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From Ranger Talks to Radio Stations

The Role of Communication in Sense of Place

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Abstract

Considerable scholarship has demonstrated that the tenure and quality of our experiences and the physical characteristics of the setting help to predict sense of place (SOP). Less research has examined how communication contributes to place meanings and attachment. Working from the general premise that communication produces meaning, this study examined how exposure to communication about a national park contributes to visitor meanings and attachment to these places. Using survey data from three national parks, this study demonstrated that visitors envisioned parks as blending "natural" and "human" elements. Results suggest that park-related communication contributes to SOP, independent of variables commonly used to predict this concept. Theoretical implications and avenues for future research are discussed.

Keywords: *place meaning; place attachment; communication; national parks*

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Introduction

Mount Rainier is a Washington state landmark: a peak towering above Puget Sound and an iconic image on the state vehicle license plate. More than rock and snow, sites such as Mount Rainier can become special places, embodying meanings such as locales for recreation and leisure, homes, or sanctuaries. Following this perspective, this article engages with core concepts related to sense of place (SOP) by exploring how subjective meanings of and attachment to places are formed (e.g., Farnum, Hall, & Kruger, 2005). Considerable scholarship has demonstrated that human experiences in and physical characteristics of a setting foster meanings of and attachment to a place (e.g., Tuan, 1977). In contrast, there has been limited research examining how communication about a place may influence place meanings and attachment.

Working from the premise that communication produces and reproduces meaning (Carey, 1989), this article examines how communication about national parks may contribute to visitor formation of meanings about and attachment to these places. Using survey data from visitors at three U.S. national parks, this article explores the extent that "natural" or "human" meanings of a park resonate with these audiences, as well as variables that contribute to attachment, including prior experience in the park and use of communication from the National Park Service (NPS).

Understanding Sense of Place

Definition

Places are not just physical locations, but also embody experiences and subjective interpretations of these settings (e.g., Cheng, Kruger, & Daniels, 2003; Low & Altman, 1992; Stedman 1999). Suggesting that place is "multidimensional and multidisciplinary," Stedman (2003a, p. 825) argued that SOP integrates individual and social behaviors with biophysical elements. Although there exists a lively debate about nomenclature, this study follows Tuan (1977), who suggested that SOP comprises both place meanings and attachment. Throughout this article, the more specific constructs of place meanings and attachment, rather than the more encompassing and contested "sense of place," will be used. Although meanings and attachment are often conjoined in terminology (e.g., "meaningful places"), this study distinguishes between the two, where meanings are symbolic statements about the essence or "content" of a place (e.g., "*what kind of a place is this*") (Stedman, 2008).

Place meanings may range from adjectival descriptors (e.g., "my neighborhood is friendly") to fundamentally symbolic (e.g., "this is home"). As symbolic statements about the *nature of place*, place meanings are created through human activities (Kruger & Shannon, 2000), including interaction with the material environment, and with other social actors. To some, a national park might be "a pristine environment untouched by humans" and, to others "where I can spend time with my family." Meanings, therefore, differ from constructs such as attachment that are fundamentally evaluative, such as: "this place is important to who I am" (Stewart, 2008). As symbols guiding attachment, place meanings are often maintained and cherished (Stedman, 2008).

Place attachment, by comparison, is conceived as an affective/cognitive bond between people and their environment (Low & Altman, 1992; Moore & Graefe, 1994; Williams, Patterson, Roggenbuck, & Watson, 1992), forged through experience and engagement with the local environment and social actors. From this definition, various approaches and further definitions have emerged; some have divided place attachment into place identity and dependence (e.g., Kyle, Graefe, & Manning, 2004). Although the former comprises "how one views oneself in relation to the environment" (Farnum et al., 2005, p. 4; see also Williams & Vaske, 2003), the latter

involves "connections based specifically on activities that take place in an outdoor, recreational setting" (Farnum et al., 2005, p. 4). Other researchers have found that place identity and dependence, although conceptually different, often empirically measure the same underlying construct (e.g., Jorgensen & Stedman, 2001). Still others see place attachment as comprising aspects of "people-place bonding" irreducible to component parts (Low & Altman, 1992). Although researchers may disagree on the existence of and/or relationships between place attachment, identity, and dependence, these measures share a fundamentally evaluative, rather than descriptive, definition (Cresswell, 2004; Farnum et al., 2005; Patterson & Williams, 2005).

