ENCOURAGING COLLEGE STUDENTS TO SUPPORT PRO-ENVIRONMENT BEHAVIOR
Effects of Direct Versus Indirect Rewards

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ABSTRACT: Ways to increase the delivery of a special thank-you card following behavior that protected the environment or helped another person were addressed. In Study 1, direct rewards for the target behavior were compared with indirect rewards for making a promise to emit the target behavior. Rewards for promising to give out thank-you cards resulted in the most participation and led to the most cards used per participant. In Study 2, students in one class received coupons for a raffle if they signed a petition to hand out two or more thank-you cards (indirect rewards). In a second class, students got one opportunity to win prizes in a raffle for each card delivered (direct rewards). Significantly more cards were distributed in the Direct Reward condition. However, significantly more students handed out at least one card in the Indirect Reward condition. Implications for encouraging college students to support pro-environment and pro-social behaviors are discussed.

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In large-scale behavior change efforts, extrinsic rewards are often used to motivate the occurrence of desirable behavior. When these rewards are linked directly to the target behavior, they are typically of two types: immediate or delayed. Reinforcement theory holds that if rewards increase the rate or probability of the behavior on which they were contingent, the behavior was positively reinforced. It is widely accepted that immediate rewards are more powerful reinforcers than delayed rewards of the same magnitude and probability of occurrence (Skinner, 1953).

Geller, Rudd, Kalsher, Streff, and Lehman (1987) defined immediate direct rewards as those offered "on the spot" to people emitting the target behavior. These include, for example, prize coupons or lottery tickets given to seatbelt-buckled drivers as they enter or exit a parking lot. Geller, Paterson, and Talbott (1982) used such a strategy to increase safety-belt use in a university setting. Furthermore, by distributing safety-belt promotion flyers in places such as drive-in windows at banks, Geller, Johnson, and Pelton (1982) increased safety-belt use in a community setting, and Geller (1983) increased safety-belt use among workers at a large industrial site.

Direct and delayed rewards are those provided to a random sample of participants who had been identified at an earlier time as emitting the target behaviors. This strategy has generally involved a raffle drawing (or lottery) during which winners are selected from a pool of participants determined from behavioral observation (Geller et al., 1987). Rudd and Geller (1985) increased the use of safety belts among students, faculty, and staff of a large university by having campus police record the license plate numbers of buckled drivers and using these observations as entries in several weekly prize raffles throughout the university semester. A similar program was used to increase the delivery of recyclable newspapers to a central collection site (Geller, Chaffee, & Ingram, 1975; Witmer & Geller, 1976).

Whether immediate or delayed, direct reward programs offer positive consequences contingent on the occurrence of a specific target behavior. This is not the case for a third community-based reward program defined by Geller et al. (1987) as indirect and delayed. For this approach, participants promise explicitly to perform a particular target behavior by signing a card that becomes a coupon in a raffle drawing. In this case, the rewards are contingent

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not on the target behavior but on a commitment to perform the target behavior. The rewards are, therefore, indirect with regard to a desired behavior. It is presumed there will be a correspondence between saying (i.e., making the commitment) and doing (i.e., following through on the commitment) because such consistency has likely been reinforced in the past (Biglan, 1987; Rogers-Warren & Baer, 1976).

Indirect rewards have been used effectively to increase the use of vehicle safety belts on a university campus (Geller, Kalsher, Rudd, & Lehman, 1989). Specifically, students, faculty, and staff of a large university were offered entry into weekly raffle drawings after signing a promise card that committed them to use their safety belts over the course of a university semester. Those who signed the promise to buckle up increased their use of safety belts 50% above their baseline for up to 1 year after the termination of the intervention contingencies. Similar indirect reward strategies have increased (a) safety-belt use on a naval base (Kalsher, Geller, Clarke, & Lehman, 1989), (b) pedestrian crosswalk use and driver yielding on a university campus (Boyce & Geller, 2000), and (c) the delivery of recyclable newspapers for a community-resource recovery program (Katzev & Pardini, 1987).

