

**THE INDUCTION OF SUSTAINED RECYCLING
BEHAVIOR THROUGH THE FOOT-IN-THE-DOOR
TECHNIQUE***

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ABSTRACT

Based on Bem's self-perception theory, the "foot-in-the-door" technique was utilized to induce the pro-environmental behavior of recycling in a sample with no prior history of such behavior. The sample consisted of 291 citizens of a small city chosen at random from non-student neighborhoods. Experimental conditions consisted of all permutations of three types of prior requests. Compliance with the final request (recycling), as assessed one to two months later and in an 18-month follow-up, was significantly higher for conditions eliciting compliance with multiple prior requests which required subject-originated actions, and particularly for compliance with a prior request high in task similarity with the final request. The results were discussed in terms of implications for induction of enduring subject-originated behavioral compliance.

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Psychologists have increasingly urged the application of their knowledge and skills to induce changes in the populace's behavioral responses to ecological/environmental and other social problems [1]. To date, research efforts concerned with pro-environmental behaviors have been largely restricted to studies of 1) the relationship of such behaviors to attitude, personality, and demographic characteristics [2-5]; or 2) attempts to modify behavioral responses through application of S-R based behavior technology. While the former have been quite successful in locating person variables which predict pro-environmental behavior, the implication is that to produce these desired outcomes, massive education/socialization programs are needed to alter the population's pre-behavior attitudes, beliefs, and values. In addition, it may be that the prediction is based on the behavior producing congruent attitudes and values. The second approach has shown some success in increasing the incidence of the target behavior. Several studies have shown prompting and/or reinforcement to be effective (in the short run) in increasing the collection and proper disposal of litter in a variety of settings [6], the purchase of pro-ecological products [7], and in the change of energy use patterns [8]. However, there appear to be several difficulties with the behavioral approach. First, follow-up data tend to show no long term changes in behavior patterns. Second, most of the behaviors modified are specific to a particular place or event and may not transfer to other situations. Third, the techniques usually require supervision and/or a reward dispenser, making them rather inconvenient and expensive in the long run. Fourth, many reward techniques may be counter-productive in that subjects may generate more anti-environmental behavior (e.g., littering) in order to obtain rewards. Such an effort was recently observed in California in the rapid growth of bottle counterfeiting when bottle deposits were substantially increased. Fifth, it has been observed in most of the prompting studies that any single treatment seems to work as well as any other one or combination of treatments. The prompting effect may be due to the economic or psychological value of a reinforcer, or it may be the result of new information, attentional factors, guilt induction, heightened norms, or some other variable. It then becomes difficult to parcel out causal factors in order to design programs for other settings. Finally, the utility of prompting is questionable when other less ambitious and costly techniques produce the same or similar results—viz., litter control has been increased simply by supplying more containers and decorating them [9] and by anti-litter educational campaigns [10]. Geller, Whitney, and Orebaugh found

that providing a rationale ("to recycle") produced the greatest effect, suggesting again that more attention needs to be paid to cognitive factors in prompting programs [11].

A more fruitful approach to producing long-lasting changes in pro-environmental behavior may be found in the social psychological literature. For example, Freedman and Fraser successfully obtained compliance in community members by using the gradation, or foot-in-the-door technique [12]. Based in the consistency theory literature, their research showed that inducing subjects to perform a simple task similar in nature to that ultimately desired produced a high compliance rate (with appropriate controls for familiarization, agreement only, etc.). A second study examined the effect of issue similarity in the prior and final requests. Although issue similarity did not have a significant effect, subjects in the experimental group having similar tasks and similar issues tended to comply with the larger, final request more often (76% vs. 47%). The overall compliance effect was apparently not due to simple involvement since compliance occurred even when the issues were not the same. Freedman and Fraser speculated that ". . . what may occur is a change in the person's feelings about getting involved or about taking action. Once he has agreed to a request, his attitude may change [12, p. 201]."