In the context of outdoor recreation, scholars have found the related concept of "place bonding" to describe the affective, cognitive, and conative attachment that individuals may develop with settings ranging from national parks to local fishing holes (e.g., Hammitt, Backlund, & Bixler, 2006; Hammitt, Kyle, & Oh, 2009; Kyle, Absher, Norman, Hammitt, & Jodice, 2007). While some use "place bonding" and "place attachment" interchangeably, to others, these concepts represent distinct disciplinary lineages and conceptualizations (Hammitt et al., 2009). In this tradition, place attachment is subsumed within the larger concept of place bonding which consists of place identity and place dependence (defined above), as well as additional dimensions, including place familiarity, belongingness, and rootedness (Hammitt et al., 2006). Whether such multidimensional models explain more variance in "experience use history" (e.g., being a "local" to a recreation spot) than the two-dimensional model of place bonding (i.e., place identity and place dependence) is unclear, and the subject of current research (Hammitt et al., 2009).

Developing Place Meaning and Attachment: The Importance of Direct Experience

Much of the place-based literature has emphasized the centrality of direct personal experiences with a place to developing meanings and attachment (e.g., Moore & Graefe, 1994; Relph, 1976; Stedman, 2002; Tuan, 1977). Here, researchers align with foundational studies in community sociology that have demonstrated that time spent in a place matters for developing a "sense of community," including establishing greater and deeper interpersonal bonds with other community members (e.g., Goudy, 1990; Theodori & Luloff, 2000). Besides social ties, the physical characteristics of a setting, such as the scenery of a mountain range, can also influence how individuals develop meanings and attachment. Although these attributes may not determine place-related meanings and/or attachment, they nonetheless influence their development (e.g., Brehm, 2007; Matarrita-Cascante, Stedman, & Luloff, 2010; Stedman, 2003a, 2003b). The type of experience in a place, coupled with its unique characteristics, over time jointly contribute to place meanings and attachment (Matarrita-Cascante et al., 2010).

How people interact in places, such as through outdoor recreation, also affects the meanings and attachment they develop. The specific activity (e.g., biking, hiking), an individual's level of involvement or specialization in this activity, and the "type" of user (e.g., local resident, tourist) may also be relevant (e.g., Bricker & Kerstetter, 2000; Eisenhauer, Krannich, & Blahna, 2000; Kyle, Graefe, Manning, & Bacon, 2003; Moore & Scott, 2003; Smaldone, Harris, & Sanyal, 2008). Smaldone et al. (2008), for example, demonstrated that visitors and local residents in the Grand Teton National Park area of Wyoming developed place meanings and attachment based on time spent in and around the park, as well as their recreational activities. Likewise, Moore and Scott (2003) found commitment to the recreational activity to be the strongest predictor of attachment to both a large regional park, and a trail within it. Indeed, places may become sites where individuals pursue activities that are not only hobbies, but also important to self-concept (Moore & Scott, 2003).

Researchers are just beginning to consider how place meanings can be communicated or "taught" (Kudryavtsev, Stedman, & Krasny, 2012). Exploring the potential role of SOP in environmental education, Kudryavtsev et al. (2012) suggested that the two main thrusts of these educational approaches, experiential (i.e., students spending time in a physical setting), and instructional (i.e., instructors conveying information about the setting), are well suited to influencing place meanings. In particular, instructional education "contributes to place meaning and place attachment through teaching and negotiation about places by indirect means such as lectures, storytelling, books, art, movies, websites, and other media" (Kudryavtsev et al., 2012, p. 11). Accordingly, educators and educational materials may convey to their audiences explicit and implicit information about places. Leaving aside the context of environmental education, the idea that communicators and the process of communication can contribute to meanings is not a new one, but one that has seen limited application to the study of place.

Communication as Production of Meaning

Whether emails or advertisements, communication reflects socio-historical conditions and (re)constructs beliefs about the world (Carey, 1989). Both representing the world and constituting its meanings, communication affords power to the production and interpretation of symbols. In the context of environmental issues, Cox (2007) illustrated this constitutive function by arguing that, "our ideas, beliefs, policies, and practices involving the natural world… are mediated by systems of representation—by human communication" (p. 12).