Despite these findings, little empirical evidence has accumulated to demonstrate the mechanism of "say-do" correspondence, although it has been argued that consistency is a quality valued by our society (Cialdini, 1993). In other words, people maintain a consistency between saying and doing because consistent behavior has a history of social reinforcement, and inconsistent behavior has likely been punished (Rogers-Warren & Baer, 1976). Consequently, the mechanism maintaining "say-do" correspondence is likely negative reinforcement through avoidance or escape of aversive "feeling states" that accompany inconsistent behavior (Friman, Hayes, & Wilson, 1998).

In their comprehensive review of industry-based reward programs to increase vehicle safety-belt use, Geller et al. (1987) found direct reward strategies to be more effective than indirect reward strategies in the short term. However, the indirect reward approach was more effective over the long term. Although within reinforcement theory, such effects could be explained through rule governance (e.g., Malott, 1992), we could find no explicit comparison of a direct versus indirect reward approach to behavior change within the same study. Nonetheless, based on the conceptual framework of Geller et al. (1990), we expected that providing rewards for a promise would add the need to reciprocate to the motivation for consistency (presumed to be produced by a promise). And thus, it is likely that reciprocity would also contribute to the greater impact of this intervention.

Reciprocity is a perceived obligation to do for others as they have done for us, often in an effort to reinforce positive evaluations or sentiments (Cialdini,

1993). Thus, it was predicted that such an indirect reward intervention would produce more behavior change than a promise-only intervention or a simple direct reward intervention. An experimental investigation of these components of say-do correspondence with adults and its impact on pro-environment behavior was a primary purpose of the two studies reported here.

The target behavior in the present research was the delivery of a special thank-you card following another person's behavior that protected the environment or helped another individual. In other words, we wanted college students to recognize and reward others for going beyond the call of duty on behalf of the environment or another person. Thank-you cards have been applied successfully in industrial settings to encourage employees to go out of their way for the safety of coworkers (Geller, 1997; Roberts & Geller, 1995). In the current research, the thank-you card strategy was used to encourage students taking introductory psychology to reward actively caring behaviors among their peers and the university staff and faculty. Thus, this research explored ways to teach and encourage pro-environment and pro-social behaviors throughout a campus community while also investigating the mechanism of say-do correspondence.

STUDY 1

METHOD

Participants and Setting

The subjects were undergraduate psychology students at a university in southwest Virginia. The university enrolls about 29,000 students on a large self-contained resident and commuter campus. The student population is predominantly white (83% at the time of the study). All participants were randomly assigned to one of four experimental conditions and met as a group with the senior author or a trained research assistant three times throughout the university semester. Students received extra credit toward their psychology grade for their participation in each experimental session.

The original pool of subjects was 68, but 27 subjects did not attend all of the sessions and therefore were dropped from the data analysis. The final pool of participants included 27 females and 14 males with a mean age of 19.5 (range = 18 to 23 years).

Procedure

Session 1: Baseline. All participants were treated identically at the first meeting of each experimental group. On arriving at a classroom on the university campus, students were first greeted by the experimenter (the first author), who introduced himself. Then, while informed consent documents were signed, the experimenter described the purpose of the study as an "innovative campus program" to reward people for helping the environment or other people.

Participants were issued perforated thank-you cards, which they were asked to give to anyone they felt had "gone beyond the call of duty" to care for the environment or to help another person. The students were provided with examples of pro-environment and pro-social behaviors that deserve a thank-you card and were then required to come up with some examples of their own.[1] Afterward, the protocol for completing the thank-you card and returning a portion of it to the psychology department was specified. Participants were asked to use the cards over the next 3 weeks. All participants were issued 30 thank-you cards and told where they could obtain more cards if they ran out.

Figure 1 depicts the "Actively Caring Thank-You" card, which includes a space to acknowledge the behavior that motivated the thanking, the location to which the card should be returned or mailed, the subject identification number, card number, and a special actively caring logo. The card was attractive, colored with university colors, and printed on glossy cardstock.

For tracking purposes, participants were asked to return a portion of the card (which measured the size of a legal U.S. postcard) containing the last four digits of their social security number. A card could be returned by placing it in a drop box located in the psychology department or by mailing it to the address printed on it. Subjects were asked to return this portion of the card within a week after the thank-you portion had been given to someone. Each card contained a unique number and therefore could be tracked per experimental condition.

After the thank-you cards were distributed and explained, the experimenter gave a brief motivational speech to encourage participants to use the cards. Then, subjects were thanked for participating and given an appointment card that randomly assigned them to one of the four experimental conditions by indicating the date and location of their next session.

