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 loci, sign attributes, and message content, were examined. Messages addressing deprecative 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, prescriptive 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, need 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 (Shatmak, 1977). 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 educational, the intent of compliance with regulations is implicit in the use of informational signs. Interpretive signs are a broader category of signage with varied purposes, including focusing on material that might enhance visitor appreciation of the outdoors 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 & Maukert, 1995; Chavez, Winter, & Maniers, 1995).

The number of messages within a sign is also important to consider. Assuming the multiple-message sign process 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, Hamoud, 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, the only contact visitors may have with the managing agency (Shatmak, 1987; USDA Forest Service; 1989) is the sign set for the area. Signs can be a message of welcome to the recreation 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 (Ruppers, 1992). Second, when and if normative messages (rules and regulations in 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.

**Figure 1**: A 2x2 matrix consisting of descriptive and normative messages in recreational settings.

**Table 1**: Prescriptive communication in natural settings.

| Prescriptive (positive) | Most visitors litter in the campground. |
| Prescriptive (negative) | Many visitors follow the signs. |

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 behaviors through use of normative
Normative messages in recreation settings

Information, an agency can often influence behavior. Norms can be relayed through directly observed action, inferred action based on evidence of impact (e.g., presence of carving on a picnic table), and written or spoken messages (Gruenewald & Vander Stoep, 1987). Normative influences have been established as an important component of human behavior (Cialdini, 1993; Zimbardo & Lepper, 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, 1990). 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, 1998; Cialdini, 1991).

Descriptive and injunctive norms can be formed 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 prescriptive-descriptive normative message. Descriptive norms, presented negatively "prescribed," offer disapproved behavior through others' actions; an example is, "Many visitors leave litter in the campsites." An injunctive norm, focused on prescribed 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

![Figure 1. A 2x2 matrix consisting of norms and how they are presented in recreational settings.](image-url)

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 endangered 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 prescriptive and descriptive messages can be made from the literature on fear appeals and protection motivation theory. From this perspective, negatively worded messages can be more effective by motivating risk perception to avoid physical, psychological, or social harm (Graham, Bonnfield, & Kim, 1995). Likelihood of complying with or violating regulations was explored by Graham 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. 349). 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 (Perry & Wegener, 1998). In their contrast of positively and negatively framed messages, Perry 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 (Perry & Wegener, 1998). Normative influences have been explored more directly through field experiments on littering conducted by Cialdini and colleagues (Cialdini, Kalffgren, & Reno, 1991; Reno, Cialdini, & Kalffgren, 1993). Given resource managers' reliance on signs as an important communication device (Shanuck, 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 (e.g., name of park) and county, managing agency, type of site, and density of one or several types of settings at a time. Types of settings included rivers or creeks, scenic lookouts, trails, and lakes. The variables were found to be present at one site, their number of physically distinct locations was found to be unique, facing opposite directions, or at least in different locales because a visitor would not necessarily see them all.

The second page of the coded message and sign attributes, including the message, whether there was a policy sign, and whether the sign was damaged, was included in the message. Whether the signs were damaged, if the signs were damaged, and the number of signs damaged were found to be unique, facing opposite directions, or at least in different locales because a visitor would not necessarily see them all.

Forty-two sites were visited and captured a diversity of natural resource settings, recreation information, like point of interest, and trailhead facilities. Sites were located in counties in Arizona, Arizona, reflecting a larger recreation (n=43) were at city parks (31%) of unclassified categories, 25% of trailheads (12%). Average density of message locations had a slightly higher average size (0.75 acres) at the entrance to rd area of resource (14%). The likelihood of the likelihood of processing of information of signs at a given site at the Arizona sites and in California found for almost 2/3 of the signs found in the use of multiple and

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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
rule. Types of settings included campsite, information centers, lakes, picnic areas, rivers or creeks, scenic lookout or points of interest, trails, or other. Multiple set-
tings could be found at one site. The density of message facilities 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 encoun-
tered 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 den-
sity (number of signs per message locale), message density (number of deprecative
messages and total number of messages per sign), location in the recreation setting,
likelihood of encounter, likelihood of processing, content of message, and norma-
tive type. Likelihood of encounter and likelihood of processing were subjective
judgments of recorders based on ranges in numbers of visitors who would encoun-
ter 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 pilot test 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%), campsite (12%), informa-
tion centers (12%), trailhead (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 (33%) or near a built resource (23%) or a natural
resource (14%). The likelihood of encountering a sign 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

multiple and half-unique signs, the vast majority (96%) 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, 3.3 of these messages (SD=5.3), or the majority, addressed deprecative behavior. Thematic content of messages focused on a number of unanticipated themes, such as rollerblading, weapons, excessive noise, and gambling (coded as "other" and representing 10% of the deprecative 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 forums encountered were messages about fire, littering, and camping (Table 2).

