INCREASING SENIOR CITIZEN PARTICIPATION IN A COMMUNITY-BASED NUTRITIOUS MEAL PROGRAM¹

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Two experiments were conducted to compare the effects of several prompting and reinforcement procedures on the participation of elderly citizens in a nutritious meal program. Experiment I employed a variation of the multiple-baseline design across three groups of approximately 60 households each. Elderly persons not previously participating in the program were introduced to the following conditions: (1) public service radio announcements for four weeks to advertise the meal program and the availability of free transportation, (2) a home visit that served as a personal invitation and a second prompt for participation, (3) a followup telephone call, and (4) an incentive menu for participation, which was sent through the mail. Results indicated that the home visits and incentives were both effective as recruitment procedures and superior to other conditions; however, incentives proved to be the most cost-effective intervention. Experiment II used a variation of the multi-element design to compare the effects of scheduled activities and incentives in maintaining higher levels of participation by those persons who had attended the meal program at least once in the past, but whose current rate of participation was low. Results showed that activities improved attendance levels somewhat and that incentives substantially increased the number of meal program participants. Data from these experiments thus indicate that relatively inexpensive procedures may be used effectively to increase the extent to which elderly persons make use of potentially beneficial community-based services.

DESCRIPTORS: behavioral community psychology, community meal programs, nutritional health, activity reinforcers, prompts, attendance, consumer satisfaction, social validation, cost analysis, elderly people

Living beyond middle age affects a large segment of the population, and is associated with a number of changes in economic, physical, and social contingencies which, either singly or in combination, eventually lead to decreased levels of functioning (*e.g.*, restricted income, limited productivity, illness, isolation). Often, these de-

creases are of an accelerated nature and result in premature institutionalization, a costly alternative to community living (White House Conference on Aging, 1973). Thus, the continued maintenance of vocational, health, and social behaviors in elderly persons would benefit not only the individuals concerned, but also the larger society.

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Behavior analysts have recently attempted to deal with problems characteristic of the institutionalized elderly via operant techniques and have been successful in developing behaviors incompatible with depression (Hoer, 1973; Power and McCarron, 1975), increasing conversation and participation in group activities for inactive residents (de Lerma Salter and Salter, 1975; Hoer, Kafer, Simpson, and Hoyer, 1974; McClannahan and Risley, 1974, 1975; Toepfer, Becknell, and Shaw, 1974), and maintaining ap-

appropriate levels of meal consumption for the undernourished (Geiger and Johnson, 1974). While these studies offer a very promising technology for use in relatively structured and well-controlled environments, their successful application outside the institution will require the solution of additional problems regarding access to and communication with the target client population. One of the major difficulties frequently encountered in work with the community-based elderly has been their general failure to participate in existing programs, thereby excluding themselves from numerous opportunities to take advantage of potentially beneficial services (Pierce, 1975). Part of this problem has been attributed to the elderly citizen's lack of knowledge regarding the programs and inexperience in the area of social services; in addition, a past history of nonparticipation in social activities in general would seem to reduce the probability of participation in a program that both requires and promotes such interactions (Bechill and Wolgamot, 1973; Sherwood, 1973).

One area of community programming for the elderly in which lack of participation has become a major concern is that of nutritional assistance. It is generally agreed that 65% to 95% of those over 60 yr of age are not consuming diets that meet the minimum recommended daily allowances (RDA) (Bechill and Wolgamot, 1973; Powers and Golinvaux, 1972; White House Conference on Aging, 1973). Accordingly, both public and private agencies have established supplementary diet programs that offer low-cost, nutritional meals (providing at least one-third of the RDA) to the community-based elderly. However, although meal programs now exist in most communities across the country, it is evident that the mere availability of the service has failed to generate sufficient participation to benefit those showing nutritional/social deficits (Department of Health, Education and Welfare, 1975; Pelcovits, 1972). It has been estimated that less than 1% of the eligible population participate in community meal programs for the elderly sponsored by the

federal government (Bechill and Wolgamot, 1973).

