

AN ANALYSIS OF NORMATIVE MESSAGES IN SIGNS AT RECREATION SETTINGS

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Abstract:

The reliance on signs as a mode of agency communication with visitors requires an examination of message presentation and content in order to evaluate message impact and effectiveness. This paper reports on a systematic evaluation of signs and messages at 42 recreation areas in California and Arizona. A number of factors, including type of site, managing agency, density of message locales, sign attributes, and message content, were examined. Messages addressing depreciative activities, and how those messages were framed, were of particular interest. The vast majority of messages presented behavioral commands (injunctive norms) and were negatively worded (proscriptive). This striking imbalance points to concerns in visitor information and education, allowing room for adjustments based on social-psychological principles of communication.

Keywords:

Norms, norm activation, descriptive norms, injunctive norms, proscriptive messages, prescriptive messages, interpretive effectiveness, recreation settings, persuasion, evaluation.

INTRODUCTION

Visitor information and education play an important role in natural resource management. Site information, including rules and regulations, needs to be relayed in the most effective and efficient manner possible. While face-to-face communication can be the most effective (Myers, 1990), agencies are hard pressed to support the trained personnel to provide information to on-site visitors at recreation areas.

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Signs are relied on in many recreation areas as the only contact that visitors have with the managing agency (USDA Forest Service, 1989), providing necessary information in the absence of agency employees (Shattuck, 1987). As agencies face decreasing budgets for on-site personnel, effectiveness of informational signs increases in importance. The purpose of informational signs is distinctly different from interpretive signs. Although both seek to provide an opportunity for education, the intent of compliance with regulations is implicit in the use of informational signing. Interpretive signs are a broader category of signage with varied purposes, including focusing on material that might enhance visitor appreciation of and familiarity with an area. At a minimum, informational signs provide some support to agencies when fines or penalties are applied to violators.

Effectiveness of informational signage is influenced by a multitude of factors. To have any impact on visitor behavior, signs must be noticed, read, understood, and presented in such a fashion that they have the potential to persuade individuals to conduct themselves in a desired manner (Zimbardo & Leippe, 1991). The presence of multiple signs can be problematic, such that only signs of interest in an area might be noticed and read; others will probably be ignored. It has been shown that information on rules and regulations is of little interest to recreationists (Chavez & Mainieri, 1995; Chavez, Winter, & Mainieri, 1995).

The number of messages within a sign is also important to consider. Assuming the multiple-message sign is read, it may contain more information than can be attended to and processed during a one-time reading. This would probably result in attention to only select pieces of information within a series of messages. Cole, Hammond, and McCool (1997) examined attention and comprehension of low-impact messages as a function of number of messages presented. Varying the number of messages from 2 to 8, they found that while time attended to the overall message presentation increased, attention to individual messages and message retention decreased linearly as number of messages increased.

The wording of messages presented on signs has two important implications. First, as the only contact visitors may have with the managing agency (Shattuck, 1987; USDA Forest Service, 1989), signs set the tone for the area. Signs can send a message of welcome to the recreational area, or just as powerfully they can indicate that the visitor is an unwelcome intruder who will be tolerated at best. Signs serve as one component in an area helping to establish environmental meaning (Rapoport, 1982). Second, when and if normative messages (rules and regulations fit this information type) are relayed in signs, they may be worded in a contradictory or counterproductive fashion. For example, a sign containing a message of "Please do not litter" may be paired with a graphic of a littered environment. Two messages are presented—one requesting that visitors not litter alongside another suggesting that people litter natural resource settings. The following discussion clarifies why this combination may be counterproductive.

