Training and Generalization of Restauranting Skills: Programming Primary Reinforcement for Community Travel

van den Pol

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TRAINING AND GENERALIZATION OF RESTAURANTING SKILLS:
PROGRAMMING PRIMARY REINFORCEMENT
FOR COMMUNITY TRAVEL

by

Richard Aart van den Pol

A Thesis
Submitted to the
Faculty of The Graduate College
in partial fulfillment
of the
Degree of Master of Arts

Western Michigan University
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December 1977
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This thesis could not have occurred without the most able assistance of my advisor and committee chairperson, Dr. Brian Iwata. His advice on contingency management techniques and his application of these techniques to my own research behavior played a central role in producing this experiment. As a result of Dr. Iwata's help, I believe that I now have acquired a greater appreciation of the field of applied behavior analysis, as well as a close friend.

I would also like to thank Dr. Paul Mountjoy and Dr. Cheryl Poche for their helpful comments and cooperation throughout the project.

I would also like to take this opportunity to thank Mr. Gerald Shook, Director, Kalamazoo Valley Multihandicap Center. Mr. Shook participated in early planning of the experiment, and was instrumental in acquiring funding for restaurant probe meals from the Kalamazoo Valley Intermediate School District.

I would also like to thank Mr. Terry Page, Ms. Nancy Neef, and Mr. Paul Whitley for their help in developing the instructional procedures and training stimuli; Mr. Martin Ivancic for his assistance in training and observing students in the restaurant; and Mrs. Margaret Dorsey for serving as covert reliability observer.

The management and staff of McDonald's Riverview Restaurant are to be thanked and congratulated for their friendly, prompt, and patient interactions with the students and staff who participated in this project.

Finally, I would like to thank the three young men who served as students. Certainly, theirs was the greatest accomplishment of all.

Richard Aart van den Pol

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Contemporary approaches to education and training for the mentally retarded emphasize the principle of "normalization" (Wolfensberger, 1973). This concept suggests the use of normative treatment procedures for the purpose of producing normative behavior. One result of the normalization movement has been an increase in community placement for retarded persons (Michigan Department of Mental Health, 1975). The normalization philosophy is based upon principles of humane treatment, rather than on data supporting the effectiveness of normalized training procedures. However, it would seem reasonable to assume that community placed retarded persons will learn by and benefit from contacting the contingencies that control the behavior of non-retarded citizens.

Ideally, as a result of these experiences the retarded client will live in progressively less restrictive settings, with a functionally independent living situation being the terminal goal. However, such an outcome may be unlikely for individuals with severe skill deficits. Indeed, punishment contingencies in the form of actual physical danger, legal intervention, or social censure could preclude community placement for some individuals and long-term survival for others. Consequently, one of the effects of normalization and mainstreaming is the concomitant need for developing basic educative programs.

Operant procedures have been successfully applied to teaching a wide variety of basic self-help skills to both verbal and non-verbal populations. Examples include toileting (Azrin, Bugle, and O'Brien, 1971; Azrin and Foxx, 1971; Mohoney, Van Wagenen, and Myerson, 1971), dressing (Minge and Ball, 1967), toothbrushing (Horner and Keilitz, 1975), and mealtime behaviors (Barton, Guess, and Baer, 1970; Henrikson and
Behavioral procedures have also been used to shape appropriate workshop and other occupationally related skills (Bateman, 1975; Green and Hoats, 1969; Mitchell and Stoffelmayer, 1973; Schroeder, 1972). A more sophisticated behavior was taught by Clark, Boyd, and Macrae (1975) who used sequential training of responses on job applications and obtained generalization to novel application forms.

Only recently has operant technology been applied to teach the specific skills requisite for community living. Housekeeping (Bauman and Iwata, 1977), nutritional eating habits (Bailey and Lee, 1976) telephoning (Leff, 1974, 1975), coin usage (Lowe and Cuvo, 1976; Trace, Cuvo, and Criswell, 1977) and appropriate use of leisure time (Johnson and Bailey, 1977) have been recent topics of empirical analysis.