Freedman and Fraser's explanation of their results is conceptually similar to Bem's self-perception theory, which suggests that individuals make inferences about their attitudes and beliefs on the basis of self-observations of their behaviors [13]. Presumably, then, compliance with an initial request results in a perception of the self which is consistent with the subject's actions. That is, the subject attributes the cause of his behavior to an internal disposition and subsequent behaviors would then be consistent with the new self-perception. To test this notion, Pliner, Hart, Kohl, and Saari modified the Freedman and Fraser technique by varying the magnitude of the prior requests [14], by assessing actual compliance with the larger request (as opposed to a stated intention to comply), and by assessing compliance on a continuous dependent variable. An overall compliance effect was observed, but size of prior request produced no differential effect and no differences were observed in amount of compliance. The authors interpreted their results as consistent with the self-perception explanation since the presumed subjective change in the participants was qualitative rather than quantitative. Snyder and Cunningham designed prior requests so as to produce either a high likelihood of

compliance (small request) or non-compliance (large request) [15]. It was expected that subjects who complied with the small request would come to perceive themselves as compliers and hence would be more likely than a control group to agree to a subsequent moderately sized request. Subjects who refused to comply with the large prior request should, in a similar fashion, perceive themselves as non-compliers and refuse to comply with the subsequent moderate request. The results confirmed these expectations. Cann, Sherman, and Elkes investigated the effects of the initial request size and the timing of the second request upon compliance rates [16]. A small prior request produced compliance for an intermediate later request whether the later request followed the first immediately or was delayed from seven to ten days. A large prior request (which was generally refused) produced non-compliance with the delayed intermediate-size request, as expected from the Snyder and Cunningham "door-in-the-face" effect. However, subjects did comply with the second request if it immediately followed the larger request, a result interpreted as due to a bargaining-concession effect.

In spite of the support given to the self-perception theory interpretation of the foot-in-the-door technique by the above and other studies, several important questions remain concerning its applicability to long term pro-environmental behaviors [17, 18]. First, most of the research in this area has examined only compliance with a request made immediately after the initial request; Cann, et al., were able to show an effect for a seven to ten day delay. However, it is not known whether the supposed changes in perceptions of the self are sufficient to result in an enduring behavioral change. Second, prior studies have been concerned with evoking rather limited, relatively passive, and one-time-only behaviors, such as displaying a sign, donating funds to charity, responding to a survey, or handing out a few pamphlets. In addition, nearly all of these studies assess only the subject's stated willingness to comply—not actual compliance. And the compliance or statement of willingness to comply is usually assessed in the presence of the experimenter. An important issue is whether or not this approach can successfully induce behavior changes which require more extensive, active, and long-term efforts which are sustained in the absence of the experimenter. Third, it is not known whether multiple prior compliance increases the supposed changes in self perceptions and, hence, increases the likelihood of compliance with the criterion request. Finally, the question of the importance of similarity of prior requests with criterion requests

has not been clearly answered. Freedman and Fraser found issue similarity to be unrelated to later compliance. Harris, as well as Snyder and Cunningham, observed compliance with different issues. Pliner, et al., Cann, et al., and Cialdini, et al., all observed compliance with similar issues. Thus, it would appear that any prior compliance is sufficient for later compliance, at least for the kinds of requests made in these studies. However, it seems unlikely that mere compliance to any request will result in long-term, self-sustained, active behavioral change—e.g., why should responding to a survey (regardless of its content) induce the respondent to begin saving recyclable materials and carry them periodically to a central collection center? It seems likely that prior and criterion requests must be similar in both content and actions required in order to induce long-term behavioral change.

The purpose of the present study was to provide evidence which would clarify the four issues raised above.

Method

SUBJECTS

Subjects were 291 adult citizens of Athens, Ohio (a rural university community of about 16,000 permanent residents), drawn from all non-student neighborhoods of the city, and assigned randomly to treatment conditions. Thus, effects due to factors which might vary systematically by neighborhood (e.g., social class, education, proximity to recycling center) were precluded.