Session 2: Intervention. On the weekend prior to the intervention phase, subjects were contacted by telephone and reminded of their second appoint-

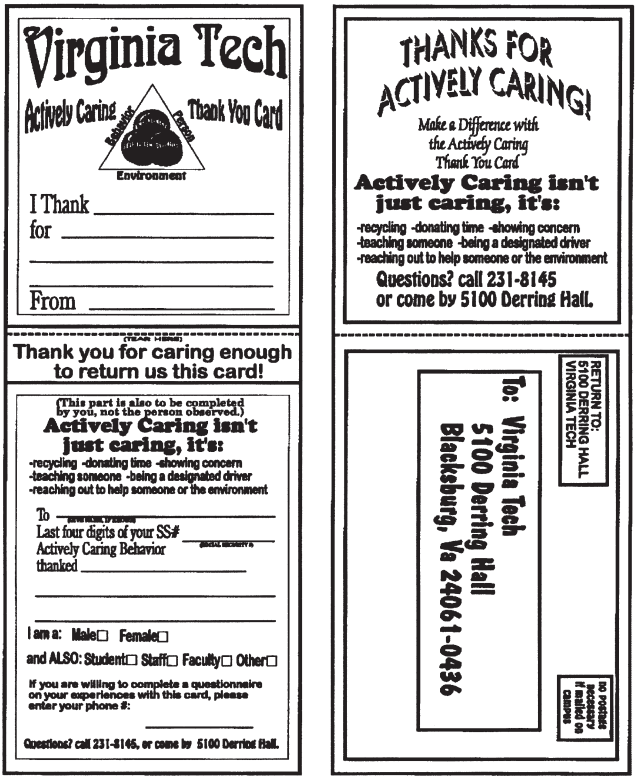

Figure 1: The Actively Caring Thank-you Card, Which Participants Were Asked to Use

NOTE: The card was printed on glossy cardstock, and the five different colors were bright and consistent with the university colors.

ment. A trained research assistant read from a script that identified the caller as a research assistant for the study, indicated the time and location of the session, and reminded the subject of the opportunity for extra credit. If the subject did not answer the phone, the research assistant did not initially leave a message. Instead, a second attempt was made to contact the student at a later time. If the subject did not answer the second call, and if it was possible, the research assistant left a message either with a roommate or on a recording machine. About 85% of the subjects were successfully contacted and reminded of their appointments.

During Session 2, different intervention conditions were manipulated to increase subsequent use of the thank-you card. As they arrived at the research

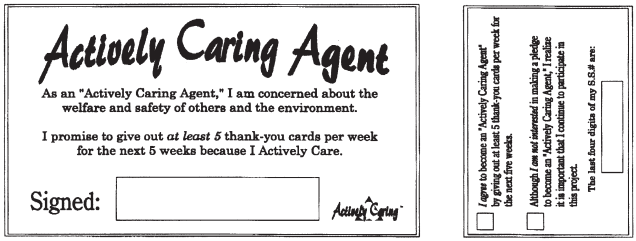

Figure 2: The Promise Card, Which Experimental Subjects Were Asked to Sign in Study 1

room, the experimenter greeted each participant, then collected all thank-you cards, including those completed but not returned previously and those unused. The experimenter re-read the cover story and asked the participants if they had any questions or comments. All other aspects of Session 2 were identical to the procedures followed in Session 1, except for the following manipulations:

Control. Subjects were simply asked to continue using the thank-you cards.

Promise only. Subjects were asked to sign a promise card to become an "Actively Caring Agent" and hand out at least five thank-you cards a week for the next 5 weeks.

Figure 2 shows the promise card as adapted from that described by Geller and Lehman (1991). It displays a rationale for the target behavior and provides a space for subjects to sign their name and thereby demonstrate commitment to emit the target behavior. Like the thank-you card, this card was attractive and perforated, with one portion to be returned to the research team and the other to be kept by the subject as a reminder of his or her commitment to distribute the thank-you cards. Promise signers were identified by their unique subject number assigned during Session 1.

Indirect reward. Subjects were asked to sign the same promise as in the No Reward condition, but they were told that for signing the promise, they would receive an attractive T-shirt and insulated travel mug, both displaying a unique actively caring logo. Subjects were shown the T-shirt and mug prior to card signing and received them immediately after making the promise.