One general training strategy that has in recent years proven effective for teaching complex behavioral skills such as automobile driving or manned spacecraft piloting, has been the use of simulators. The advantages of such devices are that various response topographies are acquired under the stimulus control of stimuli that are very similar to those that will be present in the "real life" situation. Thus, the probability of response generalization is maximized. Recently, simulator training used in combination with simple shaping and reinforcement has been demonstrated to be highly effective with retarded populations, which characteristically exhibit less generalization than do the non-retarded. For example, Leff (1974, 1975) trained phone usage on a model telephone and obtained generalization of dialing skills.
In order for individuals to make physical contact with the community they must possess certain travel and safety skills (President's Council on Mental Retardation, 1972) which are lacking in a large proportion of community placed retarded persons (Nihira and Nihira, 1975). In an attempt to systematically train a basic safety skill that would directly facilitate community integration Page, Iwata and Neef (1976) developed a pedestrian behavior program. After performing a task analysis of component behaviors (Resnick, Wang, and Kaplan, 1973), five response components of street crossing were sequentially trained on a tabletop simulation of four city blocks. Generalization was obtained from simulator to city streets, and from trained to untrained items. The authors noted a number of advantages to the classroom procedure including decreased danger to students from traffic hazards, minimized embarrassment to the student, and reductions in time, expenses, and number of trainers. Also, complications due to weather were diminished.

A second study (Neef, Iwata, and Page, 1977) trained public bus riding. This higher level program consisted of teaching behaviors in the classroom on a simulated bus equipped with coin box, seats and a pull cord. They also utilized photographic slide sequences as a training aid. As in the previous study, results demonstrated generalization to the natural environment on actual city bus rides. In addition, the authors compared the time and cost requirements for in vivo versus simulator training. Cost efficiency ratios indicated that simulation training of bus riding could be accomplished in about 28% of the time and at about 10% of the cost of training on an actual bus.

Whereas a retarded or handicapped individual may acquire community travel skills, it is not clear that (s)he will continue to engage in
these behaviors over an extended period of time. The response effort would seem particularly high for individuals with physical involvements, or for those who regularly contact the "natural" contingencies of extinction or punishment. However, the availability of a primary reinforcer (i.e. food) in the community could serve to maintain a travel repertoire by increasing its functional value. Furthermore, if food seeking skills are performed in an appropriate manner the likelihood of encountering punishing contingencies would be reduced.

The present study attempted to extend the efficacy of simulator generalization training by teaching students who already had the requisite pedestrian and bus riding skills to use public restaurants. In this study training was programmed to provide a set of skills that would be appropriate in standard quick-food restaurants. These facilities were selected for several reasons. First, there exists a commonality of stimulus characteristics across restaurants of the same and of competing corporations. Second, a standard repertoire of food items can be taught, thereby eliminating menu reading skills. Third, since prices are generally low at such establishments, a simple finger-match subtraction algorithm permits a "change" check while obviating math-money skills beyond counting whole dollars up to five. Fourth, the ubiquity of quick-food establishments in most communities and their comparatively low prices suggest that an individual trained in these skills would have a high probability of contacting primary reinforcement for engaging in these and the temporally prerequisite travel behaviors. Finally, the prevalence of quick-food restaurants with signs stating numbers of billions served attest to the "normativeness" of using these community facilities.
A component analysis yielded four major skill categories of Locating, Ordering, Paying, and Eating and Exiting. Each component was trained sequentially using photographic slide stimuli, instructions, modeling, role playing, descriptive feedback, remediation, and social reinforcement.
Method

Subjects

Three male students enrolled at the Kalamazoo Valley Multihandicap Center (KVMC), a day program for the physically handicapped and developmentally retarded, participated in this program as one component of a community survival skills curriculum. Subjects' ages ranged from 17-22 years. Their handicaps included mental retardation and at least one of the following: emotional impairment, epilepsy and deafness. Most recent IQ test scores ranged from 46-75. Subjects were selected on the basis of their willingness to participate and after parental permission had been obtained. All subjects had been previously trained on pedestrian skills (Page, Iwata, and Neef, 1976) and public transportation usage (Neef, Iwata, and Page, 1977). All had histories of having eaten in restaurants in the presence of others, but none could perform the appropriate behaviors independently.