PROCEDURE

The study contained three experimental manipulations: a survey (*S*), an appeal (*A*), and a letter (*L*). The survey (*S*) assessed the subjects' knowledge of local and national issues concerning recycling, and was incidentally used to ascertain which potential subjects were already recycling. Households already recycling were eliminated from the study since 1) the purpose of the experiment was to induce recycling behavior, and 2) inclusion of persons already committed to recycling would artificially inflate compliance rates. The surveyors were graduate students in psychology who introduced themselves as representatives of a community group interested in working to promote environmental protection. In the appeal manipulation (*A*) subjects were asked immediately upon completion of the survey to save cans for recycling for one week.

These subjects were given both a plastic bag in which to store the cans and a handout of helpful recycling hints. One week later the bags of cans were collected. In the letter manipulation (*L*), subjects were sent a letter through the mail one week after the can collection which described the benefits of a community-wide recycling program. It also included a request that each subject mail an accompanying postcard to (or otherwise communicate with) his or her city council representative indicating support for expanded recycling programs in Athens. The postcards also allowed the subjects the option of expressing negative sentiment (none used this option). The letters were sent on stationary identifying the sender as the same group described in the survey manipulation.

The three experimental manipulations were combined to form the following three conditions in the “foot-in-the-door” technique:

1. the three-step group: survey, appeal, and letter (*SAL*);
2. the two-step groups: survey and appeal (*SA*), survey and letter (*SL*), or appeal and letter (*AL*); and
3. the one-step groups: survey only (*S*), appeal only (*A*), or letter only (*L*). A control group (*C*) received no manipulations.

The dependent variable in this study was whether the subject began to use the city’s recycling center. This was assessed through a disguised telephone survey conducted one to two months after the letters were mailed. The caller was identified as a member of a graduate student class in city planning who was working on a class project on use of city facilities. In this survey each subject was asked questions concerning his participation in several community activities (the Community Involvement Index). Embedded within this survey were questions regarding the subject’s use of the city’s recycling center. At this point in the study a total of fifty-four subjects were lost due to the following reasons: refusal to respond to the survey ($n = 19$), no answer after repeated calls ($n = 14$), telephone numbers not available ($n = 21$). These were approximately equally distributed across conditions.

A follow-up survey was made eighteen months after the experimental manipulations (16-17) months after the original assessment of recycling behavior. In this survey, an additional four subjects were lost because of change of address. The interviewer was identified as a researcher working on a newspaper article about the use of city facilities. The same questions were asked as in the initial telephone survey (the Community Involvement Index). The coefficient of reliability of total scores on the Index was .96.

It was hypothesized that compliance rates for the long term behavior request (use of the community's recycling center) would be ordered as follows, from the highest to lowest:

- a. subjects in the *SAL* condition who complied with all three requests;
- b. subjects in the *AL*, *SA*, and *SL* conditions, respectively, who complied with both requests;
- c. subjects in the *A*, *L*, and *S* conditions, respectively, who complied (all subjects receiving the *S* treatment complied); and
- d. subjects in the *C* group.

The order of magnitude of hypothesized effects was based on similarity of prior and final requests, degree of effort presumed to be involved in compliance, and number of prior requests.

Since it was not possible to screen subjects assigned to the *L* and *C* groups for prior recycling without such screening constituting a treatment, the proportion of compliers for these two groups was determined by subtracting from their total number of compliers that number which would be expected on the basis of the overall rate of recyclers throughout the city. This rate (29.9%) was determined from the proportion of all potential subjects ($n = 204$) assigned to receive the *S* treatment (either alone or in combination with others) who reported that they already were recycling ($n = 61$) and who, consequently, were excluded from the study.

