

Choosing to Encourage or Discourage: Perceived Effectiveness of Prescriptive Versus Proscriptive Messages

PATRICIA L. WINTER*

Pacific Southwest Research Station, USDA Forest Service
4955 Canyon Crest Drive
Riverside, California 92507, USA

BRAD J. SAGARIN

KELTON RHOADS

DANIEL W. BARRETT

ROBERT B. CIALDINI

Department of Psychology, Arizona State University
Box 871104
Tempe, Arizona 85287-1104, USA

ABSTRACT / The estimated cost of repairing damage caused to recreational sites annually is in the hundreds of millions of dollars. These depreciative activities also reduce the quality of visitors' experiences in the damaged areas. Indirect methods, such as visitor education through brochures and signs, con-

tinue to be the least controversial management approaches to depreciative acts. Yet, the literature on studies examining the most effective message presentations remains sparse. A survey mailed to randomly selected National Association for Interpretation members assessed the perceived effectiveness of communications that encouraged positive conduct (prescriptive messages) versus those that discouraged negative conduct (proscriptive messages) in wildland and urban settings. Almost invariably, respondents viewed the encouragement-based prescriptive messages as more effective than the discouragement-based proscriptive messages. This finding stands in sharp contrast to an earlier study that discovered a preponderance of proscriptive versus prescriptive messages on signs in both wildland and urban recreational environments. Thus, although the great majority of interpreters see the encouragement of positive conduct as more effective, in practice, messages on signs are much more likely to discourage negative conduct. Reasons for this discrepancy are considered.

Every year, recreational sites in natural resource areas incur hundreds of millions of dollars in damage. In addition to the cost of repairs, a reduction in the quality of the recreational experience for visitors must be considered (Christensen and others 1992). Although managing agencies work hard to deter depreciative activities, a substantial portion of visitor noncompliance with regulations to protect resources goes unchecked (Johnson and Vande Kamp 1996). Much has been written about how to reduce damage in natural resource settings, both through direct and indirect methods. Direct methods include area closures and citation of rule violators; whereas indirect methods include redesign of an area (such as using picnic tables constructed of graffiti resistant materials or hardening of trail surfaces) and visitor information and education, often delivered through brochures and signs. Indirect methods continue to be the least controversial of management approaches.

Managers rely heavily on information and education

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*Author to whom correspondence should be addressed.

methods to prevent resource damage. Chavez (1996) found that of 90 forest managers surveyed, 62 reported using information and education approaches, including signs and brochures, to help prevent resource damage associated with mountain bike use. Mentioned less often were resource hardening (e.g., paving trails), cooperation (e.g., partnerships and citizen task forces), and visitor restrictions. National recreation trails managers also reported relying upon trailhead and trailside signs, along with information posters, to address resource damage (Tynon and others 1997). The reliance on information and education approaches should not be presumed to indicate that managers believe they are the best option in every case. However, this reliance does demonstrate the important role that visitor information and education have in resource management.

Although direct methods can be acceptable when visitors have an understanding of the need for such techniques (Swearingen and Johnson 1995), indirect methods are more often preferred by recreationists. For example, off-highway vehicle users expressed a distinct preference for signs along the road to provide them with agency information (Chavez and others 1993). When asked how to best address conflict between groups and other resource management prob-

lems, trail users most often recommended information and education and least preferred direct regulation, especially when freedoms were threatened (Schneider and Winter 1999). Finally, Cvetkovich and Winter (1998) reported a distinct preference for signs and brochures to address depreciative activities along a watershed, in spite of the recognition that they might not be the most effective.