Setting and Apparatus

Classroom. Training and review sessions were conducted in KVMC classroom in downtown Kalamazoo. Three plastic signs approximately 0.5m X 0.5m depicting various McDonald's sandwiches and their names were posted on the wall of the classroom. Slides were selected on a per session basis from a pool of 60 slides to present both instances and non-instances of discriminative stimuli and correct and incorrect responses for the skill being taught.

Restaurant. Generalization probes were conducted before, during and after training at two local quick-food restaurants; McDonald's and Burger King, that the students reached by city bus or on foot.
Non-vocal order form. A 21.5 X 28.0 cm plastic laminated sheet of cardboard with pre-printed questions (appropriate and inappropriate), generic item names (e.g. large hamburger), and spaces for written waitress responses was used during training and probes by student #3, who was deaf. Questions (e.g. "How much is...?") or desired items could be indicated by a check mark with a wax pencil, and then wiped clean with a napkin. Inquiries into change accuracy and "Thank you!" were also performed in this manner.

Training Sequence and Response Definitions

Figure 1 presents the procedural logic for the entire behavioral chain in flow chart format. The component analysis of responses comprising an entire restauranting episode yielded four major components. These were Locating, Ordering, Paying, and Eating and Exiting. Included within the first training component of Locating were the behaviors of getting to the counter area as well as appropriate social behavior. For example, after locating the restaurant and entering the appropriate door, the student must discriminate the presence or absence of a line. If one is present, he must stand at the end of it. If no line is present, he must determine the location of an operational cash register (by the presence of a waitress) and then stand quietly in front of it until the order is taken.

During training on Ordering students learned all the behaviors involved in inquiring the total price of items, deleting items that were unavailable or unaffordable, and inquiring about substitute items. Training on Paying included instructions on when to give the waitress money, how to count returned bills ("change"), how to inquire if there
Figure 1: Task analysis of component skills for restauranting.
appeared to be a mistake in the change, and how to acquire napkins and condiments. Training on Eating and Exiting consisted of instructions on where to sit, how to deal with spills, and where to dispose of trash prior to exiting. Table I includes the specific target responses included under each of the four components. These behavioral definitions are recorded under the heading of "Appropriate Responses". In addition, Table I provides operational definitions for inappropriate responses that were in effect for the duration of the experiment.

General training procedure. Training consisted of teaching each of the four components in order, beginning with Locating. Simulation training was accomplished by having the student respond to a question about a specific slide that was projected onto the wall, by role playing a particular restauranting interaction with the trainer serving as a "waitress", or by a combination of these techniques. For example, the student might be asked if a slide stimulus represented an appropriate place to order, or if a model in the slide was engaging in an appropriate behavior.

During role playing, the student might be asked to complete a sequence of ordering behaviors with the trainer supplying waitress responses. Finally, these procedures were combined, so that the student might be required to look at a projected image of a waitress while responding to the role played voice of the trainer.

Correct responses were consequated with social reinforcement in the form of descriptive praise (e.g.: "Good job! You remembered to ask for your change."). Incorrect responses were followed by feedback describing the inappropriate nature of the response, and a remedial trial was initiated. Inappropriate responding on a remedial trial resulted in
Table I: Appropriate and Inappropriate Response Definitions Used During Restaurant Probes
### Table I