Results

As is illustrated in the upper portion of Figure 1, the predicted hierarchy of effectiveness of the experimental manipulations was substantially confirmed. The solid line in Figure 1 represents the percentages of subjects in each condition who complied with all prior requests and who also reported initiation of usage of the community recycling center. The broken line represents the same results for subjects who complied with the *A* request but may or may not have complied with the *L* request. The trends for both sets of data are similar, although compliance rates were dramatically higher for complete compliers. A series of chi-square analyses were performed on all possible comparisons, the results of which are illustrated immediately below the upper portion of Figure 1. Conditions differing significantly at $p < .05$ or less do not share a common underline; solid lines represent the results for complete compliers, while broken lines represent the results for compliers to *S* and *A* but not necessarily to the *L* manipulation.

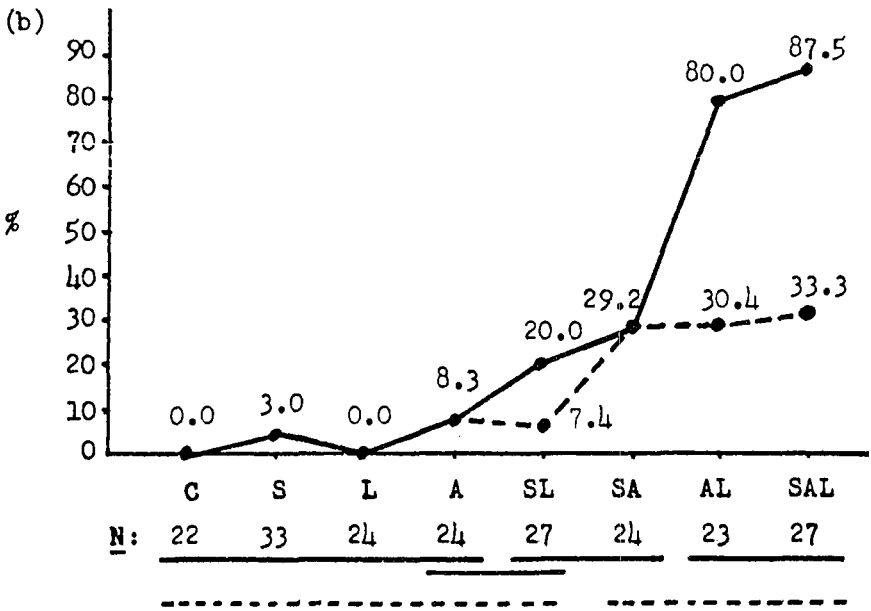
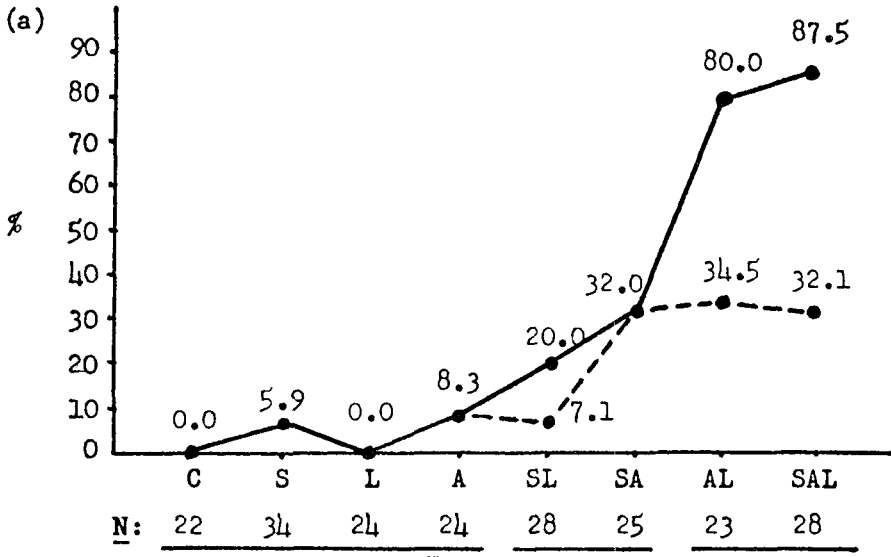


Figure 1. Percentages of participants reporting recycling behavior at (a) 1-2 months, and (b) 18 months after treatments.