Sense of Place and The National Park Service (NPS)

Within national parks, information circulates through both "official" and "unofficial" messages and messengers. Whereas "official" refers to communication produced or commissioned by the NPS, "unofficial" signifies communication produced outside of NPS oversight, such as a brochure written and distributed by a local business. To date, the majority of research in national park contexts has examined official messages/messengers with respect to face-to-face (i.e., interpersonal) or written (e.g., signage) communication.

Research suggests that park personnel are both sought-after and effective information sources for visitors to parks and other recreation and leisure settings in the U.S. and abroad (e.g., Buckley, 2010; Doucette & Cole, 1993; Manning, 2003). Rangers have used parks as settings to convey historical information (Ryan & Dewar, 1995) and to highlight contemporary public health issues (Wong & Higgins, 2010). Although the evidence is sparse, studies also suggest a relationship between face-to-face interpretive programming, learning outcomes (e.g., visitor recall of factual information), and behaviors (e.g., Powell & Ham, 2008; Ryan & Dewar, 1995; Wong & Higgins, 2010). Other studies have established a role for park personnel in encouraging normative behavior, such as persuading visitors to plan appropriate itineraries (Rickard, McComas, & Newman, 2011), follow trail etiquette (Hendricks, Ramthun, & Chavez, 2001), or respect fragile ecosystems (Armstrong & Weller, 2002; Henning, 2008). Despite the importance of park personnel, not all visitors encounter these individuals while in a national park. While some visitors may be well acquainted with a particular park, and thus perceive little need to seek out park staff, others may lack opportunity, given limited staff and a park's expansive acreage.

With respect to the type of communication, early research in leisure studies investigated signs, including the type, amount, and organization of the information found at campgrounds and trailheads (e.g., Borrie & Harding, 2002; Lackey & Ham, 2003; Smith-Jackson & Hall, 2002). This research tended to consider communication simply as information dissemination and a

route (or roadblock) to attitude and behavior change (e.g., Lackey & Ham, 2003). More recently, diffusion of technology to national parks has made podcasts (Kang & Gretzel, 2012) and park-maintained websites (Kang & Gretzel, 2012; Tsai, Chou, & Lai, 2010) important sources of park-related information.

Communication, however, is not simply information dissemination, but also the (re)creation of meaning. Park-related communication can, therefore, be reconceptualized as contributing to ideas about "what kind of place this park is." With a commitment to preserve the country's natural and cultural resources, as well as make such locations available to the visiting public in perpetuity, the NPS upholds a unique "dual mandate," as described by the Organic Act of 1916 (Antolini, 2009). As a result, ideas about linkages between people and nature are central to the NPS mission, as is encouraging particular ways to think about and act toward these places. Given its dual mandate, it can be imagined that the meanings NPS promotes about its parks might be bifurcated and possibly contradictory; parks are places to preserve land and its nonhuman inhabitants, yet are also meant for human use and enjoyment.

This article rests on the broad premise that this communication does build and/or perpetuate meaning. From there, it considers how exposure to park-related communication may play a role in influencing not only the meanings that visitors form about national parks, but also their attachment to these places. The research question is: What is the contribution of NPS park-related communication—net of the influence of experiential and setting-based variables—to place meanings and attachment among park visitors?

Methods

Study Context

Between January and August 2011, on-site data collection took place in Mount Rainier National Park (MORA), Olympic National Park (OLYM), and Delaware Water Gap National Recreation Area (DEWA).[1] MORA is a 236,381-acre park on the west side of the Cascade Mountains. Mount Rainier (14,410 ft) is a volcanic mountain boasting the most extensive single-peak glacial system in the U.S. OLYM comprises 922,650 acres of Washington's Olympic Peninsula, is an International Biosphere Reserve and a World Heritage Site, and includes alpine zones, temperate rain forests, and coastline. Situated in New Jersey and Pennsylvania, DEWA comprises 70,000 acres on a 40-mile section of the Middle Delaware River known as the "gap," which is a portion of ridgeline carved out by the river over thousands of years. At all three sites, NPS communication included ranger-led programs, brochures, websites, and interpretive signs. In addition, visitors could receive information from unofficial sources, such as local hotel and restaurant staff, chambers of commerce, and non-NPS produced guidebooks.