Appropriate and Inappropriate Response

Definitions Used During Restaurant Probes

<table>
<thead>
<tr>
<th>Number</th>
<th>Appropriate Response</th>
<th>Inappropriate Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2</td>
<td>Enters double door within 2 minutes of start.</td>
<td>Uses Wrong door. Does not enter within 2 minutes.</td>
</tr>
<tr>
<td>1.3</td>
<td>Goes directly to counter. Does not leave line except to get into shorter line.</td>
<td>Not in line or at counter within 30 seconds. Gets out of line.</td>
</tr>
<tr>
<td>2.1</td>
<td>Makes ordering response within 10 seconds of cue, not before. If written, finishes within 2 minutes.</td>
<td>Does not respond within 10 seconds. Responds before waitress cue. Makes inappropriate (i.e. non-ordering related) verbalization. Not finished writing within 2 minutes.</td>
</tr>
<tr>
<td>2.2</td>
<td>Says &quot;How much...?&quot; when giving order.</td>
<td>Does not inquire &quot;How much...?&quot;.</td>
</tr>
<tr>
<td>2.3</td>
<td>Orders food that he can afford. Appropriate item combination (i.e. minimum order - sandwich &amp; drink; maximum - sandwich, drink, side order + any other item).</td>
<td>Orders more food than he can pay for. Uses inappropriate item combination.</td>
</tr>
<tr>
<td>2.4</td>
<td>Says &quot;Eat here&quot;.</td>
<td>Does not say order is to dine in. Says &quot;To go&quot;</td>
</tr>
<tr>
<td>3.1</td>
<td>Begins to get money within 10 seconds of cue. Does not let go of money on counter before waitress cue.</td>
<td>Does not get money within 10 seconds. Releases money before cue.</td>
</tr>
<tr>
<td>3.2</td>
<td>Hands waitress appropriate combination of bills.</td>
<td>Does not give enough money. Gives too much money so that same bill is returned by waitress.</td>
</tr>
<tr>
<td>Number</td>
<td>Appropriate Response</td>
<td>Inappropriate Response</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>3.3</td>
<td>Displays fingers on at least one hand.</td>
<td>Does not display fingers.</td>
</tr>
<tr>
<td>3.4</td>
<td>Inquires &quot;Mistake?&quot; if short billed.</td>
<td>Does not inquire if short billed. Inquires &quot;Mistake?&quot; when change is accurate.</td>
</tr>
<tr>
<td>3.5</td>
<td>Puts money in pocket.</td>
<td>Does not take change. Puts money on tray instead of pocket.</td>
</tr>
<tr>
<td>3.6</td>
<td>Requests salt, pepper, or ketchup.</td>
<td>Does not request any condiments.</td>
</tr>
<tr>
<td>3.7</td>
<td>Takes a napkin from dispenser.</td>
<td>Does not take napkin from dispenser.</td>
</tr>
<tr>
<td>3.8</td>
<td>Says &quot;Thank you&quot;.</td>
<td>Does not say &quot;Thank you&quot;.</td>
</tr>
<tr>
<td>4.1</td>
<td>Sits at unoccupied, trash-free table within one minute of availability.</td>
<td>Sits with other customer. Sits at a table with trash present. Does not sit down within one minute.</td>
</tr>
<tr>
<td>4.2</td>
<td>Eats food placed only on paper.</td>
<td>Eats food off of tray, table etc.</td>
</tr>
<tr>
<td>4.3</td>
<td>Puts napkin in lap and wipes mouth or hands.</td>
<td>Does not put napkin in lap. Does not wipe hands or mouth on it.</td>
</tr>
<tr>
<td>4.4</td>
<td>Does not spill food or drink.</td>
<td>Drops food off of tray or spills drink.</td>
</tr>
<tr>
<td>4.5</td>
<td>If spills occur, picks up every one, does not eat any spilled item.</td>
<td>Does not pick up or blot. Eats any spilled item.</td>
</tr>
<tr>
<td>4.6</td>
<td>Puts trash in container, tray on top, within 2 minutes of finish eating.</td>
<td>Does not put trash in container within 2 minutes. Uses inappropriate container. Throws tray in container.</td>
</tr>
<tr>
<td>4.7</td>
<td>Exits within one minute of trash or 3 minutes of stop eating.</td>
<td>Does not exit within time limits.</td>
</tr>
</tbody>
</table>
the trainer modeling the appropriate behavior. A second remedial trial was then initiated. Subsequent incorrect responses resulted in further trainer modeling and continued remedial trials. This sequence was continued until a correct response was emitted. Correct responses on remedial trials were reinforced and the next training trial was begun.

During training on the slide stimuli, student and trainer were seated at a table so that each could see the projected image. A trial was initiated when the trainer asked the student a question about the appropriateness of a model's behavior or about the presence or absence of certain discriminative stimuli. For example, for a given slide drawn from the pool, the student might be required to tell whether a building was an appropriate instance of a McDonald's restaurant, or whether a customer was using the appropriate door to get into the restaurant. In order for a response to be scored correct, the student had to be able to identify the stimuli that determined the appropriateness or inappropriateness of a given instance, when asked "Why?".