Note: Treatments not sharing underline differ at $p < .05$ or less.

For the complete-complier analyses, it can be seen that the *AL* and *SAL* conditions were equally effective in producing recycling, with rates at 80 per cent or higher. Next most effective were the *SA* and *SL* conditions, which produced more modest recycling rates of 32 per cent and 20 per cent, which did not differ significantly. The remaining three experimental conditions, *S*, *L*, and *A* resulted in zero or near zero recycling rates, none of which differed significantly from the control group which received no treatments.

When compliance with the *L* manipulation is ignored, the results are substantially the same, but at lower recycling rates. Thus, *SA*, *AL*, and *SAL* all produce similar recycling rates ranging from 32 per cent to 34.5 per cent. These differ significantly from all other conditions. The *S*, *L*, *A*, and *SL* conditions yielded recycling rates ranging from zero to 7.1 per cent, which did not differ significantly from one another nor from the control condition rate.

The eighteen-month follow-up data are illustrated in the lower portion of Figure 1. Four subjects were lost because of having moved from the community. The pattern of results obtained was highly similar to the original recycling rates, indicating high durability of the induced behavior change. Nearly all participants who were initially induced to begin recycling were continuing to do so a year and a half later.

Secondary expectations concerning communications with city council representatives (*L* treatment) as a function of compliance with prior requests did not receive support, although the results were in the anticipated directions. However, the treatment did result in 32 of 146 people in those conditions (or about 22%) making their feelings known to their representatives. While the treatment manipulations did not prove to be statistically significant, it is gratifying to observe that even this number of participants was induced to engage in a behavior which interviews with council representatives prior to the study indicated had never before occurred.

Scores on the Community Involvement Index did not differ significantly at either Time 1 or Time 2 for participants who did and did not comply with the recycling request, nor were there differences between experimental and control group participants. Thus, the initiation of recycling activities cannot be attributed to a greater involvement-orientation on the part of the compliers. At the same time, this result would seem to rule out a "yea-saying" or social desirability interpretation of the self-report measure of recycling since there is no reason to believe that recycling would be seen by the respondents as more socially desirable than the

other activities assessed in the telephone Community Involvement survey.

Discussion

While behavior technologists have often been successful in inducing short-term pro-environmental behaviors on the part of target individuals, the results of the present study provide evidence of the effectiveness of a cognitively-oriented program in the induction of enduring, subject-initiated and sustained pro-environmental activities.

The major findings of the present study are highly consistent with the Bemian self-perception theory interpretation of the foot-in-the-door, or gradation, technique. Previous research has shown that compliance with a small prior request apparently results in a change in perception of the self such that the individual is more likely to agree with a subsequent, relatively larger request. The present research has demonstrated the viability of this approach of inducing not merely a stated willingness to comply in response to the experimenter's immediate request, but in inducing subject-originated compliance, in the absence of an experimenter, which is sustained over a long period of time.

However, the present findings also indicate certain limitations in the previous conceptions of the foot-in-the-door phenomenon. Those conditions (*AL* and *SAL*) which showed the highest rates of compliance on the dependent measure (recycling) were those in which subjects had complied with a similar earlier request (to save cans for a week) and who also complied with at least one other prior request which required substantial effort on the part of the subject (communicating with a council representative about recycling needs). Mere compliance with any related earlier request proved insufficient for evoking recycling—i.e., the *S*, *L*, and *A* treatments alone had no effect. Compliance with any two earlier requests produced some recycling, but the pervasiveness of recycling differed by treatment conditions. Those participants in the *SL* condition who complied with both requests were significantly more likely to recycle than either the control group or any of the single treatment groups. But recycling was greater still when the treatments consisted of the *A* treatment in conjunction with either the *S* or *L* treatment. Recycling was greatest, however, as a result of the *A* treatment in conjunction with either the *L* alone or the *S* and *L* treatments together. Thus, contrary to earlier foot-in-the-door studies, the present findings indicate that the induction of active