Direct reward. Subjects were asked to sign the promise and told if they met the terms of the promise, they would be rewarded with the T-shirt and mug described above. They were shown the shirt and mug prior to card signing.

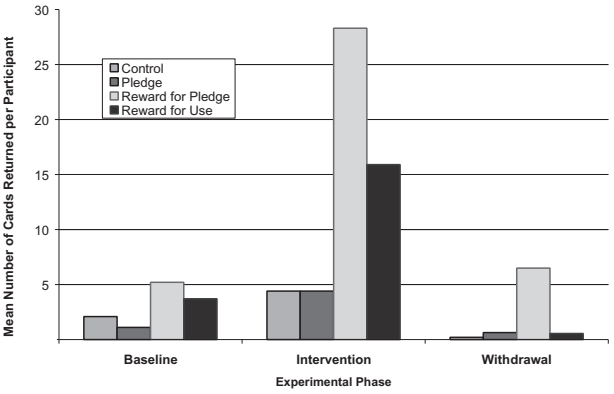

Figure 3: Average Number of Cards Returned per Participant in Study 1 as a Function of Experimental Condition and Phase

Session 3: Withdrawal. A third meeting of each experimental group was scheduled to announce the withdrawal of all contingencies. At this time, those Direct Reward subjects who had succeeded in meeting the terms of their promise were rewarded with their two prizes. The format of this meeting was essentially the same as the initial baseline meeting (Session 1). Participants were given 30 thank-you cards and encouraged to use them. Prior to being excused, they were asked to write or call the psychology department if they were interested in a formal debriefing.

RESULTS

Promise Card Signing

A chi-square analysis revealed a significant effect of intervention condition on number of card signers, $\chi^2(2, n = 40) = 9.39, p < .01$. Specifically, 36% of the No Reward subjects (n = 11), 64% of the Direct Reward subjects (n = 14), and 93% of the Indirect Reward subjects (n = 15) signed the promise to hand out five thank-you cards a week for the 5 weeks of intervention.

Thank-You Card Use

Each thank-you card returned and legitimately filled out was recorded according to a unique subject number and the date received. Figure 3 shows the average number of cards returned per participant during each phase of the study.

The number of cards returned was used as the dependent measure in a 4 group (Control, Promise Only, Reward for Promise, Reward for Card Use) × 3 phase (Baseline, Intervention, Withdrawal) mixed model analysis of variance (ANOVA). Significant main effects were found for phase, $F(2, 78) = 31.65$ and group, $F(3, 39) = 7.69$, $p < .001$. The phase-by-group interaction was also significant, $F(6, 78) = 4.87$, $p < .001$.

Planned post hoc comparisons using Fisher's LSD showed a significant increase in card use during intervention as compared to baseline for the Indirect Reward group (from 5.1 to 28.3 cards per participant) and the Direct Reward group (from 3.7 to 15.9 cards per participant), $p < .01$. A significant decrease in thank-you card use from intervention to withdrawal was also found for the Indirect Reward group (from 28.3 to 5.3 cards per participant) and the Direct Reward group (from 15.9 to 1.0 cards per participant), $p < .05$. No significant simple effects were found for the Promise Only or the Control groups.

DISCUSSION

The results support reinforcement theory as well as the procedure of combining a reward with a written commitment. Reinforcement theory was supported in that the introduction of rewards contingent on commitment increased the probability of promise-card signing. Furthermore, only the reward conditions produced a significant increase in the use of thank-you cards (from baseline to intervention). This effect was maintained while the interventions were in place but quickly disappeared when the interventions were withdrawn.

A comparison of the average number of cards returned during each intervention week by promise signers versus nonsigners suggests that making a commitment to do something also increases the likelihood the target behavior will be performed. In fact, regardless of experimental condition, promise signers were significantly more likely to return thank-you cards than nonsigners (3.0 versus 0.5 cards per week, respectively). These findings are analogous to the say-do paradigm studied by Rogers-Warren and Baer (1976), where participants' behavior presumably occurs because of an effort to maintain a consistency between saying and doing (Cialdini, 1993).