As noted by Hines (1993), the right sign can change visitor behavior in a positive way, reducing depreciative activities. Conversely, a poorly worded or inappropriately selected sign can have counterproductive effects (Whelan 1976). But what constitutes a properly worded versus poorly worded sign concerning depreciative behavior? Some investigators have examined the effects of including reference to rewards or punishments in the messages. As might be expected, referring to rewards or inducements for desirable environmental action has generally increased the frequency of such action (see Geller and others 1982, for a review), whereas referring to fines or sanctions for undesirable environmental action has generally reduced the frequency of such action (Gramann and others 1995, Johnson and Swearingen 1992, Martin 1992).

Programs that include reward or punishment contingencies are not without their drawbacks, however. In summarizing the disadvantages of reward-based interventions (e.g., offering rewards to recreationists who turn in full litter bags), Geller and others (1982) pointed to the high material and personnel costs of administering the programs and to the fact that the resultant proenvironmental action is stubbornly situation-specific (i.e., does not generalize beyond the particular times and places associated with the reward). Threatened punishments have their own disadvantages. They may have adverse impacts on visitor enjoyment and may lead to negative reactions toward the agency by visitors (Martin 1992, Reich and Robertson 1979, Roggenbuck and Berrier 1982). Messages that are threatening may be irritating to visitors, therefore reducing their potential to influence behavior in the desired way (Nobert and Hoshide 1994, Woods 1997) and, in some instances, producing boomerang effects. Long-term relationships with visitors should also be taken into account, as many areas enjoy a pattern of repeat visitation from a loyal customer base that should not be alienated as a result of efforts to deter depreciative acts (Howard 1985).

Prescription versus Proscription

In light of the previous discussion, it would be instructive to inquire into positive versus negative messages of

another sort—messages that neither promise rewards nor threaten punishments. For instance, one dimension of positivity versus negativity that has recently been examined in the domain of depreciative behaviors involves prescriptive versus proscriptive messages (Winter and others 1998). It is possible either to *prescribe* approved environmental conduct by urging recreationists toward it or to *proscribe* disapproved environmental conduct by urging them against it. For example, one could either encourage desirable action (“Please keep our environment litter-free”) or discourage undesirable action (“Please don’t litter our environment”).

In an assessment of the signage at 42 recreation areas in California and Arizona, Winter and others (1998) found a striking imbalance in the proportion of prescriptively to proscriptively worded messages. Many more signs admonished against undesirable behaviors than advocated for desirable behaviors. Moreover, the direction of this imbalance held true for urban as well as wildland settings and for a variety of recreational settings (e.g., campsites, lakes, trails), depreciative behaviors (e.g., littering, fire activities, off-trail interactions), and managing agencies (e.g., US Forest Service, Bureau of Land Management, local government).

The present study was designed to assess the likelihood of one possible reason for the greater proportion of proscriptive to prescriptive messages in recreation settings: the presence of a general perception among those who construct such messages that communications that discourage undesirable action are more effective than those that encourage desirable action. The study also sought to determine whether such a perception became more ingrained in communicators as they acquired more experience in message construction. Finally, the study assessed the extent to which this perception might differ for urban versus wildland recreational environments. To address these questions, we surveyed a random sample of the National Association for Interpretation (NAI) members (with varying degrees of message development responsibility and experience) as to their perceptions of the effectiveness of prescriptive versus proscriptive messages in both urban and wildland settings.

Methods

The mailing list for NAI, which contained 3,066 members, was obtained. NAI is a nonprofit organization dedicated to the advancement of the profession of interpretation with members in the United States, Canada, and 31 other nations. The organization was formed in 1988 to provide training and networking opportunities for interpreters (National Association for