and enduring compliance with the final request cannot be produced by compliance with a single prior request, even if that requested task is highly similar in nature to the final task. Compliance with such requests, in the Bemian view, may produce a perception of the self as sympathetic to recycling but does not result in the self attribution of being a recycler. This would seem to indicate that the production of behavior requires more than simple manipulations which may result only in changes of attitudes. Compliance with two prior requests, even if one is passive in nature (i.e., the survey), apparently necessitates a self attribution of being more behaviorally disposed toward recycling. Such an attribution appears to be even stronger if the multiple prior requests are both of an active nature and require a substantial effort on the part of the individual (i.e., the *A* and *L* manipulations). Such effortful compliances would seem to preclude the more simple self attribution of "I am in agreement with the concept of recycling" in favor of something more akin to "I am inclined to recycle."

The results are theoretically interesting for two additional reasons. First, the immediate and passive compliances elicited in previous studies did not require self perceptions beyond the belief or emotion component of attitudes toward recycling. The achievement of lasting behavioral compliance which is actively performed in the absence of the experimenter apparently requires self perceptions concerned with the behavioral disposition component of attitudes. Second, this effect is not simply the result of behavior predicting behavior. If this were the case, compliance with the can-saving appeal (*A*) alone would predict later recycling. Subjects apparently did not comply with the ultimate recycling request simply to maintain consistency in the eyes of the experimenter, since the subjects had no reason to believe they were under further observation. Nor was the compliance simply the result of new information, since subjects in the single treatment conditions showed either negligible compliance rates or none at all, and did not differ from the pre-experimental community rate. Thus, multiple prior compliance, particularly when involving subject-originated activities, apparently requires that the subject make dispositional attributions about the self of a much stronger nature than is evoked by a prior compliance of a one-time, passive nature.

Based on the results of previous studies, one might expect to find the foot-in-the-door phenomenon in effect within the treatment conditions—i.e., one should observe more compliance with the *A* request if preceded by compliance with the *S* request, and more with the *L* request if preceded by compliance with *S*

and/or *A*. No differences were observed for compliance with the *A* request between groups of subjects who received or did not receive the *S* treatment. In addition, compliance in the *A* and/or *S* treatments did not significantly affect compliance with the *L* request, although trends were observed in the expected directions. The authors interpret these failures to observe the foot-in-the-door phenomenon between the "prior request" treatments as due to the lack of similarity in the requests. To comply with the survey does not necessitate a self perception of a behavioral disposition. To comply with the appeal to save cans may produce such a dispositional attribution but it need not extend to political involvement. This is not to negate, however, the effect that compliance with combinations of these requests has on compliance with the recycling request. The dispositional attributions made by compliers to combinations of the *S*, *A*, and *L* requests, while not necessarily affecting one another, are quite consistent with the ultimate compliance with the recycling request.

From the Bemian perspective, then, an important observation can be made concerning the failure of the behavior technology approach to induce lasting changes in subjects' behaviors. It would seem that the administration of rewards or the use of prompts may result in the subject deciding that the reward is sufficient justification for the behavior, resulting in an attribution of the cause for compliance to the situation rather than to some internal disposition. Thus, in the later absence of the situational variable, compliance need not recur. The behavior technology approach, therefore, may be useful to the extent that the designers structure the situation to produce internal attributions on the part of complying subjects—a somewhat difficult task given the nature of the approach.

In sum, the present study has overcome three major shortcomings of previous studies based in both behavior technology and the foot-in-the-door phenomenon—namely, a) the use of dependent variables which require relatively passive and/or b) one-time-only responses c) in the presence of the experimenter. Compliance was greatest as the result of multiple compliance to effortful requests, one of which is highly similar in nature to the criterion behavior. The results of this study extend the applicability of the cognitively based foot-in-the-door technique to compliance to behavioral requests which require a sustained, active response from the participant, thereby substantially increasing the utility of the technique for promoting prosocial behaviors in a variety of environmental problem areas.

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