validation procedures, the STS appears to provide a more positive environment.

During the course of the experiments, suggestions for changes in the STS have occurred. Before additional field testing occurs, these changes might be incorporated into the STS. For example, until further research is carried out with the Kerr et al. (1977) test in vocational to have contributed greatly to client errors and thus to the number of trials required to reach criterion.

There were several differences between the STS and the staff's own

settings, an error correction procedure that starts with instructions and progresses to physical guidance, no matter what level of discrimination that the client possesses, might be considered. As well, certain parts of the STS need to be stressed more. For example, the instructions for task analysis need to emphasize more strongly that the task must be performed several times to ascertain the most efficient way of assembling the task. The person using the STS in Experiment 2 and a second researcher who was not used in this research both produced the more effective task analysis, but this was after the experimenter stressed the importance of trying several different approaches and analyzing which approach was the most efficient.

If replication validates this research, it seems that the STS would be a valuable training approach for sheltered workshops. The STS could be taught by either using a completely self-instructional manual or by using a manual that accompanies a workshop in which the STS is practiced and feedback is provided.

In summary, the STS appeared more effective than a personal method for teaching workshop tasks and was preferred by both the majority of the clients and the staff member. A strategy such as this would be a valuable asset for sheltered workshops.

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Appendix A: Standardized Training Strategy

A Standardized Training Strategy for Teaching Vocational Tasks To the Severely and Moderately Mentally Handicapped

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University of Manitoba

Introduction

In recent years, there have been successful demonstrations that severely retarded persons are capable of assembling complex tasks such as bicycle brakes, chain saw blades, and fishing reels. Reviews of the literature in this area indicate that the successful training procedures have had four common characteristics:

(a) a task analysis in which the assembly task is broken into a number of small steps and arranged in sequence for training purposes;

(b) a training format (forward chaining, total task presentation, or backward chaining) for teaching the client to perform the sequence of steps;

(c) a method of prompting and fading the prompts for each step during training; and

(d) a reinforcement system involving, social, edible, or other material reinforcers for correct performance at one or more of the steps for the whole task during training.

In addition to research in vocational training in the areas listed above, research has recently led to the development of a simple behavioral test to assess a client's discrimination skills. These discrimination skills appear hierarchical in nature. This implies that if a client cannot perform one of the easier discriminations, then she/he will be unable to perform more difficult discrimination. The training package that we have developed for teaching vocational skills incorporates this recent development in behavioral assessment with guidelines for teaching vocational skills to clients. Our program is described in the following pages.

Assumptions

1. Concerning the level of functioning of the client, the client is performing within the low-moderate or severely retarded functioning level.

2. Concerning pre-requisite skills, the client will sit quietly at a table and attend to items on the table. The client will follow simple instructions such as, "Pick this up", "Give me that", and so on when the trainer points to a particular item. The client is capable of performing motor dexterity skills such as those listed in the section of the Objective Behavioral Assessment of the Severely and Moderately Mentally Handicapped: The OBA (Hardy, Martin, Yu, Leader, & Quinn, 1981) titled Pre-Vocational Motor Dexterity Skills.

3. Concerning the tasks to be trained, the task to be trained is an assembly or packaging task typical of those found in many sheltered workshops.

Necessary Materials and Conditions

1. During training, the client should be seated on a chair at a table facing the items of the task to be taught.

2. An attempt should be made to minimize distractions. For example, training might be done in a separate room, or a divider might be placed around the training table.

3. Sufficient raw materials should be available to assemble several samples of the task.

4. A reinforcer tray should be prepared that contains a variety of edibles and/or beverages likely to be preferred by the client.

5. Several copies of necessary data sheets and a description of the task analysis (described below) should be available.

6. A timer or watch should be available to time both session duration and trial time.

Discrimination Skills Testing

Purpose: To assess the discrimination levels of the client. A learning-to-learn assessment test has been developed by Kerr, Meyerson, Flora, Tharinger, Schallert, Casey, and Fehr, 1977. This test consists of six tasks: imitation, position discrimination, visual discrimination, match-to-sample, auditory discrimination, and auditory-visual combined discrimination. These discriminations appear hierarchical in nature with there being little functional basis for differentiating between auditory and auditory-visual combined discriminations. If a retarded person cannot make one of these discriminations, then 100 to 900 trials are required to teach tasks requiring a higher discrimination.