During role playing the trainer simulated the behavior of a waitress while the student stood on the opposite side of the table and engaged in the customer behavior that was being trained. A trial was initiated when the trainer emitted the waitress response that would serve as a cue for the customer response. In order for a response to be scored correct, the student had to engage in the target behavior, as well as the other behaviors trained within that component. For example, a student learning to count his returned bills could only be scored correct if he first gave the trainer the appropriate number of bills when paying for his "meal".
Table II describes which training procedure was used to train each response within a component. Each training session consisted of 10 trials, not counting remedial trials. Only one component skill was taught during any given session. Criterion for mastery of a skill was 100% correct responding across two consecutive training sessions. When a student reached criterion on a particular skill, training of the next skill was begun on the following session. When the student reached criterion on the terminal skill of a component, one review session and one restaurant probe were conducted.

**Review sessions.** Review sessions consisted of 10 trials that provided practice over all previously trained skills. Conditions in effect during review sessions were identical to those for training sessions including training stimuli, instructions, feedback and, remedial procedures. The only difference between review and training sessions was the practice of previously learned skills during the review sessions.

**Restaurant probe.** Subjects' behavior was observed in a local McDonald's restaurant before, during and after training. Performance was assessed using the response definitions from Table I. A probe consisted of giving the student a randomly determine combination of bills to equal from two to five dollars, and telling him to go eat lunch by himself. He was told to pretend that he was alone and not to talk to the trainer/observers. Probes were initiated between 50 and 250 yards from the restaurant. Except for the initial instructions, no trainer-student interaction occurred until the student had exited from the building, or until the time limits for the exiting response had expired. Persons serving as primary and secondary observers were
Table II: Description of Training Procedure for Each Skill
Table II

Description of Training Procedure for Each Skill

<table>
<thead>
<tr>
<th>Skill</th>
<th>Procedure</th>
<th>Description of Student Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Comb. slide &amp; role play</td>
<td>Required to identify appropriateness of slide model's behavior; required to emit appropriate social behavior for setting depicted in slide.</td>
</tr>
<tr>
<td>1.2</td>
<td>Slide</td>
<td>Required to identify appropriate entry door, and model's use of doors.</td>
</tr>
<tr>
<td>1.3</td>
<td>Slide</td>
<td>Required to identify appropriate place to order, where to stand in line, and appropriateness of model's behavior.</td>
</tr>
<tr>
<td>2.1</td>
<td>Role</td>
<td>Required to make order within 10 seconds of &quot;waitress&quot; cue.</td>
</tr>
<tr>
<td>2.2</td>
<td>Role</td>
<td>Required to ask &quot;How much&quot; for items.</td>
</tr>
<tr>
<td>2.3</td>
<td>Comb</td>
<td>Required to identify food items by generic name. Required to identify appropriate item combinations. Required to delete items that were &quot;not available today&quot;. Required to ask about other available items.</td>
</tr>
<tr>
<td>2.4</td>
<td>Role</td>
<td>Required to compare waitress report of total cost with number of dollars in possession. Required to delete items if unaffordable. Required to say &quot;Eat here&quot; if sufficient funds.</td>
</tr>
<tr>
<td>3.1</td>
<td>Role</td>
<td>Required to produce money within 10 seconds of being told total.</td>
</tr>
<tr>
<td>3.2</td>
<td>Role</td>
<td>Required to pay within appropriate combination of bills.</td>
</tr>
<tr>
<td>3.3</td>
<td>Role</td>
<td>Required to display number of fingers on left hand that equals the total rounded up to the nearest dollar. Required to display finger on right hand that equals amount paid. Required to put hands together and identify number of dollars &quot;left over&quot; that he should receive in change.</td>
</tr>
<tr>
<td>3.4</td>
<td>Role</td>
<td>Required to inquire if number of bills returned are inaccurate.</td>
</tr>
</tbody>
</table>
Table II (continued)