Recent studies in the area of behavioral community psychology (Briscoe, Hoffman, and Bailey, 1975) have emphasized the use of prompting and reinforcement procedures in ameliorating many problems found in the natural or unstructured environment, and these techniques seem applicable to the recruitment and maintenance of senior citizen participation in community programs. Turner and Vernon (1975) found that telephone prompts increased the number of therapy appointments that were kept at a community mental health center; Geller, Farris, and Post (1973) used a simple written prompt to increase purchases of returnable beverage containers at a supermarket. McNees, Egli, Marshall, Schnelle, and Risley (1976) also used a written prompting procedure (informational signs) to reduce instances of theft in a department store. Reinforcement contingencies have been found effective in recruiting new members at an urban recreation center (Pierce and Risley, 1974), inducing campers to engage in litter collection (Clark, Burgess, and Hendee, 1972), increasing the usage of public transportation (Everett, Hayward, and Meyers, 1974), and maintaining attendance at self-help meetings for welfare clients (Miller and Miller, 1970).

Direct comparisons of prompts *versus* reinforcement have indicated that more positive results may be expected with the latter procedure. Burgess, Clark, and Hendee (1971) compared several anti-litter procedures in a movie theatre and found that small reinforcing consequences were far superior to prompts. Witmer and Geller (1976) reported similar findings for a paper recycling program. Reiss, Piotrowski, and Bailey (1976) found that a package consisting of a written and telephone prompt plus a home visit was about as effective as an initial prompt plus a \$5.00 incentive in encouraging low-income parents to bring their children in for needed dental-care visits. However, the incentive procedure led to more followup visits and

cost much less than did the three-prompt procedure. The Reiss *et al.* cost-efficiency analysis focuses attention on a detail of considerable importance with respect to community program development: the amount of time or labor that must be spent to produce a desired outcome. Although their findings suggest that reinforcement procedures may be more cost-effective than certain prompting packages, it is conceivable that an efficient prompting procedure may produce more behavior change per dollar or unit time spent than a costly reinforcement program.

The present study sought to compare several prompting and reinforcement procedures in increasing senior citizen participation in a nutritious meal program offered by a local community center. Experiment I attempted to recruit new participants, and examined the relative effects of public service announcements over the radio, personal contacts with the elderly during a home visit, followup contacts, and access to a wide variety of reinforcers. Experiment II compared two reinforcement procedures (group activities *versus* items and services similar to those used in Experiment I) in maintaining high attendance levels at the meal program. During both experiments, the relative costs of the different procedures were tabulated and compared.

EXPERIMENT I

METHOD

Subjects and Setting

This study was conducted at an attractive, modern service center, centrally located in a community of approximately 12,000 persons. In addition to providing social, medical, and recreational services to area residents, the center sponsored a low-cost meal program for the community's elderly citizens, which was designed to meet at least one-third of the recommended daily nutritional allowances. At the time of the present study, the meal program had been in operation for approximately 2 yr.

Participants consisted of 202 senior citizen households from which no member had pre-

viously taken part in a meal program sponsored by the center. Names and addresses of the subjects were obtained from township tax rolls, records of various service agencies, and from community residents. Ages ranged from 62 to 99 yr, and were distributed as follows: 3% were between 62 and 65 yr, 25% between 66 and 70, 40% between 71 and 75, 15% between 76 and 80, 8% between 81 and 85, and 9% were over 86 yr. Sixty per cent of these persons responded to questions regarding income; of these, over half indicated that their sole source of income was from Social Security. The mean distance from the subjects' homes to the community center was 1.75 miles, with a range from 0.75 to 10 miles.