Table 1 Mean ratings of message effectiveness^a

Message Pairs	Message	Wildland	Urban
1a. Protect our environment. Please extinguish your fire.	Prescriptive	7.4	5.4
1b. Don't endanger our environment. Please don't leave your fire burning.	Proscriptive	5.2	3.9
2a. Please don't leave your fire unattended.	Proscriptive	5.9	4.6
2b. Please pay attention to your fire.	Prescriptive	4.4	3.5
3a. Please don't litter our environment.	Proscriptive	5.2	4.6
3b. Please keep our environment litter-free.	Prescriptive	6.6	5.8
4a. Please throw your litter in a trash container.	Prescriptive	6.3	6.7
4b. Please don't throw your litter on the ground.	Proscriptive	4.7	4.4
5a. Please don't damage the beauty of our environment. Don't drive off established roads.	Proscriptive	4.8	3.9
5b. Please preserve the beauty of our environment. Drive only on established roads.	Prescriptive	7.6	6.3
6a. Please park in designated areas.	Prescriptive	7.5	7.5
6b. Please don't park outside designated areas.	Proscriptive	4.4	4.3
7a. Please don't violate posted rules during your visit.	Proscriptive	3.7	3.4
7b. Please observe posted rules during your visit.	Prescriptive	6.6	6.2
8a. Our rules are for everyone's benefit. Please follow them.	Prescriptive	6.5	5.9
8b. Our rules are for everyone's benefit. Please don't ignore them.	Proscriptive	4.3	4.0
Mean	Prescriptive	6.6	5.9
	Proscriptive	4.7	4.2

^aRatings of message effectiveness were on a scale from 1 to 10, with 1 = ineffective and 10 = very effective.

Interpretation 1999). From the population of members, a randomly selected sample of 219 members in the United States was chosen to receive questionnaires. The questionnaire was sent to the NAI sample via first-class mail. A cover letter explained that the survey represented a joint effort between the US Forest Service and Arizona State University and that the project's long-term goal was to increase the success of signage in reducing depreciative activity in various environments. Depreciative behavior was defined as behavior that devalued the environment in some way, such as littering or damaging vegetation. It was further explained that the survey was being conducted to examine the opinions of members regarding the effectiveness of signs displaying various kinds of messages concerned with environmentally depreciative behaviors. An addressed, postage-paid return envelope was included with the questionnaire.

The questionnaire was two pages in length and was designed so it could be completed within five minutes. Several demographic questions were included: employer, place of employment, type and amount of involvement in creating signage, number of years of experience in creating signage, level of education, and field of academic degree(s) of the respondent.

Respondents then read eight pairs of messages concerning issues of fire management, littering, off-road use, parking, and posted rules. Each message pair contained a prescriptive version and a proscriptive version, resulting in a total of 16 statements. For example, three message pairs—the first pertaining to the use of fire, the second to parking regulations,

and the third to littering—resulted in the following six statements:

- 1—proscriptive: Don't endanger our environment. Please don't leave your fire burning.
- 1—prescriptive: Protect our environment. Please extinguish your fire.
- 2—proscriptive: Please don't park outside designated areas.
- 2—prescriptive: Please park in designated areas.
- 3—proscriptive: Please don't litter our environment.
- 3—prescriptive: Please keep our environment litter-free.

To avoid order effects, statements were sequenced so that prescriptive statements occurred last in some pairs and first in others. The actual ordering of these sequences is presented in Table 1.

Respondents were then asked to indicate, using a 10-point Likert-type scale ranging from 'ineffective' to 'very effective,' the likely efficacy of each statement in both a wildland and an urban setting. Thus, each statement was evaluated twice by interpreters, the first evaluation gauging the effectiveness of a particular statement for wildland use, and the second evaluating the same statement for urban use. Finally, a copy of the results was offered to all respondents upon completion and analysis of the survey.

Of the 219 surveys mailed, 112 responses were received within a 60-day period. At that point, a second wave of 107 surveys was mailed to those who had not responded to the initial mailing, and 34 additional responses were received. Overall, completed question-

naires were obtained from two thirds (146/219) of those receiving them.