Basic Discrimination Skills

1. Imitation: The client can follow a demonstration. For example, if the client places an object into a container when shown an object placed into a container, then the client is making an imitation.
2. Position Discrimination: The client can respond appropriately to locations of objects that remain in relatively fixed positions. For example, if the client consistently places an object into the container on the left when presented with two containers in fixed positions, then the client is making a simple position discrimination.
3. Visual Discrimination: The client can follow an object as it is moved around in relation to other stimuli. For example, if the client consistently places an object into one container regardless of its position relative to a different-looking container, then the client is making a visual discrimination.

4. Match-to-sample: The client can sort objects according to colour or size, or match figures. For example, if the client places a yellow cylinder into a yellow container and a red cube into a red container when presented with yellow and red containers followed sequentially by a yellow cylinder and a red cube, then the client is demonstrating match-to-sample behavior.

5. Auditory Discrimination: The client responds appropriately to spoken words. For example, if the client places a neutral non-matching object into an appropriate container, given two choices, when the trainer says, "put it into the red box," then the client is making an auditory discrimination. This does not require a visual discrimination if the two containers remain in the same positions.

6. Auditory-Visual Combined Discrimination: The client can make a discrimination based on both visual and auditory cues. For example, if the client places an object into a yellow can or a red box, when the position of the containers and the trainer's request for one or the other are altered randomly, then the client is making an auditory-visual combined discrimination.

Administration of Test

The data recording form and the instructions for administering the learning-to-learn test may be found in Kerr et al. (1977). If the results of the test are not available to you, you may wish to administer the test yourself. If testing is required, it would be advisable to administer one practice test. From the results of the test available, or after you have administered the test to your client, you will be able to assess the client's discrimination levels.

Task Analysis

Purpose: To break a task down into smaller component responses in order to facilitate training.

Steps

Step 1. To familiarize yourself with the task, perform all the steps of a task yourself until the entire assembly has been completed. In doing so, note steps that might be taught as functional units, stimuli that should come to control each unit of response, and the criterion for recognizing acceptable performance for each response.

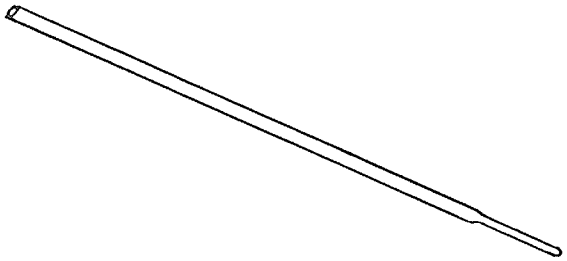
Step 2. Next, start with the parts to be assembled on the table in the order in which they will be assembled, assemble the parts, one part at a time, and complete the description of the task analysis. For example, consider the task of assembling the four parts of a ball-point pen shown in Figure A. The steps in assembling the pen are listed in the sample task analysis in Figure B.

Insert Figures A and B about here

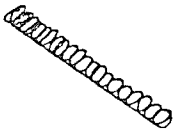
Step 3. Perform the assembly several times following the steps listed in the task analysis. In performing each of the steps note possible minor variations that might increase efficiency. Revise the task analysis accordingly.

Step 4. Re-examine each of the steps in the task analysis to see if each can be considered an independent functional unit. Functional units are behaviors that typically satisfy some