Response Measure and Reliability

The lunchroom manager regularly maintained daily (Monday through Friday) attendance records by entering participants' names in a log. Persons not known by the manager or whose identity was in doubt were greeted in order to obtain their names. A participant was scored as "new" if (s)he had not attended the meal program in the past six months (this was determined by checking participants' names against previous attendance records). Approximately every third day throughout the study, another observed independently recorded names of attendees. The names on both lists were later compared, and occurrence reliabilities were calculated by dividing the number of agreements by the number of agreements plus disagreements, and multiplying by 100. This figure was 100% across all conditions of the study.

Procedure

Baseline. During this and all subsequent conditions, elderly persons received a nutritious meal at the community center during the lunch hours. To ensure that participants would not feel "pressured" into making the nominal donation (50¢) for the meal and that persons who could not afford to donate would not be embarrassed, the lunchroom manager made no

requests for donations unless a participant specifically inquired as to the price of the meal. The manager then explained that the participant could elect to pay nothing or make a small donation of no more than 50¢. In addition, the donation box was situated away from the dining area, no signs were posted to indicate that a donation was requested, and center staff neither recorded the names of donating participants, nor observed the donation box during the meal program.

Free transportation to and from the center was provided for those who requested it. Publicity for the program during this condition was by way of periodic announcement in the local newspapers.

Public service radio announcements. A 30-sec, public service announcement was given to the community's eight commercial radio stations. The announcement contained information regarding the nature of the meal program, its low cost, the availability of free transportation, and the time the meal was served. For four weeks, the announcement was broadcast one to three times daily by each station.

Home visits. Personal contacts were initiated with 132 of the 202 nonparticipant households. Elderly citizens were visited at home by a social worker, psychology intern, or research volunteer who indicated that (s)he was a representative of the community center, explained the meal program in a way similar to the public service announcement, and invited the elderly citizen to participate. The average time spent contacting each household was about one-half hour. Households in which no persons were contacted during a second attempt a different day of the week were considered part of this condition when a brochure was placed in their mailbox.

Followup contacts. Elderly citizens not participating after the home visit were contacted a second time. Persons with phones were called, invited to participate, and asked if they would like to be scheduled for free transportation. Those without phones were mailed a personal letter containing the same information.

Incentive offer. Those not participating in the meal program after completion of followup contacts were mailed a list of 58 items from which they could select upon participation in the meal program.³ The list contained activities such as trips and movies, items such as house plants, state lottery tickets, and games, and services such as housecleaning, car washing, and yard work.

Experimental Design

The 202 households chosen for this study were randomly assigned to one of three experimental groups composed of 69, 63, and 70 households each. Except for the public service announcements, which had to be introduced to all groups at the same time, all experimental conditions were implemented in Group I before Group II. The home visits and followup conditions were excluded in Group III in an effort to control for the problem of multiple treatment interference. To the extent that incentives produced similar results in Group III, compared to Groups I and II, it is more likely that prior conditions for Groups I and II were not necessary to obtain the results found during the incentives condition. Thus, the experimental design consisted of a multiple baseline (Baer, Wolf, and Risley, 1968) across Groups I and II, with a partial replication occurring in Group III.

RESULTS

Methods of Contact

During the home visits condition for Groups I and II, 90 of the 132 households were contacted in person and 42 brochures were left in mailboxes of the homes where a second visit resulted in no contact. Followup telephone calls to the same two groups reached 89 households; the remaining 43 were mailed personal letters, as they had no phones. During the incentives condition, no letters were returned by the post

³Complete lists of incentives used in both experiments may be obtained from the second author on request.

office in Groups I and II, but 10 of the 80 mailed to Group III were returned as "undeliverable". The accuracy of addresses for Group III was not checked by means other than public records, since home visits and followup calls were not conducted in this group.

New Participants

Figure 1 shows the cumulative number of new participants in each of the three groups across all experimental conditions. Public service radio announcements increased new participants by one in Group II but had no effects in the other groups. Home visits led to an increase of six in Group I and two in Group II. Followup contacts produced one new participant in Group I, and none in Group II. Incentive offers mailed to Groups I, II, and III, increased participation by 5, 3, and 7, respectively. Thus, the incentive condition led to a total of 15 new participants across all three groups, compared to 10 in all previous conditions. Of these 25 persons, five continued to attend the meal program at least once per week; the others did not return.