Sampling and Data Collection

The NPS does not share publically available contact information, so visitors cannot be sampled systematically from a particular frame. Following the precedent of NPS visitor use studies (see Dillman, Dolsen, & Machlis, 1995), visitors were contacted face to face at locations such as fee collection stations and visitor centers, selected after consultation with each park's chief ranger.[2] The researcher contacted one person out of each visitor group passing a predetermined landmark; for groups in vehicles, the driver was selected, whereas in groups on foot, the first person to respond to the researcher's greeting (and over 18 years old) was selected. In areas with a fee station, the researcher contacted each car within a predetermined time period *before* the

visitors stopped to pay. Addressing the selected individual, the researcher explained the study and asked whether he or she would be willing to participate, which involved sharing a first name and e-mail address; the individual was then thanked and given a postcard with the researcher's contact information. Across the three parks, compliance with the request to share an e-mail address was high, averaging 89% across sites. Given that more time was spent at MORA, there were greater opportunities for visitor recruitment, leading to a larger sample frame.

Cornell University Survey Research Institute coordinated the survey process, including contacting potential respondents by email with an introductory message that included a link to a web-based questionnaire and a unique ID number. Nonrespondents received up to two e-mail reminders sent at two-week intervals. Upon completing the questionnaire, respondents could enter a random drawing for a gift card. Across the three sites, unadjusted response rates (total survey responses/total visitors contacted) ranged from 39% at DEWA ($n = 191$) to 58% at MORA ($n = 411$) and 61% at OLYM ($n = 171$).

Measurement

Reliance on park-related communication. Using Griffin, Dunwoody, and Zabala's (1998) measurement of "information channel reliance," visitors were asked to indicate the extent to which they relied (not at all, very little, some, a lot, not applicable) on 11 sources of information about the park, denoted in the questionnaire as "National Park Service information sources" (i.e., official communication) and "information sources other than the National Park Service" (i.e., unofficial communication). First-time visitors were instructed to answer with respect to this visit; non-first-time visitors were asked to consider all of their park visits in the last two years to the park. "Not applicable" responses were coded as missing, and subsequently excluded from the analysis.

Recreational activities. Respondents indicated whether they had participated in any of 16 listed recreational activities on their most recent visit. Conversations with park personnel, previous research (Tuler, Golding, & Kruger, 2002), and knowledge based on extended stays in each park informed the list, which included both seasonal (e.g., swimming) and year-round (e.g., visiting a visitor center) activities. This study used two sublists of these activities: "guided activities" and "non-guided activities." Three nonguided activities were selected because (a) all three could be described as nonguided, in that individuals undertake them without NPS personnel; (b) they tend to involve a higher level of skill, expertise, and/or risk; (c) respondents reported participating in them. These activities were (a) mountaineering ($n = 67$), (b) backpacking in the backcountry ($n = 60$), and (c) skiing or snowboarding ($n = 109$). Using the same logic described above, a sublist of two guided activities was selected: (a) visiting a visitor center ($n = 456$) and (b) attending a ranger-led program or hike ($n = 63$).

Experience in a national parks. Experience in a national park was measured by (a) the number of visits to the park in the past year (i.e., once, 2–5 visits, 6–10 visits, more than 10 visits), and (b) the total number of national parks the individual had visited in his or her lifetime.

Respondent attributes. Standard measures were used, including (a) race/ethnicity, (b) age, (c) sex, (d) highest level of formal education completed, and (e) native language.

Place meanings and attachment. Items pertaining to place meaning were informed by Davenport et al. (2000) as well as by an informal review of the messages contained in official park communication in each site. Eight items were measured on a 5-point scale, from *strongly disagree* to *strongly agree,* selected to represent both "nature-based" meanings of the park (e.g., "a wildlife habitat") and "human-based" place meanings (e.g., "a place mostly for vacationers"). The items comprising place attachment were adapted from existing literature, and included seven

items measured on the same scale (e.g., "Few people know Mount Rainier National Park like I do") (Table 3). Based on the NPS dual mandate, it was expected that, through exploratory factor analysis, place meaning items would load onto two separate factors, one consisting of "nature" based park meanings and a second of "human" based park meanings.