It is noteworthy, however, that if one conceptualizes the card use by the Indirect Reward participants as reciprocating (rewarding another person) for a reward already provided them (cf. Cialdini, 1993), and the behavior of the Promise Only participants as an effort to maintain a consistency between saying and doing (e.g., Rogers-Warren & Baer, 1976), the current data suggest

that reciprocity is a more powerful mechanism for behavior change than consistency. In fact, that the greatest card use was by the Indirect Reward participants, who signed a promise and received an immediate reward, suggests that providing rewards in advance is more powerful than the more standard direct reward intervention that provides a reward after multiple occurrences of the desired behavior.

Study 2 was designed to compare explicitly the impact of indirect rewards versus direct rewards for encouraging the use of actively caring thank-you cards. Unlike Study 1, however, the indirect reward in Study 2 was not provided until after the opportunity to perform the target behavior. This was done to prevent the artifact of reciprocity presumed to occur in Study 1. We applied the thank-you card program in two large classes of introductory psychology, thereby studying the viability of teaching a mechanism for rewarding pro-environment and pro-social behaviors as part of a university course.

STUDY 2

METHOD

Participants and Setting

Subjects were undergraduate students from two sections of a large introductory psychology lecture course at a university in southwest Virginia. One class met Mondays and Wednesdays, and the other met on Tuesdays and Thursdays. Each class was represented by equivalent populations of students enrolled in the course to satisfy a university core requirement. A total of 323 females and 230 males were enrolled in the Monday/Wednesday section, and 297 females and 347 males were in the Tuesday/Thursday section. About 85% of these students were white.

Materials

The same thank-you cards used in Study 1 were used (see Figure 1). The cards were tracked by the last four digits of the students' social security numbers. In addition, cards given to subjects in the class that met on Tuesdays and Thursdays were marked unobtrusively with a *VT* to distinguish them from cards used by students in the Monday/Wednesday class.

Procedure

A coin was flipped to assign one class to an Indirect Reward condition and the other to a Direct Reward condition. At the beginning of a 3-week baseline period, the instructor (the second author) discussed actively caring behavior, gave examples of pro-environment and pro-social behavior, required students to contribute examples of their own, and explained how to use the thank-you card. The students were then asked to deliver the upper portion of the card (see Figure 1) to people they observed performing desirable pro-environment or pro-social behaviors. The lower portion was to be returned to the instructor before or after class or dropped in a specially labeled box located in the psychology department. A list of five pro-environment and five pro-social behaviors was displayed in the lecture hall with two overhead projectors and two screens.[2]

Students were told they could take as many cards as they wanted when they left class, or they could choose to take none. During the course of the baseline period, the thank-you card project was mentioned in two additional lectures per class. At these times, subjects were told they could take more cards at the end of class, and additional cards could be picked up at the instructor's office in the psychology department. On each lecture day, the instructor brought 200 cards to class.

Indirect Rewards

After a 3-week baseline period, the students in this condition were asked by the course instructor to sign a promise to hand out two thank-you cards over a 3-week period. The instructor announced that a signature would enter the student into a raffle drawing for prizes donated by community merchants. The promise appeared at the top of a petition circulated on a clipboard throughout the lecture hall. The promise was identical to the promise used in Study 1, except the commitment was for two cards rather than five. Students made their commitment by signing their name on 1 of 50 lines that appeared below the pledge statement.

Throughout the lecture, four research assistants facilitated the circulation of 10 identical promise petitions. A list of 10 prizes was displayed to the class on two overhead projector screens; it included such items as $50 in cash, actively caring T-shirts and travel mugs, free meal coupons, and coupons for discounted merchandise at local stores. Students were told that 10 names would be drawn from a raffle box, and the winners would be announced on the last day of class.

Direct Rewards

After the baseline period (3 weeks), the instructor explained that each used thank-you card a student returned would allow a single entry into a prize raffle to be held at the end of the semester. It was emphasized that returning more cards gave a greater chance of winning. The same list of 10 prizes shown to the other class was displayed on the two overhead projectors, and students were told that 10 winners would be drawn from a raffle box and announced on the last day of class.

As during baseline, the instructor brought 200 cards to both classes on each lecture day during the 3-week intervention phase. Subjects in both conditions were reminded that more cards could be obtained at the instructor's office in the psychology department. Participants were encouraged to take as many cards as they wanted.