Treatment Costs

Table 1 provides a breakdown of the costs associated with each condition. In terms of total

cost, the public service announcements were by far the least expensive procedure. However, when one considers the effectiveness of a given cost (*i.e.*, the cost per new participant and the number of participants), different results are obtained. Although public service announcements cost only \$3.57 per new participant, the procedure was ineffective as a recruitment technique (one person). Followup contacts were both expensive (\$40.18 per person) and ineffective (one person). The home visits produced eight new participants at a cost of \$42.63 per person, and the incentives procedure yielded 15 persons at a cost of \$4.48 each. In comparing the costs for the home visits and incentives conditions, it can be seen that the major expenditure for home visits was the social worker salaries. Although this study utilized students in addition to social workers, the costs are based on the latter category of personnel, since home visits would ordinarily be accomplished by such persons. However, even if the costs were based solely on the use of volunteer (free) time, the home-visits procedure would have resulted in a total expenditure of \$85.02 or \$10.67 per new participant, still more than twice the cost of the incentives procedure. Thus, offering incentives for participation in the meal program proved to be the most effective yet comparatively economical procedure.

Table 1
Estimated Cost for Each Condition in Experiment I

	<i>Public Service Announcements</i>	<i>Home Visits</i>	<i>Followup Contacts</i>	<i>Incentives</i>
Radio announcements	N/A	N/A	N/A	N/A
Clerical time at \$2.25 per hour	\$2.25	\$2.25	\$29.35	\$6.75
Postage	\$1.04	N/A	\$4.30	\$20.20
Office supplies at \$0.035 per letter	\$0.28	\$7.25	\$1.29	\$18.18
Transportation at \$0.158 per mile	N/A	\$75.25	N/A	N/A
Social worker's time at \$3.57 per hour	N/A	\$256.01	N/A	N/A
Telephone calls at \$0.06 per call	N/A	N/A	\$5.34	N/A
Incentives	N/A	N/A	N/A	\$27.00
Total cost per condition	\$3.57	\$341.03	\$40.18	\$72.13
Number of participants	1	8	1	15
Cost per participant	\$3.57	\$42.63	\$40.18	\$4.80

Fig. 1. Cumulative number of new participants at the meal program per week in Groups I (N = 69), II (N = 63), and III (N = 70) during Experiment I.

EXPERIMENT II

Records kept throughout the 41 weeks of Experiment I indicated that mean daily attend-

ance at the meal program was 16 (range = 11 to 23), and that implementation of the various recruitment procedures appeared to have no effect on total attendance. The present ex-

periment evaluated the effects of low-cost incentives in improving daily meal attendance.

METHOD

Subjects and Setting

All elderly citizens who participated at least once in the meal program during Experiment I were considered subjects; setting and operation of the program were identical to Experiment I.

Response Measure and Reliability

Data collection and reliability procedures were the same as in Experiment I. Agreements of 100% were obtained throughout all phases.

Procedures

Baseline. Procedures were the same as those for the baseline of Experiment I.

Activities days. Wednesdays were designated as "Activities Days", on which either a free movie or free bingo game was held. The activity was conducted following the meal and was available to each person who attended the meal program on that day. Activities Day was advertised through daily announcements at the meal program for two weeks before the first Activities Day, and by a flier mailed to those who had participated in the meal program but who had not attended during the previous two weeks.

Incentives days. Each person who participated in the meal program on the day designated as "Give-Away Day" was allowed to select from a list of free incentives similar to those used in Experiment I. This offer was made on two Thursdays and one Tuesday in order to decrease the probability that events unique to one particular day of the week were responsible for any increases in meal attendance.

Experimental Design

This design is best described as a series of "repeated probes" of the independent variable.