Weighting and Analysis

Given the disproportionate number of responses per park and the level of visitation in each park during the study period, weights were calculated to attempt to make the resulting sample more representative of the larger visiting public. Weights for each of the three parks were calculated as population percentage divided by sample percentage. Specifically, population percentage equaled the number of visitors to the individual park during the sampling period (as tracked and reported by the NPS) divided by the sum of visitors to all three parks during the respective sampling periods. The sample percentage equaled the number of survey responses at the individual park divided by the total number of responses across all three parks.[3]

Data were analyzed in SPSS (version 21) using descriptive and inferential statistics. For the correlational and regression analyses, each of the activity variables was calculated as the sum of the type of guided or non-guided activity that the respondent participated in during the most recent park visit. Block model OLS regression analyses used the "WLS" command. The PROCESS macro (Hayes, 2013) for SPSS was used for conducting an exploratory mediation analysis with a bootstrapping approach.

Results

Table 1 provides an overview of respondents for DEWA (n = 191), OLYM (n = 171), and MORA (n = 411; total n = 773) using the weighted data. In each of the parks, most respondents were White/Caucasian, and spoke English as a native language. Mean age in each of the park samples was approximately mid-forties. Whereas the majority of the MORA and OLYM samples were male (65% and 69%, respectively), less than half (48%) of the DEWA sample was male. Approximately one third of visitors at each of the parks (26% in DEWA) reported completing a four-year college degree as the highest level of formal education. In MORA and OLYM, more than half of the respondents had visited the park in which they were surveyed more than once in the last year (75% and 60%, respectively), whereas at DEWA, the proportion was just under half (49%). The majority of respondents in all parks had visited other national parks, and had spent more than four hours in the park on their most recent visit. At all three parks, visitors reported relying at least somewhat on both official and unofficial communication about the park (Table 2). Sources rated as most relied upon included NPS brochures, newspapers, and maps; the park website; interacting with park staff; and in-park signs, exhibits, and movies. For unofficial communication, visitors reported relying most on non-NPS guidebooks and other visitors, family members, and friends.[4]

Understanding Place Meanings

A factor analysis with principal axis factoring extraction and varimax rotation using the weighted data (KMO = .70, Bartlett's χ^2 = 736.50, $p < .001$) indicated that the eight items loaded on two factors; however, the first factor, on which six items loaded highly, represented a *conjoining* of natural (e.g., "this park is a wildlife habitat") and human-based (e.g., "this park is a community of visitors, employees, and volunteers") place meaning. A reliability analysis indicated that the alpha of the items would be improved by omitting one item ("a place threatened by humans"); the resulting five items were averaged into an index (α = .69) (Table 3). Hereafter, this index is referred to as representing "blended" place meaning.

Table 1

Descriptive Statistics of the Visitor Sample (N = 773)

	DEWA	OLYM	MORA
Sample Size	*n* = 191	*n* = 171	*n* = 411
Age	*M* = 45.51 (*SD* = 12.61)	*M* = 44.07 (*SD* = 13.74)	*M* = 43.97 (*SD* = 12.68)
Male	48%	69%	65%
From Local States	54% (NY, NJ, or PA)	76% (WA, OR)	82% (WA, OR)
White/Caucasian	84%	91%	88%
English as Native Language	89%	93%	94%
4-year College Highest Formal Education	26%	31%	32%
Group size	*M* = 4.82 (*SD* = 5.06)	*M* = 3.69 (*SD* = 4.60)	*M* = 4.46 (*SD* = 5.06)
Total number National Parks Visited	*M* = 7.91 (*SD* = 8.26)	*M* = 10.13 (*SD* = 8.05)	*M* = 9.47 (*SD* = 11.24)
Visited Park > Once in Last Year	49%	60%	75%
> 4 Hours in Park on Most Recent Visit	60%	69%	72%

Note. Descriptive statistics based on weighted data.