Prize Distribution

For the Indirect Reward class, each name signed on a promise petition was cut out in equal size and placed in a box for the raffle drawing. For the Direct Reward class, all signed thank-you cards returned prior to the last day of class were placed into a box for a separate raffle drawing. For each raffle, the names of 10 winners were drawn and shown to the class. Participants were told that prizes could be claimed at the instructor's office in the psychology department.

RESULTS

Participation

Indirect rewards. Of the 323 females and 230 males enrolled in the Indirect Reward condition, only 38 students (7%) participated during baseline by handing out at least one card. Although 201 (36%) students (136 female, 65 male) had signed the petition promising to hand out at least two cards during the 3-week intervention, only 18% or 102 students (65 females, 30 males, 7 gender unmarked) returned the lower part of at least one thank-you card, indicating they had delivered the card for pro-environment or pro-social behavior. A chi-square analysis on the number of students who used at least one card revealed that participation was contingent on experimental phase, $\chi^2(1) = 68.45, p < .001$. Significantly more students used at least one card during the Indirect Reward intervention as did during baseline.

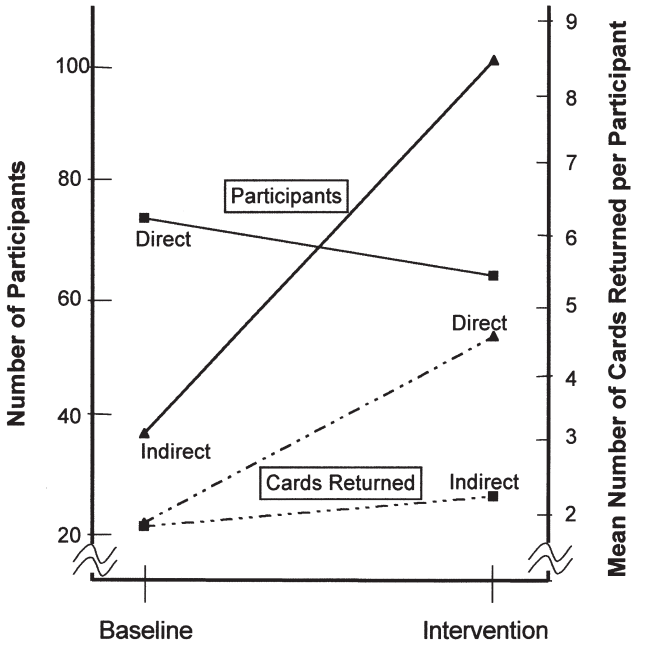

Figure 4: Number of Participants per Intervention Condition Who Used at Least One Thank-You Card and the Average Number of Cards Used per Participant During Each Experimental Phase in Study 2

Direct rewards. Of 297 females and 347 males enrolled in the class assigned the Direct Reward condition, 75 students (12%) participated during the baseline phase, and only 65 students (10%) participated during the intervention phase. A chi-square analysis on the number of students who used at least one card revealed that participation was not contingent on experimental phase, $\chi^2(1) = .80$, ns.

To explore overall gender differences, an additional chi-square on the number of males and females who used at least one card revealed that participation was also contingent on gender, $\chi^2(1) = 43.9, p < .01$. More females ($n = 204$) used at least one thank-you card than did males ($n = 94$). These results are based on using a card at any time during the study, regardless of phase or condition.

Figure 4 depicts the differential impact of the two intervention conditions on subjects' participation. Although the number of cards returned per participant was markedly higher during the Direct Reward than Indirect Reward intervention, the number of participants (those returning at

least one thank-you card) was prominently higher during the Indirect Reward intervention.

Thank-You Card Use

A 2 condition (Indirect Reward versus Direct Reward) × 2 phase (Baseline versus Intervention) × 2 gender (Male versus Female) ANOVA on the number of cards returned per participant indicated significant main effects for condition, $F(1, 261) = 5.45$, $p < .05$; gender, $F(1, 261) = 5.70$, $p < .05$; and phase, $F(1, 261) = 10.80$, $p < .05$. On average, participants in the Direct Reward condition returned more cards (3.1 per participant) than participants in the Indirect Reward condition (2.2 per participant). Females returned more cards (2.7 per participant) than males (1.6 per participant). Finally, more cards were used during the intervention (3.2 per participant) than in baseline (1.9 per participant).