RESULTS

Attendance

Figure 2 shows moderate increases in daily attendance at the meal program on "Activities Days" and substantial increases on "Give-Away Days", compared to corresponding baseline days. Attendance on "Activities Days" was 24 and 22 on the two days that movies were shown, and 24 and 33 on the two bingo days. The average attendance across the four days was 23 persons, and can be compared with an average daily attendance of 11 on all other Wednesdays during Experiment II. "Give-Away Days" produced attendance levels of 41, 42, and 74 persons on two Thursdays and one Tuesday, respectively, compared to mean attendance levels of 18 on Thursdays and 19 on Tuesdays for baseline sessions. No new participants (target subjects from Experiment I who had not previously attended the meal program) were present on either baseline or "Activities Days" during Experiment II, whereas five new participants attended on "Give-Away Days".

Costs

The total cost for "Activities Days" was \$40.70. Movies were provided free of charge from the local public library, and the costs for the bingo games were \$15.70 for postage, paper, and clerical time, and \$25.00 for prizes. The total cost for "Give-Away Days" was \$106.05. Postage, paper, and clerical time totalled \$15.95, while the incentives for each of the three "Give-Away Days" cost \$50.00, \$24.10, and \$16.00, respectively.

CONSUMER EVALUATION

Experiments I and II attempted to increase meal program participation through external means—the addition of new program components (special prompts and reinforcement)—rather than modifying existing aspects of the program. Thus, the significance of the present

Fig. 2. Total daily attendance at the meal program during Experiment II.

results must take into consideration answers to the following questions:

(1) How satisfied were the participants with the program *per se*? A high degree of satisfaction might justify adding new motivational components to an otherwise unchanged program; dissatisfaction would suggest that remedying program deficiencies (e.g., the quality of the meals) might render additional motivational procedures unnecessary.

(2) To what extent would directors of similar programs be willing to implement the present procedures? If potential consumers (program users) are either unimpressed with the results obtained, or forced to devote considerable expenditures to develop the program, adoption would seem unlikely.

(3) How likely is a program to continue, assuming that a director considers its initial adoption worthwhile? The underlying assumption in this question is that the actual reinforcing consequences of the program will contribute to its durability.

In an attempt to answer the first question, all participants in the meal program on a single day after Experiment II ended ($N = 24$), were asked the following questions: (a) How satisfied are you with the quality of the meals served at this program?, and (b) How satisfied are you with the way in which the center manages this program and any others that you may have participated in? Responses were in the form of five-point Likert rankings, where a "5" indicated extreme satisfaction, and a "1" indicated extreme dissatisfaction. Nineteen participants returned the questionnaires; their responses indicated a high degree of satisfaction with the quality of the meals (mean rank = 3.8), and an extremely high degree of satisfaction with the operation of the meal program (mean rank = 4.4).

Data relevant to the second question were collected by polling four directors of either community programs or community mental-health centers whose agencies offered special services to the elderly. They were asked to pro-

vide five-point ranking responses to the following questions: (a) How impressed (5 = extremely impressed, 1 = discouraged) would you be with a program that increases the total number of eligible new service participants by 12% (our results for all conditions during Experiment I) and that doubles the rate of regular participation (our findings for both procedures examined in Experiment II)?; (b) How willing (5 = very willing, 1 = under no circumstances) would you be to implement such a program at an annual cost of \$400 (the cost of the incentive condition during Experiment I plus the average cost of a monthly "Give-Away Day")? (c) How willing (5 = very willing, 1 = under no circumstances) would you be to implement such a program at an annual cost of \$250 (the cost of the incentive condition plus the lowest cost for a monthly "Give-Away Day")? Results of the poll indicated that the directors were highly impressed with the program outcome (mean rank = 4.2). Regarding costs, they were opposed to an annual expenditure of \$400 (mean rank = 1.9), but indicated a general willingness to spend \$250 annually (mean rank = 3.2).