Table 2

Mean Communication Reliance [1]

	DEWA	OLYM	MORA
Official Sources			
Interpretive Program	1.61 (1.02)	1.76 (.96)	1.88 (1.0)
Brochures, newspapers, maps	2.81(1.05)	2.97 (.92)	3.06 (.88)
NPS website	2.77 (1.20)	3.31 (.91)	3.29 (.93)
Signs, exhibits, movies	2.78 (1.08)	2.77 (.96)	2.74 (.95)
In-park AM radio station	1.25 (.63)	1.67 (.95)	1.77 (1.0)
Interacting with park staff	2.69 (1.01)	2.89 (.94)	2.81 (.96)
Unofficial Sources			
Chamber of commerce, business	1.67 (.95)	1.48 (.80)	1.48 (.83)
Guidebooks (non-NPS)	2.19 (1.14)	2.79 (1.07)	2.88 (1.04)
Recreational trip leaders/guides	1.82 (1.04)	1.61 (.94)	1.81 (1.07)
Concessions staff	1.96 (1.04)	1.78 (.96)	1.99 (.98)
Visitors, family/friends	2.51 (1.08)	2.71 (.98)	2.66 (1.0)

Note. Values presented are means with standard deviation in parentheses; calculations based on weighted data.
[1]In response to question worded: "How much would you say you relied on the following sources for information about the park?" and measured on a scale where 1 = *not at all,* 2 = *very little*, 3 = *some*, and 4 = *a lot*. First-time park visitors were asked to answer with respect to their most recent visit; repeat visitors were asked to respond with respect to all of their visits in the past two years. Those answering "not applicable" were coded as missing, and excluded from the analysis.

Based on satisfactory reliability (α =. 71), five items assessing reliance on unofficial communication (e.g., interacting with restaurant staff) were averaged into an index, as were six items assessing reliance on official communication (e.g., attending an interpretive program) (α =. 73).

There were positive significant correlations between higher scores on blended place meaning and age, and participation in a guided activity (Table 4). Additionally, there was a positive significant correlation between blended place meaning and reliance on official communication ($r = .25$, $p < .001$).

Table 3

Variable Scale Itmes and Reliability

Scale	Item-Total Correlation	Cronbach's α if item deleted	Cronbach's α
Blended Place Meaning			.69
This park is a wildlife habitat.	.55	.59	
This park is a place with historical value.	.56	.58	
This park is a place to be preserved for future generations.	.32	.68	
This park is a community of visitors, employees, and volunteers.	.39	.66	
This park is an unpredictable landscape.	.41	.65	
Place Attachment			.83
This park means a lot to me.	.66	.79	
I identify strongly with this park.	.70	.79	
No other place can compare to this park.	.61	.80	
I feel that I can really be myself at this park.	.56	.81	
Few people know this park like I do.	.46	.83	
Being at this park says a lot about who I am.	.65	.80	
Reliance on Official (NPS) Communication			.73
Attending an interpretive program (e.g., ranger talk).	.38	.71	
Reading NPS brochures, newspapers, or maps.	.58	.65	
Viewing signs, exhibits, or movies in the park.	.54	.66	
Interacting with NPS staff, such as rangers, throughout the park.	.48	.68	
Visiting a National Park Service website (e.g., www.nps.gov or www.nps.gov/mora)	.39	.72	
Listening to the Traveler Information Systems (TIS) (AM radio station in the park)	.42	.70	
Reliance on Unofficial (non-NPS) Communication			.71
Interacting with climbing guides, boating guides, or other recreational trip leaders.	.55	.64	
Interacting with staff at restaurants, gifts shops, or hotels in the park.	.58	.62	
Interacting with other park visitors, family members, or friends.	.39	.70	
Visiting a local chamber of commerce, private businesses, or visitor center outside of the park.	.48	.66	
Reading guidebooks, such as hiking guides.	.39	.71	

Note. Item-total correlations and alphas based on weighted data.

Table 4

Pearson Correlations between Place, Demographic, Communication, and Experience Variables

	Place Attachment	**Place Meaning**
Place Attachment	1	
Place Meaning	**.39*** **	1
Age	.05	**.19*** **
Education	**-.15*** **	-.04
Reliance on Official Info	**.25*** **	**.25*** **
Reliance on Unofficial Info	**.26*** **	.02
Number of Visits (past year)	**.45*** **	.04
	.00	.05
Total Parks Visited	**.07***	**.21*** **
Participation in Guided Activity	**.22*** **	.06
Participation in Non-Guided Activity		

Note. Bold indicates significant correlation. *Correlation is significant at the .05 level (2-tailed)
**Correlation is significant at the .01 level (2-tailed)
***Correlation is significant at the 0.001 level (2-tailed)
Correlations based on weighted data.