The distribution of normative messages focusing on deprecative behavior, regardless of thematic content, revealed an imbalance in their framing. These messages were far more likely to be prescriptive than descriptive. Descriptive messages were actually quite rare. Furthermore, among those signs relaying injunctive norms, there was a greater likelihood for messages to be prescriptive rather than descriptive (r=4.3, p<.01, combined state data). An examination of the within-state data showed little of a balance between prescriptive and descriptive messages for Arizona than for California (Table 3), though a majority of prescriptive messages was still found outside of conventional significance at p<.20.

A further difference between prescriptive and descriptive 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 (prescribed) behaviors compared to signs depicting approved (prescribed) behaviors (12% vs. 6%, Table 4). Although the difference was not statistically 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 locations

| Table 1. Likelihood of encountering and processing signs |
|-----------------|-----------------|-----------------|-----------------|
|                  | Proportion of recreational sites |                  |
|                  | <1/3 (%) | 1/3 to 2/3 (%) | >2/3 (%) |
| Arizona (n=189) | Encountered | 9             | 35             | 56             |
|                  | Processed  | 27            | 59             | 14             |
| California (n=92) | Encountered | 23            | 60             | 19             |
|                  | Processed  | 46            | 46             | 9              |

**Table 2. Thematic Content**

<table>
<thead>
<tr>
<th>Theme</th>
<th>Arizona (n=149)</th>
<th>California (n=77)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td>Off-maint.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Fire</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Camping</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Littering</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Pets</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Removal of artifact</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Sanitation</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Payment of fees/tolls</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Wildlife</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

**Table 3. Forms of Message**

<table>
<thead>
<tr>
<th>Arizona (n=149)</th>
<th>California (n=77)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td>92</td>
</tr>
<tr>
<td>Descriptive</td>
<td>56</td>
</tr>
</tbody>
</table>

**Table 4. Whether message was discovered**

<table>
<thead>
<tr>
<th>State</th>
<th>Prescriptive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>92</td>
</tr>
<tr>
<td>California</td>
<td>55</td>
</tr>
</tbody>
</table>

was discovered. Most signs were resource. Herdlke, Stankey, and Elsen in wilderness occur at an entrance to the recreational experience. In oil, where the behavior occurs might more visitors were likely to encounter or comprehend, then. In many found within a site, especially in addressed deprecative behavior,
Table 2. Thematic focus of messages in signs

<table>
<thead>
<tr>
<th>Theme</th>
<th>Arizona (%)</th>
<th>California (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>other*</td>
<td>29</td>
<td>60</td>
</tr>
<tr>
<td>Gift trail instruction</td>
<td>26</td>
<td>29</td>
</tr>
<tr>
<td>Fire</td>
<td>12</td>
<td>39</td>
</tr>
<tr>
<td>Camping</td>
<td>18</td>
<td>34</td>
</tr>
<tr>
<td>Liming</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td>Pets</td>
<td>15</td>
<td>22</td>
</tr>
<tr>
<td>Removal of artifacts/veget</td>
<td>8</td>
<td>28</td>
</tr>
<tr>
<td>Sanitation</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Payment of fees/taxes</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Wildlife</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

*Other* consisted of miscellaneous aspects of recreation, including selling, gambling, and use of weapons.

Table 3. Forms of normative messages in signs

<table>
<thead>
<tr>
<th></th>
<th>Prescriptive (%)</th>
<th>Prescriptive (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona (n=149)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injunctive</td>
<td>56</td>
<td>44</td>
</tr>
<tr>
<td>Descriptive</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>California (n=77)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injunctive</td>
<td>81</td>
<td>1.7*</td>
</tr>
<tr>
<td>Disruptive</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

* p<0.05, p<0.01

Table 4. Whether signs were damaged by normative message type

<table>
<thead>
<tr>
<th></th>
<th>Damaged (%)</th>
<th>Undamaged (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptive</td>
<td>12</td>
<td>38</td>
</tr>
<tr>
<td>Descriptive</td>
<td>6</td>
<td>94</td>
</tr>
</tbody>
</table>

was discovered. Most signs were near an entrance, a built resource, or a natural resource. Hunter, Stantey, and Lucas (1999) 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 visitor were likely to encounter the signs that would be expected to process, or comprehend, them. In many cases, multiple versions of the same signs were found within a year, especially in California. The majority of messages in the signs addressed descriptive behaviors, and several addressed "nontraditional" aspects of...
recruitment, including weapons, gambling, and rollerblading. A striking preponderance of negatively worded behavioral commands (prescriptive-injunctive) was revealed in the analysis of the messages in signs. This was especially the case for signs located in Califomia, which were distinctly more urban. Descriptive messages were almost nonexistent. Additionally, negatively worded signs (prescriptive) were twice as likely to be damaged, probably a clear reflection of visitors' attitudes toward them (Shatuck, 1987).

The analysis of signs presented here points to an interesting dilemma in visitor information and education. If an area manager's goal are to create a positive recreational experience and to gain visitor compliance with rules and regulations, then better attentions to the presentation of normative information in signs is warranted. At the least, prescriptive messages should predominate over prescriptive 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 nose 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 prescriptive response. The importance of visitor information and education will increase in the future (Hendee, Stankel & 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 constructions. The greater damage evoked by prescriptive 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 Haun (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

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