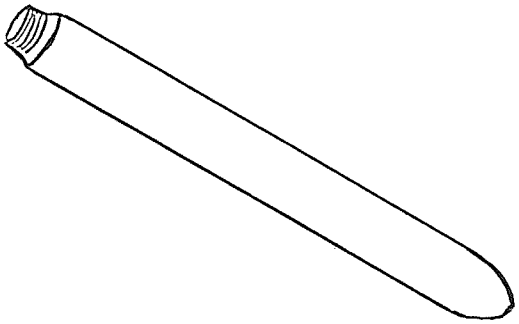
1. CARTRIDGE



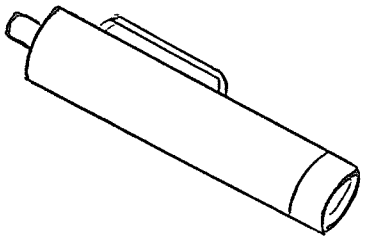
2. SPRING



3. BOTTOM



4. TOP



5. BOX

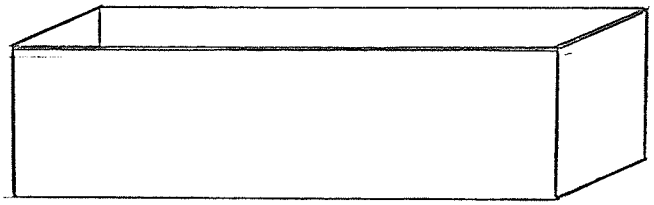


Figure A. Four-part ball-point pen.

Controlling Stimuli	Response					
Parts on Table in order to be assembled	Place spring on tip end of pen cartridge	5__	5__	5__	5__	5__
Spring on pen cartridge	Place spring end in pen bottom	4__	4__	4__	4__	4__
Pen cartridge in bottom	Place top over pen cartridge	3__	3__	3__	3__	3__
Top on bottom	Screw top and bottom tightly together	2__	2__	2__	2__	2__
Pen complete	Place pen in box	1__	1__	1__	1__	1__

Figure B. A task analysis data sheet for a four-part ball-point pen with controlling stimuli, responses, and the numbers used for data collection.

common-sense notion of completion. That is, when you perform the behavior, there is an observable stimulus change that makes it easy to recognize that the behavior has been completed. For example, in our sample task analysis, the first functional unit consists of placing the spring on the pen cartridge. A smaller unit of behavior would simply be moving the spring closer to the pen cartridge. That, however, does not produce the same kind of cue denoting completion of a response.

Step 5. Now review each of the items listed under the controlling stimuli. Ideally, each controlling stimulus should be clearly distinctive from the others. If similar controlling stimuli cue different reponses, there is a greater chance for error and confusion by the client. If, in your task analysis, two of the controlling stimuli are quite similar and there appears to be nothing that you can do about it, then consider artificially coding one of the stimuli in some way to make the assembly easier.

Step 6. Finally, consider each of the responses relative to the skill level of your client. If, on the basis of other information available, e.g., the results of the Kerr et al. (1977) test, some of the responses appear too complex, consider breaking them down into finer steps. Alternatively, you might consider preparing a jig to aid the client in the assembly of that particular step. If, after revising your task analysis, some steps still require skills that the client does not possess, then there are two options:

(a) to train the client to a higher skill level, or

(b) to not attempt to train this client on this particular task. A viable alternative in this case would be to match clients to tasks that require skill levels they do possess.

Step 7. Assuming you are training a particular client, you should now transfer your task analysis to the training data sheet as shown in Figure C. The last step in your

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Insert Figure C about here

---

task analysis, the step that completes the assembly should be listed on the bottom of the data sheet as Step 1 (see Figure C). In our example (from Figure B) the step "Place pen in box" is listed as Step 1. Continuing with our example, the second last step "Screw top and bottom tightly together" is listed second from the bottom as Step 2, and so on, until the end of the list. It may appear that the steps are numbered in backwards fashion. However, numbering the steps in this way will facilitate data recording. An examination of Figure C may help to clarify this. When the client performs a step correctly and independently, make a check mark (√) by the number by that step. In our example on Trial 1 (see Figure C), the client performed the step labelled Step 1, "Place pen in box" correctly; therefore, the number 1 beside that step has been checked. The number of steps performed correctly and