The only significant interaction was condition by phase, $F(1, 261) = 4.43$, $p < .05$. This is illustrated in Figure 4 by the dashed lines showing no difference between groups during baseline but significantly more cards used during intervention by the Direct Reward participants (4.6 cards per participant) than the Indirect Reward participants (2.3 cards per participant).

DISCUSSION

A comparison of direct reward versus indirect reward strategies to increase the use of pro-environment thank-you cards indicated differential impact of these two incentive/reward approaches. Direct rewards were more effective at increasing the number of cards used per participant, whereas the indirect rewards were more effective at increasing the number of participants who used at least one thank-you card. In other words, a reward contingent on the occurrence of the target behavior had greater impact on the effort per participant. However, a reward for promising to participate influenced some minimal effort from more individuals. It is speculated the indirect rewards used in Study 1 were relatively more effective than the indirect reward strategy of Study 2 because the reward in Study 2 was not provided in advance, and therefore, reciprocity was not invoked (Cialdini, 1993). In other words, the procedural difference in Study 2 prevented subjects in the Indirect Reward condition from performing to reciprocate for a reward received in advance.

The effectiveness of the direct rewards to increase the number of cards used per person demonstrated the basic principle that desirable consequences can increase the occurrence of behaviors on which they are contingent (Skinner, 1953). Participants used more cards on average when they knew each

card returned would be rewarded with another entry into the end-of-the-semester raffle than during baseline when no reward was promised.

It is noteworthy, however, that the rewards or prizes were modest, delayed, and uncertain. Selecting 10 winners from a potential pool of several hundred cards makes success quite improbable. Most participants never physically contacted the contingency. Thus, the incentive to hand out cards most likely provided an easy and simple rule for some students to follow. Rudd and Geller (1985) used a similar raffle program to increase the use of safety belts throughout a large campus community; and Geller et al. (1975) and Witmer and Geller (1976) used this approach to increase the delivery of recyclable newspapers to campus recycling centers.

A rule is simply a verbal description of a contingency (Malott, 1992). In the present case, delivering more thank-you cards increased students' chances of winning a raffle prize. The students who responded to the intervention may have done so because of a history of winning raffles. Thus, it could be claimed some students were more susceptible to the rule than others. Alternatively, this compliance could have resulted from different socialization histories. Such an interpretation could account for the finding that more women than men used the thank-you cards.

Related to socialization, the students who were "intrinsically motivated" to use cards in the absence of the contrived intervention may have perceived the incentive as demeaning and thus stopped using the cards during the intervention phase. In fact, this interpretation would account for the decrease in participation among some students during intervention.

The indirect-reward-for-promise intervention had no significant effect on the number of cards used per person. This may be because subjects were asked to hand out only two cards over the course of 3 weeks, which was about as many cards as participants had already used during baseline. Because this intervention did not challenge the participants to do more, they simply kept their promise and gave out an average of two cards per participant. In other words, they followed the specific rule established by the promise. A lack of behavioral variability is a common characteristic of rule-governed behavior (Hayes & Hayes, 1992).

GENERAL DISCUSSION

The results of these studies demonstrate the power of particular incentive/reward contingencies to motivate delivery of interpersonal recognition for pro-environment or pro-social behavior. If implemented in various situ-

ations, this process could increase the large-scale occurrence of behaviors to protect the environment or help other people. It could also increase people's awareness of the need to show appreciation for behavior that reflects actively caring (Geller, 1991) or going beyond the call of duty for others.

Furthermore, it was shown that if rewards are provided indirectly and in advance of an opportunity to perform a target behavior, more behavior will be emitted than if rewards are provided after the target behavior with some delay. We presume that the impact of such an indirect reward intervention occurs as a result of the additive effect of reciprocity to people's desire for consistency, which is presumed to operate in promise or commitment interventions.

Consider that unlike the Indirect Reward intervention in Study 1, during which participants were given their reward for promising in advance, the reward in the Study 2 Indirect Reward intervention was delayed until after the completion of the intervention period. Thus, it could be argued that the Study 2 intervention failed in comparison to its counterpart in Study 1 because the subjects did not feel the need to reciprocate for rewards. However, consistent with the say-do paradigm (Rogers-Warren & Baer, 1976), it is likely an avoidance contingency was derived as a result of the commitment (or promise). In other words, some students complied with the promise to avoid or escape social disapproval or an aversive physiological state for failing to honor one's commitment. The card use of these participants was, therefore, negatively reinforced without the added impact of a reciprocity effect.