<table>
<thead>
<tr>
<th>Skill</th>
<th>Procedure</th>
<th>Description of Student Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5</td>
<td>Role</td>
<td>Required to put money away before sitting at table.</td>
</tr>
<tr>
<td>3.6</td>
<td>Role</td>
<td>Required to request salt, pepper, or ketchup.</td>
</tr>
<tr>
<td>3.7</td>
<td>Comb</td>
<td>Required to identify napkin dispenser in slide. Required to take napkin from training dispenser.</td>
</tr>
<tr>
<td>3.8</td>
<td>Role</td>
<td>Required to say &quot;Thank you&quot;.</td>
</tr>
<tr>
<td>4.1</td>
<td>Slide</td>
<td>Required to identify unoccupied seats. Required to describe procedure for removing trash from table.</td>
</tr>
<tr>
<td>4.2</td>
<td>Slide</td>
<td>Required to identify appropriate place to put food down. Required to identify that off-paper food cannot be eaten and must be thrown away.</td>
</tr>
<tr>
<td>4.3</td>
<td>Comb</td>
<td>Required to identify appropriate napkin usage. Required to demonstrate appropriate napkin usage.</td>
</tr>
<tr>
<td>4.4</td>
<td>Slide</td>
<td>Required to identify spills and specify that they should be avoided.</td>
</tr>
<tr>
<td>4.5</td>
<td>Slide</td>
<td>Required to describe clean-up procedure to be used in case of a spill.</td>
</tr>
<tr>
<td>4.6</td>
<td>Slide</td>
<td>Required to identify appropriate trash containers. Required to identify place to put trays.</td>
</tr>
<tr>
<td>4.7</td>
<td>Slide</td>
<td>Required to identify appropriate exit doors.</td>
</tr>
</tbody>
</table>
prepared to intervene in the event that the student or another customer was in physical danger, but action was never required. Following the probe session the student was met outside and his change was retrieved, but no feedback was provided regarding his performance.

Upon completion of training on the final component and the restaurant probe for that component, a series of follow-up probes was conducted. These were intended to assess maintenance of the skills trained, as well as to assess generalization to a novel restaurant. The initial follow-up probe for student #3 was identical to probes conducted before and during training in terms of instructions, probe site location and observer presence. All other follow-up probes for all students were conducted in a novel setting with either overt or covert observation. Students were taken to the site of a quick food restaurant of a competing corporation (Burger King) and instructed to eat lunch in that restaurant. During novel site probes observers recorded student performance using the response definitions from Table I. During covert observation probes a trained observer who was unknown to the student recorded performance. Students were informed that this time the trainers would not go along with them and that they should do everything exactly as they had been taught. The covert observer was already in the restaurant when the student arrived.

Reliability

Independent observations were made during training and restaurant probe sessions by one of the experimenter/trainers or a graduate student naive to the experimental conditions in effect. Primary and secondary observers records were compared on a per response basis.

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Interobserver reliability scores were computed by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100. This formula was used to compute agreement percentages for occurrences of correct responses, non-occurrences of correct responses, and occurrences plus non-occurrences. Reliability checks on 53.6% of all restaurant probes yielded mean scores of 92.9%, 91.5%, and 93.3% for occurrences, non-occurrences, and occurrences plus non-occurrences, respectively. Checks made on 52.0% of all training sessions yielded means of 96.4%, 92.5%, and 97.0%.

Experimental Design

The design utilized was a multiple baseline across both subjects and skill components (Baer, Wolf, and Risley, 1968). Baseline data consisted of a minimum of three restaurant probes. Training was begun with the first student on Locating, and then continued sequentially through the remaining components. Baseline probes continued for all students not receiving training. After student #1 reached criterion on the first component, the second student began receiving training on that component. When student #2 reached criterion on the first component, the third student began receiving training on the first component. Thus, all students progressed at their own rate, once training had been initiated for each one.
Results

Figure 2 presents performance for each student in McDonald's (circles) and Burger King (triangles) restaurants. The final Burger King probe (open triangle) were conducted using covert observation. All other probes (closed data points) were conducted using overt trainer observation. Since the total number of possible responses varied between 20 and 22, depending on waitress and student behaviors during the probes, the ordinate values in Figure 2 represent percent correct responding.