Controlling Stimuli	Response	Trial 1	2	3	4	5	6
5. Parts on Table in order to be assembled	Place spring on tip end of pen cartridge	5 X	5 X	5 ✓	5 ✓	5 ✓	(5) ✓
4. Spring on pen cartridge	Place spring end in pen bottom	4 X	4 X	4 ✓	4 ✓	(4) ✓	4 ✓
3. Pen cartridge in bottom	Place top over pen cartridge	3 X	3 X	(3) X	(3) X	3 ✓	3 ✓
2. Top on bottom	Screw top and bottom tightly together	2 X	2 X	2 X	2 X	2 X	2 ✓
1. Pen complete	Place pen in box	(1) ✓	(1) ✓	1 ✓	1 ✓	1 ✓	1 ✓

Figure C. A task analysis data sheet with data from training trials. A step performed correctly and independently is marked by a check mark. A step performed incorrectly is marked by an X. The total number of steps performed correctly and independently on each trial is circled. The circles are joined to give a visual presentation of the client's progress.

independently should be totalled for each trial. That number is then circled for that trial. In our example, during the first trial the client performed one step correctly and independently, therefore, the number 1 is circled. This recording system is maintained for each training trial. In our example on Trial 4, the client performed those steps labelled 5, 4, and 1 correctly, therefore they are checked. The total number of steps performed correctly was 3, therefore 3 is circled. You will note that the number that is circled (number 3 for Trial 4 in Figure C) has nothing to do with the corresponding step (Step 3 was actually performed incorrectly on Trial 4). By joining the circles, a visual presentation is obtained of the client's progress. This data sheet will provide information on how fast this client is progressing by looking at the total number of steps performed correctly on a given trial, as indicated by the number that is circled. It also shows which steps she/he is continuing to perform incorrectly, as indicated by the steps that have an X on a given trial. This information will allow you to assess when massed practice trials are required, or when reinforcement should be discontinued. (See Figure D for an example of a data sheet).

Insert Figure D about here

SCORING KEY

√ = Step performed correctly and independently

◯ = Total number of steps performed correctly and independently

X = A step performed incorrectly

CLIENT: _____ TRAINER: _____

TASK: _____ TASK CRITERION: _____

TRIALS TO CRITERION: _____ TOTAL TRAINING TIME: _____

Controlling Stimuli	Response	Date:										
20		20	20	20	20	20	20	20	20	20	20	20
19		19	19	19	19	19	19	19	19	19	19	19
18		18	18	18	18	18	18	18	18	18	18	18
17		17	17	17	17	17	17	17	17	17	17	17
16		16	16	16	16	16	16	16	16	16	16	16
15		15	15	15	15	15	15	15	15	15	15	15
14		14	14	14	14	14	14	14	14	14	14	14
13		13	13	13	13	13	13	13	13	13	13	13
12		12	12	12	12	12	12	12	12	12	12	12
11		11	11	11	11	11	11	11	11	11	11	11
10		10	10	10	10	10	10	10	10	10	10	10
9		9	9	9	9	9	9	9	9	9	9	9
8		8	8	8	8	8	8	8	8	8	8	8
7		7	7	7	7	7	7	7	7	7	7	7
6		6	6	6	6	6	6	6	6	6	6	6
5		5	5	5	5	5	5	5	5	5	5	5
4		4	4	4	4	4	4	4	4	4	4	4
3		3	3	3	3	3	3	3	3	3	3	3
2		2	2	2	2	2	2	2	2	2	2	2
1		1	1	1	1	1	1	1	1	1	1	1
	TIME/TRIAL											

Figure D. Example of Data Sheet

Data sheet adapted from: Bellamy, G.T., Horner, R.H., & Inman, D.P. Vocational habilitation of severely retarded adults: A direct service technology, 1979 (pp. 65-76).

Training

Preliminary Preparations

1. Prepare a reinforcer tray, training table, and data sheets.
2. Place a mark on the data sheet beside those steps per trial on which edibles will be dispensed. On the average, an edible should be dispensed for every four or five steps, and following the completion of the chain. For a short chain, such as our ball-point pen example, an edible should be dispensed only on the last step in the chain, in our example, "Place pen in box".
3. The client should be seated at the training table and the trainer should stand or sit to one side of the client.
4. Training sessions should last approximately 20 minutes, but not longer than 30 minutes.