Regarding the final question of maintenance, the director of the center at which the present studies were conducted expressed enthusiasm at the results and a desire to continue scheduling "Activities Days" and "Give-Away Days", as described in Experiment II. He was provided information on how to conduct the events; however, further assistance or additional followup monitoring were not offered. Informal reports from persons who were either associated with the center, or who maintained contact with it, indicated that both events were held on a regular basis (about twice each month) for six months after the studies were terminated, at which time the center director moved to a different state.

GENERAL DISCUSSION

The results of Experiment I suggest that inexpensive and therefore widely used prompting

procedures (*e.g.*, public service announcements) may not be as effective as more costly incentive offers in encouraging the elderly to participate in community-based service programs. Furthermore, although intensified prompting may be almost as effective as reinforcement, the former procedure is prohibitive from a cost-efficiency standpoint. Thus, these results both replicate and extend those of Reiss, *et al.* (1976).

The delayed effects found during the incentives condition of Experiment I, leading to simultaneous increases in Groups I and II, pose some threat to internal validity. Several factors may have been responsible. First, the incentives procedure for Group I was implemented several weeks before Christmas, and new participants who were asked why they waited to take advantage of the reinforcement offer reported that they were engaged in various holiday activities and were either unavailable or too busy during that period. Second, individuals from Groups I and II who responded to earlier recruitment attempts can be considered "high probability" participants. On the other hand, those not responding to earlier procedures would also be less likely to respond quickly to new recruitment attempts. Third, Group III either was not exposed or did not respond to earlier conditions, perhaps producing a more "instant effect". An additional factor that argues against fortuitous events as a controlling variable is the extremely long and stable baselines that were utilized, lasting from four to seven months.

The number of individuals recruited during Experiment I totalled only 25 across all groups and experimental conditions. Although this figure seems low, it is much higher than the usual 1% participation rate cited earlier. Additionally, the results of the consumer evaluation are encouraging, in that community program administrators found the present recruitment rate highly impressive.

Results of Experiment II showed that scheduled activities were minimally effective in maintaining meal-program participation. Although mean attendance on "Activities Days" was much

higher than on comparison baseline days, this difference was somewhat obscured due to the gradual increases in attendance seen during baseline throughout the experiment. On the other hand, clear and substantial increases were seen in attendance on "Give-Away Days", even though these were held only three times during the study. In fact, the extremely large number of participants present on the final "Give-Away Day" exhausted the meal supply at the center, and more food had to be ordered. The possibility of such periodic overflows in attendance, combined with the problem of sporadic participation on nonreinforcement days (*e.g.*, baseline), suggests that future applications of the present procedures will require careful attention to reinforcement scheduling aspects. In the present experiment, reinforcement was delivered on days announced in advance. A much preferable strategy would be to advertise the periodic availability of reinforcement, and to deliver it on random, unannounced days. Such a procedure would more closely resemble a variable-interval reinforcement schedule (*i.e.*, its unpredictability) than that used in the present study, and should produce more consistent levels of daily attendance. Additional variations in contingencies could include rewarding a participant for bringing a friend (*e.g.*, Pierce and Risley, 1974), arranging a raffle whereby rewards would be randomly delivered to a subset of the total participants (*e.g.*, Iwata, Bailey, Brown, Foshee, and Alpern, 1976), or requiring consistent levels of either group or individual participation as a criterion for reinforcement (*e.g.*, Kohlenberg, Phillips, and Proctor, 1976).

Future studies should also consider additional means of identifying effective yet low-cost reinforcers. The present experiments utilized movies and bingo games as reinforcing activities that could be delivered efficiently on a group basis at the meal site. Although these incentives were not very effective in generating higher levels of program participation, it is conceivable that alternative activities (*e.g.*, hobby clubs) could serve such a function. On the other hand, such

group activities may not, in general, be as appealing as the availability of a variety of reinforcers. The incentives used in the present studies were developed over a six-month period and were selected not only for their motivating value, but also on the basis of their possible therapeutic or functional value specifically to the elderly, and our ability to deliver them at a low cost. Examples of such incentives included house cleaning, car and yard work, health exams, vitamins, fruit and vegetable baskets, and appointments with an attorney. Many of these items and services were provided at no cost through various groups or individuals. Thus, rather attractive reinforcer menus may be developed through a careful analysis of the needs of the target population and existing community resources.