Mean performances during baseline conditions for students #1-3 respectively were 48.4%, 30.4% and 38.8%. As students were sequentially exposed to training their probe performance scores increased. On the final training probe performance scores were 85.7%, 80.0%, and 95.0%. More than one data point appear for several training probes for the same component. This is the result of students' failing to generalize target behavior from the classroom to the restaurant after initial exposure to training. In such instances review training sessions were conducted and further probes were run until the student performed the target behaviors for that component in the restaurant setting.

Follow-up generalization probes were conducted after training had been discontinued. Data from these probes appear under the appropriate condition heading in Figure 2. Mean scores for students #1-3 were 90.0%, 77.5%, and 98.4%. As well as demonstrating students' abilities to maintain these skills in the absence of instructions or feedback, follow-up data collected in Burger King restaurant suggest that the skills trained were generative across quick-food restaurant
Figure 2: Percent correct responding of students on restaurant probes.
Figure 2

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location and companies. Further, data collected using covert observation techniques indicate that the students' performance had not come under the stimulus control of the trainers' presence. That is, student performance did not deteriorate when the trainer was removed from the restaurant.

Training sessions ranged in duration from 5 to 10 minutes. Mean number of training and review sessions to criterion was 77. Mean total training time was approximately 9.6 hours. Costs for training materials were limited to slide film purchased and processing (2 rolls) at an approximate cost of $16.00. Costs for restaurant probes (mean = 15 per student) ranged from $0.77 to $2.00 (mean = $1.25). In addition, transportation on city busses to and from probe sites required a $10.00 expenditure. Thus, mean program costs per student were approximately $27.00. As students normally brought lunches from home, potential savings on school-provided lunches are not reflected in this cost analysis.
Discussion

As in previous travel skill experiments (Page, Iwata, and Neef, 1976); Neef, Iwata, and Page, 1977) the results of this study indicate that retarded persons can generalize from classroom training sessions to the community. The overall effectiveness of the program was demonstrated through the multiple baseline design. Baseline performance for all students reflected various skill deficits that precluded students' appropriate restaurant usage. Typically, students were able to acquire food during probes; however in all cases waitress assistance was required during ordering and paying. In addition, unorthodox eating and social habits were sufficiently obtrusive to attract customer attention, and in some cases offers of assistance. For example, during a baseline probe one student purchased four orders of french fries only, and then distributed them to other customers in the dining area. Probe performance scores increased for each student when training was initiated, and maintained after training had been discontinued. On at least one occasion students #1 and 3 scored 100% appropriate responding. Student #2 emitted every appropriate target response in the restaurant setting at least one time. His somewhat lower performance over all probes reflects the omission of various behaviors, which although not functionally related to getting food, did serve to demonstrate acquisition of restauranting skills (e.g. asking for condiments, placing his napkin in his lap between mouth wipes).

Students also generalized to novel quick-food restaurants. In Burger King students were required to respond appropriately to the
novel stimulus conditions of physical plant, menu item names and prices. Students were able to use the novel restaurant appropriately. Data from the covert observation probes indicate that the students used the novel restaurant appropriately without a trainer being present: Students #1 and 3 emitted 100% of the target behaviors.

Verbal reports from student #2's parents indicated that there are no McDonald's in their rural suburb, and while they do not frequent quick-food restaurants in town, they do dine in family-type restaurants with table service. They noted that their son now orders from the waitress independently, and that his eating and social behavior in the restaurant is improved. Thus, it would seem that the skills he acquired are functional in terms of reducing the response effort for his parents' eating out, and consequently increase the probability that he will engage in some form of community travel. It is also interesting to note that student #3 had participated in previous mobility programs (Page, Iwata, and Neef, 1976; Neef, Iwata, and Page, 1977). His ability to travel independently (via walking and city busses) and his basic familiarity with restaurants has since enabled him to obtain a job at a local Italian restaurant as a dishwasher. Thus, the training that he received has proven to be highly functional and generalizable with respect to his current activities.

In this program several of the "higher order" skills associated with restauranting (e.g. menu reading and money skills) were circumvented. Students were taught general classes of food names (e.g. "large hamburger", as opposed to "Big Mac" or "Whopper") in order to facilitate generalization across food chains. Typically, when requesting a "large hamburger" students were informed that they wanted a "Big
Mac". After having been told the brand name of an item, students would come under the stimulus control of that restaurant and continue to use that brand name until they received different "instructions" from another waitress in a different restaurant.