Preliminary Modelling Trial

1. Model the entire assembly while verbally describing the performance of each step. If only one training task is available, then the task must be disassembled after the modelling trial and the components placed in order in front of the client. Otherwise, the client can be trained using alternative samples of the task.

Training Format

The training format is a total task presentation format. On each trial, the client performs every step beginning with the first step of the task. In our example, in Figure C, the client begins by performing the last numbered step on the data sheet, Step #5, "Place spring on tip end of pen cartridge", and continues through to the end of the task. This format is used for each training trial.

Instructing the Client

1. Give an initial command to the client to begin work and to assemble the task. For example, "OK, Charles, please put the pen together."
2. At any step, if the client stops responding or appears distracted, a pacing prompt such as "What's next?" or "Carry on" may be given.

Error Correction

If the client performs a response incorrectly or fails to begin responding at any step within approximately 10 seconds, proceed with error correction. If the client can make an auditory discrimination as measured by the Kerr et al. (1977) test, then error correction should proceed from instructions to gestures and/or modelling to physical guidance. If the client cannot make an auditory discrimination, then error correction should proceed from gestures and/or modelling to physical guidance. Error correction consists of:

(a) Re-presenting the controlling stimuli for that step and giving additional verbal instructions, such as, "Pick up the spring and put it on the end of the cartridge."

(b) If the client still responds incorrectly or fails to respond within approximately 10 seconds, then re-present the controlling stimuli and repeat the instructions with gestures and/or modelling. If modelling is used, and if only one sample task is available for training, then immediately disassemble the task following the modelling so that the controlling stimuli will be available to the client.

(c) If the client still does not respond correctly or fails to respond within approximately 10 seconds, repeat the instructions and physically guide the client to perform that particular step. Following successful completion of that step (to any of the preceding prompts) allow the client to continue with the next step.

Reinforcement

1. Concerning edible reinforcement, you will recall that the data sheet was to be marked so that an edible would be given for approximately every 4th or 5th step. An edible reinforcer should be set aside for the client if the client correctly performs the step that was marked for edible reinforcement prior to the session. Remember, the client must perform the step correctly. Edibles may be consumed at the end of each training trial or at the end of the training session.

2. Concerning social reinforcement, social reinforcement is always dispensed each time that an edible reinforcer is presented. In addition, each time the client performs a step correctly without additional prompts, that step should be praised. If a step has been performed correctly on six consecutive trials, then praise should no longer be presented for that step unless an edible is given.

Massed Practice

Mass practice trials on a step should begin after a step has been performed incorrectly on six consecutive trials.

1. Mass practice trials are repeated trials on just that step on which the client has difficulty. If only one task sample is available for training, then repeated disassembly is necessary. It is preferable to have several samples of the task available to avoid having to repeatedly disassemble the task. Assemble the task(s) to the problem step. Present the client with the partially completed task and the part necessary to perform the next step. The remaining parts should be removed from view to prevent the client's attempting to proceed further.

2. The massed training should begin with physical guidance. After several trials, the guidance should be faded to gestural then instructional prompts. After several more trials, those prompts should be faded so that the client can perform the step without any help. If the client begins to make errors during fading of the prompts, increase the level of prompts so that the client experiences approximately 75% successful performance.
3. Concerning reinforcement for massed practice, praise should be provided for each correct response to any level of prompting. An edible should be provided for a correct response to a new level of prompting, or for a correct response on approximately every fourth or fifth trial, independent of the level of prompting.
4. Massed practice trials should not last longer than 10 or 15 minutes. Massed practice trials of this duration can be repeated several times per day.
5. Once a difficult step has been mastered, return to the previous guidelines for training.

Learning Criteria

1. A learning criterion for correctly performing the entire assembly should be established prior to training. Criteria used by others have included three out of three correct trials in a row, three correct trials out of four, and six correct trials out of eight.
2. Once the learning criterion has been met, then several additional trials should be conducted so that edibles can be gradually eliminated.