FRAMING AND IMPACT OF NORMATIVE MESSAGES

The activation of social norms is a useful tool in visitor communication and is possible through the presentation of normative messages in signs. If an agency can draw a person's attention to what the desired behavior is through use of normative

information, an agency can often influence behavior. Norms can be relayed through directly observed action, inferred actions based on evidence of impact (e.g., presence of carving on a picnic table), and written or spoken messages (Gramann & Vander Stoep, 1987). Normative influences have been established as an important component of human behavior (Cialdini, 1993; Zimbardo & Leippe, 1991). Researchers have examined the role of social norms, distinguishing between two main types (Cialdini, Reno, & Kallgren, 1990; Cialdini, Kallgren, & Reno, 1991; Reno, Cialdini, & Kallgren, 1993). First, *descriptive norms* specify what most people do in a particular situation, easily understood as the “is” of behavior. They motivate by informing people of effective and adaptive action (Cialdini, 1996). Second, *injunctive norms* specify what is approved, or the “ought” of behavior. They are usually paired with some inference of reward or punishment for adherence to, or violation of, certain actions. Either type of norm, what is popular or what is socially acceptable, can motivate action (Buunk & Bakker, 1995; Cialdini, 1996).

Descriptive and injunctive norms can be framed in a positive or negative fashion. A descriptive norm, when framed in a positive fashion, is prescriptive and presents approved behavior through the actions of others. For example, the statement, “Most visitors dispose of trash in the receptacles,” is a prescribed-descriptive normative message. Descriptive norms, presented negatively (proscribed), offer disapproved behavior through others’ actions; an example is, “Many visitors leave litter in the campsites.” An injunctive norm, focused on proscribed behavior, presents a behavioral command, stated positively; an example is, “Please dispose of trash in the receptacles.” A proscribed-injunctive norm presents disapproved behavior; an example is, “Please do not litter” (see Figure 1).

Returning to the previous example of a sign stating, “Please do not litter,” paired with a graphic showing a littered environment, the normative perspective would contend that two contradictory messages are being presented. The sign’s

		Normative type	
		Descriptive (is)	Injunctive (ought)
Message framing	Prescriptive (positive)	<i>Most visitors dispose of trash in the receptacles.</i>	<i>Please dispose of trash in the receptacles.</i>
	Proscriptive (negative)	<i>Many visitors leave litter in the campsites.</i>	<i>Please do not litter.</i>

Figure 1. A 2x2 matrix consisting of norms and how they are presented in recreational settings.

message requests that littering not occur while noting that littering does occur. From this perspective, a preferred approach would be to present a graphic depicting an unlittered environment, thereby aligning the injunctive and descriptive norms presented.

The implied purpose of a normative message is to inform the reader of acceptable behavior within a setting, many times only serving as a reminder to make the particular norm salient. In such cases, the message serves as a prompt. Bell, Greene, Fisher, and Baum (1996) note that prompts have been found to be most effective when they are specific rather than general, when the requested behavior is easy to comply with, and when the prompt is presented in a polite and nondemanding way.

A counterargument regarding effectiveness of proscriptive and prescriptive messages can be made from the literature on fear appeals and protection motivation theory. From this perspective, negatively worded messages can be quite effective by motivating recreationists seeking to avoid physical, psychological, or social harm (Gramann, Bonifeld, & Kim, 1995). Likelihood of complying with or violating regulations was explored by Gramann and colleagues (1995) in a laboratory situation. They found that the stated likelihood of compliance was greater among those who were provided with reasons for regulations as well as those who were informed of "negative consequences for resources or for others" not obeying regulations (p. 340). Results were strongest when reasons for the regulations as well as the consequences of violating them were presented. A similar finding presenting effectiveness of stated sanctions was found in a field study conducted by Martin (1992).

It should be noted, however, that fear appeals are effective under conditions wherein the stated consequence is severe, is viewed as likely to occur in the absence of recommended action, and when the recommended action is viewed as effective (Petty & Wegener, 1998). In their contrast of positively and negatively framed messages, Petty and Wegener suggest that negatively worded messages are more effective when people are motivated to think about each piece of information in a message, whereas positively worded messages are probably more effective under situations of lesser scrutiny of wording.

Investigation into the use of various types of messages in recreation settings, and their positive or negative framing, remains underexplored. The majority of literature on fear appeals and protection motivation comes from the health arena (Petty & Wegener, 1998). Normative influences have been explored more directly through field experiments on littering conducted by Cialdini and colleagues (Cialdini, Kallgren, & Reno, 1991; Reno, Cialdini, & Kallgren, 1993). Given resource managers' reliance on signs as an important communication device (Shattuck, 1987; USDA Forest Service, 1989), the presentation of normative information in signs at natural resource settings was explored.