Students were taught to inquire the total price of a combination of items before ordering them. They were also taught a manual motor algorithm ("finger subtraction") in order to check the number of dollars that should be returned to them from a payment of 2-5 whole dollars. In the event of a short-change students inquired if there was a mistake. This response was scored only when there was a waitress "error", or if the student erroneously inquired when the change was in fact correct. Thus, if the change was correct and the student did not inquire, this response category was not scored, resulting in a decreased total number of responses scored on that probe. Skinner (1953) identifies precurrent behavior as responses that increase the probability of acquiring behavior that will be reinforced. Finger subtraction may have served a precurrent function in facilitating change checking. That is, after initial practice on the finger matching response, students could respond appropriately with respect to their change without overtly involving their fingers. Finger matching was included as a target response in order that trainers would be able to assess when students were beginning to attend to the stimulus characteristics of their "change". In order to assess appropriate change inquiries, waitresses were prompted prior to a student's entry to short-bill him and to give the balance to the trainer/observer if the student did not request it. For ethical reasons prompted short-billings occurred only after the student had received training on change inquiry
and only until he correctly inquired. Finger matching continued to serve as an indicator of the student's behavior with respect to his change. Although this response typically decreased later and could not be scored, students often began counting their change, whereas they previously had not.

The behavior of waitress was another variable that affected performance. While prompted at the beginning of the study to "act just as they normally would", waitress repertoires have been shaped to provide assistance to customers who are unfamiliar with the restaurant. Thus, natural training contingencies were imposed upon students during the probes. Waitress behavior also resulted in an occasional decrease in percent appropriate responding. Waitress repertoires would vary, as when they neglected to ask if an order was "for here or to go", or if the student would "like anything else". These waitress behaviors were used as discriminative stimuli for student responses during training and often their omission would result in the student also failing to respond appropriately. Finally, generalization was programmed via a fading procedure that combined photographically projected slide stimuli with role playing. In this procedure students were initially trained to role play the responses of a customer with the trainer assuming the role of waitress. This procedure alone resulted in a high rate of requests for assistance from the trainer/observer (which were scored as inappropriate social behavior, but otherwise ignored). Students in training were then presented with a projected slide of the waitress and required to look at it as they responded to the auditory component of the trainer's role playing.
The success that this and previous studies (Page, Iwata, and Neef, 1976; Neef, Iwata, and Page, 1977) demonstrated using in class training only may be due in part to historical variables. All subjects in this study had some exposure to restaurant usage before beginning training. This is reflected in their abilities to emit some of the target behaviors (e.g. appropriate entry, asking a waitress for food at the counter) in baseline. Simulator training and feedback-free probes may not constitute sufficient conditions for generalization training, given a subject with no prior experience at eating in public restaurants. In vivo modeling and prompting in the restaurant paired with in-class simulator training would be a more powerful means of providing the student with the basic repertoire necessary for restaurant usage. Feedback-free probes would be contraindicated for such an individual, since he would be contacting a milieu of novel stimuli requiring rapid responding. Fading of the trainer's stimulus control in the actual restaurant would seem likely to minimize the overall frequency of inappropriate responding for such a student.

In conclusion, this study demonstrates that an important skill in terms of maintaining community travel in retarded persons can be taught using classroom-based instruction only. This type of instruction has several advantages over in vivo instruction in terms of relative cost and staff time required. It allows repetitive practice on specific component skills of the restauranting chain without actually having to go to the restaurant, order, pay for, and eat a meal. Consequently, simulator instruction obviates the student contacting the aversive characteristics of embarrassment, inclement weather, obesity or
satiation. In addition, within this experimental design restaurant probes serve as primary reinforcers for criterial performance during training. It would seem likely that restaurant usage can be conceptualized as a primary reinforcer that would also come to increase the probability of emission of the entire chain of operants that directly precede it. That is, individuals who possess quick-food restaurant usage skills are more likely to engage in all forms of community mobility.
References


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