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Appendix B: Sample Data Sheet with Instructions

STEPS OF TASK	correct	incorrect	REINFORCEMENT		PROMPTS (ERROR CORRECTION)								PACING PROMPTS	REPRIMANDS	MASSED PRACTICE
					Instructions		Gestures		Modelling		Physical Guidance				
			Social	Edible	Pre	Post	Pre	Post	Pre	Post	Pre	Post			
10															
9															
8															
7															
6															
5															
4															
3															
2															
1															

Sample Data Sheet

Date: _____

Trial #: _____

Trial Time: _____

Task: _____

Client: _____

Trainer: _____

Additional Remarks: _____

Instructions

1. Put date, name of client, name of trainer, and task name on sheet.
2. Put trial # on sheet. For each new session, start numbering the trials starting with one.
3. Record the time it takes to complete each trial. Start when the client picks up the first piece, and end after giving social approval but before edibles are consumed.
4. In additional remarks, record what happens at the beginning of each session; such things as the trainer setting up the table, getting edibles out, marking when edibles should be dispensed, getting the client, seating the client at the table; in other words, anything that the trainer does at the beginning of the session. Also, for the end of the session, record what the trainer does. Such things as giving the client edibles, thanking him/her for participating, taking him/her back to the workshop. In other words, anything that the trainer does at the end of the session. In addition, events may occur during training that might have an effect on the session. Such things as someone unexpectedly coming into the training area, the client or trainer becoming ill, having a seizure or some other such problems. Anything that could be a possible problem should be noted.
5. Put the name of the steps of the task down. A word or two to denote the step will be sufficient. This will facilitate recording the data. The steps for the researcher will be available after she/he has completed the task analysis. For the staff member, it will be necessary to observe how she/he presents the steps to the client before the steps can be recorded.
6. If no prompts, excluding pacing prompts, are given on a step, mark that step as correct.
7. If a prompt, excluding pacing prompts, is given on a step, mark that step as incorrect.

8. Reinforcement will be scored when given regardless of whether the step was performed correctly or not. Only one instance of social and one instance of edible reinforcement will be scored per step. Social approval will consist of statements that praise the client but do not give information on how to do a step. Comments such as "good", "that's right", or "fine" will be scored as praise. These comments may include a pat on the back as well.

9. Prompts will be scored as either pre or post instructions, gestures, modelling or physical guidance. Prompts will be scored as preresponse if given before the client has responded in order to cue the particular response required. Prompts will be scored as postresponse if given after the client has responded in order to correct a client error. A maximum of one instance of each type of pre and post prompt will be scored per step. An instructional prompt will tell the client how to do a step. Prompts such as "What's next?" or "Carry on" will be scored as pacing prompts, not as instructions.

10. Pacing prompts will consist of such statements as "What's next?" or "Carry on". These prompts do not inform the client how to do a step but prompt them to continue with the task. If a pacing prompt is given in the middle of a step, e.g., Step 5, the prompt should be scored in Step 5. If the prompt is given after Step 5, to prompt the client to go on to Step 4, the prompt should be scored in Step 4. The general command to begin the task will be scored as a pacing prompt in the first step required of the task.

11. Reprimands will consist of statements such as "that's wrong" or "no" or any other statement that is clearly reprimanding the client, such as "Don't do that again." A maximum of one reprimand will be scored per step.

12. Massed practice trials will be scored when required. The number of trials given should be recorded, as well as the level of prompting given, and the reinforcement dispensed. The time taken for massed practice should be recorded starting with the first trial and ending with the last.

Appendix C: Questionnaire on Training Method

Questionnaire on Training Method

Name: _____

STS = Standardized Training Strategy

OWN = Your own Training Style before learning the STS.

1. How hard did you find the STS to use?

   Very Easy Easy Slightly Easy Slightly Hard Hard Very Hard

2. Which did you prefer?

   STS No Preference Own

3. Which do you think the clients preferred?

   STS No Preference Own

   On what do you base the above conclusion? _____

   _____

   _____

4. Which did you find the least frustrating to use?

   Own No Difference STS

5. Which would you prefer to use in the future?

   Own No Preference STS

   Why? _____

   _____

   _____

6. Any other comments you would like to make on your own training style, the STS, or the research itself?

   _____

   _____

   _____

   _____

   _____

   _____