AN ANALYSIS OF MESSAGE CONTENT AND PRESENTATION IN SIGNS

To examine key considerations in effectiveness of signs, including the presence and form of normative messages, a two-page coding instrument was constructed. The first page focused on aspects of the recreational site and data collection specifics, including date of coding, location name (e.g., name of park) and county, managing

agency, type of site, and density of message locales. *Site* was defined as an area where one or several types of settings are found, separated from other sites by at least 1/4 mile. Types of settings included campsites, information centers, lakes, picnic areas, rivers or creeks, scenic lookouts or points of interest, trails, or other. Multiple settings could be found at one site. The *density of message locales* was defined as the number of physically distinct locations within a setting in which messages of any type were presented. A coding rule was set such that, in addition to individual signposts being coded as unique message locales, a single signpost with messages facing opposite directions, for example, would be coded as two separate message locales because a visitor would not encounter both signs concurrently.

The second page of the coding instrument focused on the messages encountered and sign attributes, including identification of the sign (first three words of the message), whether there were multiple signs in the area that were the same, whether the sign was damaged, whether an accompanying photograph was taken of the sign (done when coding was difficult or questionable), message media density (number of signs per message locale), message density (number of depreciative messages and total number of messages per sign), location in the recreation setting, likelihood of encounter, likelihood of processing, content of message, and normative type. Likelihood of encounter and likelihood of processing were subjective judgments of recorders based on ranges in numbers of visitors who would encounter and process the information: less than 1/3, 1/3 to 2/3, and greater than 2/3. Although subjective, interrater agreement on likelihood measures, as well as all other items recorded, was at 74% or better during the pretest and reliability checks.

Forty-two sites were visited in southern California and Arizona in 1997. To capture a diversity of natural resource site types, the goal was to visit at least one campsite, information center, lake, picnic area, river or creek, scenic lookout or point of interest, and trailhead within two counties in southern California and four counties in Arizona. Sites were not randomly selected. Counties were selected based on proximity to each state's research team location, with four counties from Arizona reflecting a larger research team in this state. The majority of locations ($n=42$) were at city parks (31%) or USDA Forest Service sites (26%), and 17% were other (unclassified categories), 14% state parks, 7% regional parks, 2% Bureau of Land Management sites, and 2% unknown. Types of sites included picnic sites (36%), followed by scenic overlooks or points of interest (14%), campsites (12%), information centers (12%), trailheads (12%), rivers or creeks (9%), and lakes (5%).

Average density of message locales was 17.2 across both states, though Arizona had a slightly higher average message locale density (17.6 message locales within a site vs. 13), California had a higher maximum (71 vs. 37). In total, 283 signs were analyzed. An average of 2.1 signs was found per "signpost." Signs were most often located at the entrance to an area (35%) or near a built resource (23%) or a natural resource (14%). The likelihood of encountering signs was judged to be greater than the likelihood of processing information in the signs (Table 1). A larger percentage of signs was judged to be encountered and processed by a majority of recreationists at the Arizona sites than in California. Multiple versions of the same sign were found for almost 2/3 of the signs (60% were multiples). Differences by state were found in the use of multiple and unique signs. While Arizona signs were about half

Table 1. Likelihood of encountering and processing signs

	Proportion of recreationists		
	<1/3 (%)	1/3 to 2/3 (%)	>2/3 (%)
Arizona (n=189)			
Encountered	9	35	56
Processed	27	39	34
California (n=92)			
Encountered	23	60	19
Processed	46	46	9

multiple and half unique signs, the vast majority (86%) of signs at the California sites were found in multiples at the same location.

A further examination of messages on signs revealed an average of 4.4 messages per sign with wide variation ($SD=6.6$). On average, 3.5 of these messages ($SD=5.5$), or the majority, addressed depreciative behaviors. Thematic content of messages focused on a number of unanticipated themes, such as rollerblading, weapons, excessive noise, and gambling (coded as "other" and representing 60% of the depreciative messages in California and 29% in Arizona). Discussions among the research teams from each state pointed to a distinct site type difference for the two states such that the California sites were more urban than those visited in Arizona. Other thematic focuses encountered were messages about fire, littering, and camping (Table 2).