Results

One hundred forty-four respondents indicated their place of employment: 39 (27%) federal land management, 18 (12%) city parks, 16 (11%) state parks, 6 (4%) regional parks, 6 (4%) universities or colleges, and 59 (40%) other, with 2 (1%) unspecified. As part of their job responsibilities, 108 (74%) generated interpretive messages for signs, 32 (22%) did not. One hundred thirteen (77%) generated interpretive messages for brochures, 29 (20%) did not. A majority, 123 (84%), developed interpretive programs for face-to-face delivery, while 17 (12%) did not. Fifty (34%) conducted research on communication and interpretation, 85 (58%) did not. When asked how many years they have been engaged in at least one of these activities, participants responded between 0 and 30 years, with an average of 11.3 years ($SD = 6.4$). Most respondents were well educated; 4 (3%) reported a high school education, 89 (61%) had a BA or BS, 46 (32%) had an MA or MS, and 5 (3%) had a PhD or EdD.

Mean effectiveness scores were calculated across each message type (prescriptive/proscriptive) and each locale (wildland/urban) (Table 1). A two-way within-subjects ANOVA revealed a significant main effect for message type, indicating that respondents rated the prescriptive (encouragement-based) messages as significantly more effective than the proscriptive (discouragement-based) messages [$F(1,133) = 170.08, P < 0.001$], and a significant main effect for locale, indicating that messages were seen as significantly more effective in wildlands as compared to urban locations [$F(1,133) = 39.52, P < 0.001$]. These main effects were qualified by a marginally significant message type by locale interaction. That is, although respondents rated the prescriptive messages as more effective in both the wildland [$F(1,133) = 162.84, P < 0.001$], and the urban settings [$F(1,133) = 158.45, P < 0.001$], the superiority of the prescriptive messages was seen as somewhat greater in the wildland settings [$F(1,133) = 3.88, P < 0.051$].

These results were quite consistent across the individual messages. An examination of the means for each message revealed that the prescriptive messages were seen as more effective for seven of the eight pairs (the only exception being the second pair involving fire safety). Similarly, respondents rated 14 of the 16 messages as more effective in wildland settings (the exceptions were those involving throwing litter in trashcans and parking in designated areas).

Overall, of the 134 respondents with complete data, 92% rated the prescriptive messages as more effective than the proscriptive messages, 6% rated the proscriptive messages more effective, and 2% rated them as equally effective. Two additional results suggest that greater experience generating interpretive messages was associated with higher ratings for prescriptive messages. Those asserting the superiority of the prescriptive messages had 4.4 more years of experience generating interpretive messages ($M = 11.6$) than those rating the proscriptive messages more highly ($M = 7.2$), $t(126) = 1.88, P = 0.063$. In addition, only 4% of those who had experience generating interpretive messages for signs rated the proscriptive messages more highly, compared to 14% of those without this experience; these percentages differ according to Fisher's exact test at $P = 0.077$.

Discussion

Information and educational messages contained in signs hold considerable interest, particularly in light of the high cost of depreciative acts in resource areas (Christensen and others 1992). Signs continue to be relied upon heavily in natural resource management (Chavez 1996, Tynon and others 1997) and are in many cases preferred by recreationists (Chavez and others 1993); yet approaches to framing messages in the most effective manner, and how settings and visitor characteristics mediate that effectiveness remain underexplored. The right wording can be conducive to appropriate visitor activity (Hines 1993); the poorly worded sign can have counterproductive effects (Whelan 1976). While studies of messages that include inducements or sanctions provide evidence of effectiveness in laboratory and field situations (e.g., Gramann and others 1995, Johnson and Swearingen 1992, Martin 1992, Witmer and Geller 1976), they are not always viewed as preferable or appropriate by people in the field (Geller and others 1982, Johnson and others 1992). They also have limits in terms of material and personnel costs (Geller and others 1982), as well as leading to negative reactions from visitors (Martin 1992, Reich and Robertson 1979, Roggenbuck and Berrier 1982, Woods 1997).