Finally, more empirical procedures for assessing consumer satisfaction must be developed. Behavior analysts have become increasingly cognizant of the fact that a demonstration of experimental control over a clearly defined response may not be sufficient to ensure that a given treatment or program will be adopted for use in settings other than those devoted primarily to research. Accordingly, recent studies have attempted to establish "social validity", both for the selection of the behaviors targeted for change (Quilitch, 1975) and for the degree of change (Briscoe *et al.*, 1975; Minkin, Braukmann, Minkin, Timbers, Timbers, Phillips, and Wolf, 1976), by asking potential consumers or knowledgeable referees subjectively to evaluate these aspects of the research. In addition, when cost-efficiency analyses are performed, potential consumers can then be asked to evaluate a program's behavior-change capabilities in light of its associated costs, as was done in the present study. Although these three aspects of program validation—consensus on the importance of the behavior to be changed, on the degree of change obtained, and on the feasibility of implementing change—provide much useful information to the researcher, evaluation procedures that rely solely on the use of verbal report data

are not necessarily accurate indicators of motor behaviors. It would seem that a useful dimension along which programs could be evaluated is the extent of their actual use. The director of the center where the present studies were conducted continued the program; however, a number of biasing factors and demand characteristics may have been instrumental. Future attempts at behavioral program validation could identify a sample of potential program users, generate questionnaire evaluations to select those persons interested in implementing the program (e.g., those who give the program a high rating or those who state that they would use the program), and, finally, make the program available to determine if those interested persons will actually use it. Interestingly, program usage then takes on the status of a dependent variable to be manipulated via program improvement.