The distribution of normative messages focusing on depreciative behaviors, regardless of thematic content, revealed an imbalance in their framing. These messages were far more likely to be injunctive than descriptive. Descriptive messages were actually quite rare. Furthermore, among those signs relaying injunctive norms, there was a greater likelihood for messages to be proscriptive rather than prescriptive ($z=4.41, p<.01$, combined state data). An examination of the within-state data showed more of a balance between prescriptive and proscriptive messages for Arizona than for California (Table 3), though a majority of proscriptive messages was still found (outside of conventional significance at $p<.20$).

A further difference between prescriptive and proscriptive signs, in this case related to the presence or absence of damage to the signs containing normative messages, was discovered. The percentage of damaged signs was twice as high for the signs depicting disapproved (proscribed) behaviors compared to signs depicting approved (prescribed) behaviors (12% vs. 6%, Table 4). Although the difference was not conventionally significant ($p=.15$), most likely due to the low sample size of damaged signs, it is still noteworthy.

SUMMARY AND CONCLUSIONS

Content and presentation of normative information through signs at recreation sites in California and Arizona were examined. Sites varied in type and were managed by a wide range of agencies. An average density of about 17 message locales

Table 2. Thematic focus of messages in signs

Theme	Arizona (%)	California (%)
Other*	29	60
Off-trail interactions	26	29
Fire	12	39
Camping	18	34
Littering	24	12
Pets	15	22
Removal of artifacts/veg.	8	28
Sanitation	13	4
Payment of fee/fines	9	3
Wildlife	4	3

*"Other" consisted of nontraditional aspects of recreation, including rollerblading, gambling, and use of weapons.

Table 3. Forms of normative messages in signs

	Proscriptive (%)	Prescriptive (%)
Arizona (n=149)		
Injunctive	56	44
Descriptive	0	0
California (n=77)		
Injunctive	81	17*
Descriptive	0	3

* $z=5.66, p<.01$.

Table 4. Whether signs were damaged by normative message type

	Damaged (%)	Undamaged (%)
Proscriptive	12	88
Prescriptive	6	94

was discovered. Most signs were near an entrance, a built resource, or a natural resource. Hendee, Stankey, and Lucas (1990) suggested that the informing process in wilderness occur at an entrance, or outside of the wilderness setting, to preserve the recreational experience. In other areas, the intent of making the message salient where the behavior occurs might point to a different locating strategy. Slightly more visitors were likely to encounter the signs than would be expected to process, or comprehend, them. In many cases, multiple versions of the same sign were found within a site, especially in California. The majority of messages in the signs addressed depreciative behaviors, and several addressed "nontraditional" aspects of

recreation, including weapons, gambling, and rollerblading. A striking preponderance of negatively worded behavioral commands (proscriptive-injunctive) was revealed in the analysis of the messages in signs. This was especially the case for signs located in California, which were distinctly more urban. Descriptive messages were almost nonexistent. Additionally, negatively worded signs (proscriptive) were twice as likely to be damaged, probably a clear reflection of visitors' attitudes toward them (Shattuck, 1987).

The analysis of signs presented herein points to an interesting dilemma in visitor information and education. If an area manager's goals are to create a positive recreational experience and to gain visitor compliance with rules and regulations, then better attention to the presentation of normative information in signs is warranted. At the least, prescriptive messages should predominate over proscriptive ones. As suggested by Martin (1992), negatively worded messages might best be saved for serious rule violations or life-threatening situations. It is our contention that while most managers might agree that a positive (prescriptive) approach is desirable and potentially more effective, we suspect that signs are created as a reaction to a problem or the probability of a problem behavior. As a result, signs are created within a negative context, which spurs a proscriptive response. The importance of visitor information and education will increase in the future (Hendee, Stankey, & Lucas, 1990), and the inclusion of the social-psychological principles outlined here can add to the effectiveness of signs (Gardner & Stern, 1996). While visitors in fact may be getting the point of a message, with the signs serving as a reminder of desired actions, issues revealed in our analysis of signs would suggest a different approach to their construction. The greater damage evoked by proscriptive signage is instructive in this regard, suggesting a negative reaction by visitors to the negatively framed messages that predominate in recreational areas. A potentially adverse reaction directed at the managing agency was also described by Martin and by Bell, Greene, Fisher, and Baum (1996) under such conditions. Additional work in progress by the authors is focused on interpreters' perspectives on potential effectiveness of various message types as well as actual behavioral changes witnessed in the recreational setting as message type is varied.