Indirect and immediate rewards produced more behavior change than direct and delayed rewards and resulted in a slower decline of the target behavior after termination of the intervention. Thus, it could be argued that indirect rewards may function to prevent decreases in self-determinism or the undermining of intrinsic motivation sometimes claimed in studies of response-contingent rewards (Deci & Ryan, 1985; Ryan & Deci, 2000). The context during which rewards produce undesirable side effects remains an area in need of systematic research.

Despite these intriguing findings, the present research was not without limitations. First, it may have been useful to provide more training to participants regarding how to approach people to deliver a thank-you card. From the cards' descriptions of the behaviors that led to thanking, we found that the majority of cards were given to friends, roommates, and professors. Our vision is to see the process generalize beyond acquaintances. Shaping and guided practice could facilitate such an outcome.

Second, some participants may have used the cards without returning the lower portion. It is also possible that the prizes did not function as reinforcers for some participants. Thus, it's likely, even probable, that many more cards were used than our data show. In fact, cases like this were reported to us

anecdotally, which makes our measure of response effort (i.e., number of cards returned) conservative. On the other hand, without systematically tracking the behaviors for which these cards were used, we can only speculate that they were used as intended. Unfortunately, the frequency with which the cards were used for various target behaviors is not available.

Future research on the interpersonal recognition of pro-environment and pro-social behaviors should be directed at its practical implications for organizational or community-based application. Geller (1996) reports several applications of the thank-you card process, some in which cards received could be exchanged for prizes. Others provided a peel-off sticker for display on hard hats, lunch boxes, or other personal items. In one process described by Geller (1997), the thank-you cards could be placed into a drop box, where each was worth $1 toward the purchase of toys for needy children at Christmas.

Roberts and Geller (1995) used thank-you cards at an industrial site. In this application, the cards were made available to all employees for distribution to coworkers for behaviors reflecting actively caring for safety. Like the cards in the current research, these cards provided a space to define the behaviors that led to the thanking. These included suggesting a safer way to perform a task, helping someone avoid an at-risk behavior, and pointing out or correcting an environmental hazard.

An important practical issue involves how to implement a thank-you card program that can be sustained by community members with minimal involvement of a research team (Fawcett, 1991). In the present case, we believe the thank-you card process can be incorporated into ongoing university functions such as student orientations, fraternity and sorority initiations, athletic groups, service organizations, residence and dining halls, and the routine curriculum of all courses in the environmental or social sciences. It is speculated that thank-you cards formalize the recognition process, thereby providing license for people to approach strangers who are doing nice things. If social recognition functions as a reinforcer in these contexts, the result should be an increase in the behaviors on which the cards are made contingent. The industrial applications described above indicate that the thank-you cards can be used with minimum involvement of research personnel.

Although these studies set out to evaluate the impact of different external contingencies on behavior change, they also provided a mechanism for getting people to recognize and show appreciation for the pro-environment and pro-social behavior of others. Continued application of this process could encourage the card givers to be more altruistic. In other words, by becoming reinforcing agents for actively caring behavior, people might be more likely to perform similar pro-environment or pro-social behaviors themselves. This

would be predicted by consistency theory (Cialdini, 1993) and the say-do paradigm (Rogers-Warren & Baer, 1976).

Consequently, the greatest impact of the thank-you cards may be on those who deliver them rather than on those who receive them. However, if reciprocity is an underlying mechanism, it should be possible to construct interventions such that the beneficial impact can be felt equally in both directions and thus maximize the large-scale and broad-based appeal of the thank-you card process. This and other empirical questions provoked by this research warrant further study. But more important, we need to continue the search for practical ways to protect the environment, as well as the health and safety of others. We hope this research is only the beginning.

NOTES

1. Examples included recycling, picking up litter, turning off lights, using public transportation, designated driving, giving blood, buckling up, using crosswalks, helping with homework, giving a good lecture.
2. Examples shown: recycling, picking up litter, turning off lights, using public transportation, designated driving, giving blood, buckling up, using crosswalks, helping with homework, giving a good lecture.

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