REFERENCES

- Baer, D. M., Wolf, M. M., and Risley, T. R. Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis*, 1968, 1, 91-97.
- Bechill, W. D. and Wolgamot, I. *Nutrition for the elderly*. Department of Health, Education and Welfare Publication No. (SRS) 73-20236. Washington, D.C.: U.S. Government Printing Office, 1973.
- Briscoe, R. V., Hoffman, D. B., and Bailey, J. S. Behavioral community psychology: training a community board to problem solve. *Journal of Applied Behavior Analysis*, 1975, 8, 157-168.
- Burgess, R., Clark, R., and Hendee, J. An experimental analysis of anti-litter procedures. *Journal of Applied Behavior Analysis*, 1971, 4, 71-75.
- Clark, R. N., Burgess, R., and Hendee, J. C. The development of anti-litter behavior in a forest campground. *Journal of Applied Behavior Analysis*, 1972, 5, 1-5.
- de Lerma Salter, C. and Salter, C. A. The effects of an individualized activity program on elderly patients. *The Gerontologist*, 1975, 15, 404-406.
- Department of Health, Education and Welfare. *Reprints on elderly nutrition*. Technical Assistance Memorandum TA-AoA-76-3. Washington, D.C.: U.S. Government Printing Office, 1975.
- Everett, P. G., Hayward, S. C., and Meyers, A. W. The effects of a token reinforcement procedure on bus ridership. *Journal of Applied Behavior Analysis*, 1974, 7, 1-9.
- Geiger, O. G. and Johnson, L. A. Positive education for elderly persons: correct eating through reinforcement. *The Gerontologist*, 1974, 14, 330-335.
- Geller, E. S., Farris, J. C., and Post, D. S. Prompting consumer behavior for pollution control. *Journal of Applied Behavior Analysis*, 1973, 6, 367-376.
- Hoer, W. J. Application of operant techniques to the modification of elderly behavior. *The Gerontologist*, 1973, 13, 18-21.
- Hoer, W. J., Kafer, R. A., Simpson, S. C., and Hoyer, F. W. Reinstatement of verbal behavior in elderly mental patients using operant procedures. *The Gerontologist*, 1974, 14, 149-152.
- Iwata, B. A., Bailey, J. S., Brown, K. M., Foshee, T. J., and Alpern, M. A performance-based lottery to improve residential care and training by institution staff. *Journal of Applied Behavior Analysis*, 1976, 9, 417-431.
- Kohlenberg, R., Phillips, T., and Proctor, W. A behavioral analysis of peaking in residential electrical-energy consumers. *Journal of Applied Behavior Analysis*, 1976, 9, 13-18.
- McClannahan, L. E. and Risley, T. R. Design of living environments for nursing home residents: recruiting attendance at activities. *The Gerontologist*, 1974, 14, 136-140.
- McClannahan, L. E. and Risley, T. R. Design of living environments for nursing home residents: increasing participation in recreation activities. *Journal of Applied Behavior Analysis*, 1975, 8, 261-268.
- McNees, M. P., Egli, D. S., Marshall, R. S., Schnelle, J. F., and Risley, T. R. Shoplifting prevention: providing information through signs. *Journal of Applied Behavior Analysis*, 1976, 9, 399-405.
- Miller, L. K. and Miller, O. L. Reinforcing self-help group activities of welfare recipients. *Journal of Applied Behavior Analysis*, 1970, 3, 57-64.
- Minkin, N., Braukmann, C. J., Minkin, B. L., Timbers, G. D., Timbers, B. J., Fixsen, D. L., Phillips, E. L., and Wolf, M. M. The social validation and training of conversational skills. *Journal of Applied Behavior Analysis*, 1976, 9, 127-139.
- Pelcovits, J. Nutrition to meet the needs of older Americans. *Journal of the American Dietetic Association*, 1972, 60, 297.
- Pierce, C. H. Recreation for the elderly: activity participation at a senior citizen center. *The Gerontologist*, 1975, 15, 202-205.
- Pierce, C. H. and Risley, T. R. Recreation as a reinforcer: increasing membership and decreasing disruptions in an urban recreation center. *Journal of Applied Behavior Analysis*, 1974, 7, 403-412.
- Power, C. A. and McCarron, L. T. Treatment of depression in persons residing in homes for the aged. *The Gerontologist*, 1975, 15, 132-135.
- Powers, E. A. and Golinvaux, J. P. *The aged in an*

- affluent society: A resource book*. Ames: Iowa State University Cooperative Extension Service, 1972.
- Quilitch, H. R. A comparison of three staff-management procedures. *Journal of Applied Behavior Analysis*, 1975, 8, 59-66.
- Reiss, M. L., Piotrowski, W. D., and Bailey, J. S. Behavioral community psychology: encouraging low-income parents to seek dental care for their children. *Journal of Applied Behavior Analysis*, 1976, 9, 387-397.
- Sherwood, S. Sociology of food and eating: Implications for action for the elderly. *The American Journal of Clinical Nutrition*, 1973, 26, 1108-1110.
- Toepfer, C. T., Becknell, A. T., and Shaw, D. O. Remotivation as behavior therapy. *The Gerontologist*, 1974, 14, 451-453.
- Turner, A. J. and Vernon, J. C. Prompts to increase attendance in a community mental health center. *Journal of Applied Behavior Analysis*, 1976, 9, 141-146.
- White House Conference on Aging. *Toward a national policy on aging*. Department of Health, Education and Welfare Publication No. (OHD) 74-20911. Washington, D.C.: U.S. Government Printing Office, 1973.
- Witmer, J. F. and Geller, E. S. Facilitating paper recycling: effects of prompts, raffles, and contests. *Journal of Applied Behavior Analysis*, 1976, 9, 315-322.

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