REFERENCES

- Bell, P. A., Greene, T. C., Fisher, J. D., & Baum, A. (1996). *Environmental psychology*. Fort Worth, TX: Holt, Rinehart and Winston, Inc.
- Buunk, B. P., & Bakker, A. B. (1995). Extradynamic sex: The role of descriptive and injunctive norms. *The Journal of Sex Research*, 32(4), 313-318.
- Chavez, D. J., & Maimieri, T. (1995). *Recreation day use series report 1: San Bernardino National Forest, summer 1992*. Unpublished report, USDA Forest Service, Riverside, CA.
- Chavez, D. J., Winter, P. L., & Maimieri, T. (1995). *Recreation day use series report 2: Angeles National Forest, summer 1993*. Unpublished report, USDA Forest Service, Riverside, CA.
- Cialdini, R. B. (1993). *Influence: Science and practice* (3rd ed.). New York: Harper/Collins.

- Cialdini, R. B. (1996). Activating and aligning two kinds of norms in persuasive communications. *Journal of Interpretation Research*, 1(1), 3–10.
- Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A focus theory of normative conduct: A theoretical refinement and reevaluation of the role of norms in human behavior. *Advances in Experimental Social Psychology*, 24, 201–234.
- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, 58(6), 1015–1026.
- Cole, D. N., Hammond, T. P., & McCool, S. F. (1997). Information quantity and communication effectiveness: Low-impact messages on wilderness trailsides bulletin boards. *Leisure Sciences*, 19, 59–72.
- Gardner, G. T., & Stern, P. C. (1996). *Environmental problems and human behavior*. Needham Heights, MA: Allyn & Bacon.
- Gramann, J. H., Bonifeld, R. L., & Kim, Y. (1995). Effect of personality and situational factors on intentions to obey rules in outdoor recreation areas. *Journal of Leisure Research*, 27(4), 326–343.
- Gramann, J. H., & Vander Stoep, G. A. (1987). Prosocial behavior theory and natural resource protection: A conceptual synthesis. *Journal of Environmental Management*, 24, 247–257.
- Hendee, J. C., Stankey, G. H., & Lucas, R. C. (1990). *Wilderness management*. Golden, CO: International Wilderness Leadership Foundation.
- Martin, D. C. (1992). The effect of three signs and a brochure on visitors' removal of pumice at Mount St. Helens. In H. H. Christensen, D. J. Johnson, & M. H. Brooks (Technical Coordinators), *Vandalism: Research, prevention and social policy* (pp. 121–131). USDA Forest Service, Pacific Northwest Research Station, General Technical Report, PNW-GTR-293.
- Myers, D. (1990). *Social psychology* (3rd ed.). New York: McGraw-Hill Publishing Company.
- Petty, R. E., & Wegener, D. T. (1998). Attitude change: Multiple roles for persuasion variables. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology: Vol. 1* (4th ed., pp. 323–390). New York: McGraw-Hill Companies, Inc.
- Rapoport, A. (1982). *The meaning of the built environment*. Beverly Hills, CA: Sage Publications, Inc.
- Reno, R. R., Cialdini, R. B., & Kallgren, C. A. (1993). The transsituational influence of social norms. *Journal of Personality and Social Psychology*, 64(1), 104–112.
- Shattuck, J. B. (1987). *Vandalism in public park facilities: A guide for park managers*. Columbus, OH: Publishing Horizons, Inc.
- USDA Forest Service, Recreation Staff. (1989). *Ideas for wilderness information and education*. Washington, DC: U.S. Department of Agriculture.
- Zimbardo, P. G., & Leippe, M. R. (1991). *The psychology of attitude change and social influence*. New York: McGraw-Hill Companies Inc.