Therefore, in the present study, we examined a dimension of message positivity/negativity that did not rely on promised rewards or punishments. That dimension, the prescriptive versus proscriptive nature of a communication, differentiated messages according to whether they encouraged (prescribed) desired conduct or discouraged (proscribed) undesired conduct. Winter and others (1998), who found a decided prevalence of proscriptively worded communications on the sig-

nage in 42 separate recreation settings, had previously investigated the on-site frequency of prescriptive versus proscriptive messages.

In light of the findings of Winter and others (1998), our results were surprising. Our survey of NAI members with varying levels of experience in constructing signage found that the great majority of them viewed prescriptively worded messages as more effective; yet, signage is predominantly proscriptive in character (Winter and others 1998). This finding held true for wildland and urban settings, although judgements of effectiveness were somewhat higher for wildland settings. An analysis of effectiveness of message themes showed similar results, although some messages were viewed as slightly less effective than others. What could account for this discontinuity between an on-site preponderance of proscriptive messages and the higher perceived effectiveness of prescriptive messages? Several possibilities exist. For instance, it is conceivable that the proscriptive wording on existing signage represents the traditional approach of those interpreters who are in authority. Perhaps this admonition-laced tendency of the "old guard" does not represent the preferences of the majority of interpreters who made up our survey sample. One aspect of our data argues against this interpretation, however. Greater experience and responsibility in the domain of message construction was associated with more, not less, favorability to prescriptively worded communications. A second possibility may be that message developers recognize that negative messages are shorter and, consequently, easier to fit on signs. Thus, even though they may prefer positively worded messages in theory, given the size constraints of the typical sign, they may opt for the terse language of proscriptive. Such a concern over the length of a message would be warranted, particularly in light of work demonstrating that quantity of information is an important factor in visitor compliance (e.g., Cole and others 1997). However, this possibility does not stand up to an analysis of recommendations for message effectiveness, since negative messages are most effective when paired with a statement of consequences (e.g., Gramann and Vander Stoep 1986).

If these explanations do not provide satisfactory accounts, what might? Perhaps the answer to the puzzle has to do with the likely state of affairs that is present when interpreters encounter the need for signage regarding depreciative acts. Most likely, such a need arises in response to a significant problem or pattern of repeated violations of environmental integrity. There are two psychological mechanisms by which this problem-centered state of affairs could incline interpreters toward proscriptively worded messages. First, if the

problem has produced negative emotions such as anger or frustration, it is natural to react in more aggressively toned, challenging, or restrictive ways. The typical response when someone is in a state of annoyance, frustration, or anger is to assume an aggressive posture (Berkowitz 1993). Second, even if unpleasant emotions are not present, a problem-focus is likely to produce a negative cognitive state. According to current psychological theorizing, (Berkowitz 1990, Bower 1981, Morris 1989), a negative cognitive state will make negative memories, thoughts, and even wordings spring to mind more easily than their positive counterparts. Thus, it is plausible that because of the particular affective and cognitive circumstances present when interpreters confront the need to create signs, they may be steered away from their preferred modes of responding under more neutral circumstances—such as those present when they filled out our survey. Although such an explanation fits with existing psychological theory and data, research should be conducted to assess its validity.

It should also be noted that interpreters might not have final say in the wording of all signs. While many of our respondents reported experience in constructing messages for signs, and the years of experience was significantly related to a greater preference for prescriptive messages, we did not ask questions assessing their degree of responsibility for all signs in areas where they work. For example, we might have asked about their degree of responsibility over total number of signs in an area and the types of signs for which they have message construction responsibility.

Assessing the role in signage wording and selection that interpreters have warrants follow-up. In general, additional research in field settings, contrasting types of settings, message focus, prescriptive and proscriptive framing, and agency and visitor reactions is needed. Signs will continue to be relied upon to provide information to visitors in natural resource areas, necessitating the ongoing pursuit of this line of inquiry. Resource managers and interpreters overseeing message selection and framing in situations where depreciative acts are targeted should explore prescriptive wording for its application in signage.

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