The block model regression predicting agreement with blended place meaning consisted of three sequential blocks: (a) respondent attributes, (b) park-related experience, and (c) park-related communication (Table 5). The ordering of these blocks represents an effort to distinguish the effect of communication on place meaning, over and above the more conventional variables used to understand the concept. In Model 1, being Hispanic/Latino, older, female, and a native English speaker was related to higher agreement with blended place meaning. This model was statistically significant ($F = 7.32$, $p < .001$), but explained only 11% of the variance. Model 2 introduced variables related to experiences in national parks. In addition to the variables that were significant in Model 1, participating in a guided activity was associated with increased agreement with blended place meaning ($\beta = .17$, $p < .01$), but being a DEWA visitor was associated with *decreased* agreement, as compared to being a MORA visitor ($\beta = -.26$, $p < .01$). Adding these experience-based variables increased the proportion of explained variance above that of Model 1: $R^2 = .20$, $F = 6.97$, $p < .001$. Introducing the communication variables in Model 3, visitor reliance on official communication increased agreement with blended place meaning ($\beta = .21$, $p < .01$), whereas reliance on unofficial communication decreased agreement ($\beta = -.24$, $p < .001$). In Model 3, the proportion of explained variance increased, but quite modestly: $R^2 = .24$, $F = 7.48$, $p < .001$.

Understanding Place Attachment

A factor analysis of the place attachment variables with principle axis factoring extraction and varimax rotation using the weighted data (KMO = .84, Bartlett's $\chi^2 = 1636.96$, $p < .001$) indicated that the seven items loaded onto a single factor. A reliability analysis indicated that the alpha of the items would be improved by omitting one item ("The things I do at this park I would enjoy doing just as much at a similar site"); the resulting six items were averaged into an index ($\alpha = .83$; Table 3). As with place meaning, place attachment was positively related to reliance on park-related communication, including official ($r = .25$, $p < .001$), and unofficial sources ($r = .26$, $p < .001$; Table 4).

The regression predicting place attachment consisted of four sequential blocks: (a) respondent personal attributes, (b) experience with parks, (c) park-related communication, and (d) place meanings (Table 6). In Model 1, identifying as Asian related negatively to increased place attachment, whereas identifying as "other" race related positively. This model explained 8% of the variance. In Model 2, all three dummy variables related to visiting the park more than once in the past year, as compared to visiting the park once, were related to increased place attachment. Participation in non-guided activities was also related to increased place attachment ($\beta = .20$, $p < .001$). Adding the park-related variables greatly increased the proportion of explained variance above that of Model 1: $R^2 = .39$, $F = 17.08$, $p < .001$.

In Model 3, visitors' reliance on official communication was associated with increased place attachment ($\beta = .15$, $p < .01$). The number of visits in the past year, as well as participating in nonguided activities, continued to be positively related to place attachment. The proportion of explained variance increased, but only slightly: $R^2 = .40$, $F = 15.57$, $p < .001$. Model 4 added agreement with blended place meaning. This variable was related to place attachment ($\beta = .26$, $p < .001$), leading to an increase in explained variance: $R^2 = .45$, $F = 18.45$, $p < .001$. In this model, other positive predictor variables included participation in non-guided activities and visiting the park more than once in the past year (as compared to visiting the park just once in the past year), whereas identifying as Asian (as compared to White/Caucasian) predicted decreased place attachment. Reliance on official communication was a marginally significant predictor of place attachment in this model ($\beta = .09$, $p = .07$).

Table 5

Summary of Block Regression Analysis for Variables Predicting Blended Place Meaning (N =424)

	Model 1			Model 2			Model 3		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Constant	3.43	.15		3.63	.18		3.67	.20	
Race (1=Asian)[a]	.06	.13	.03	.12	.13	.05	.10	.13	.04
Race (1=Hispanic)	.27	.10	**.13***	.32	.10	**.15****	.28	.10	**.13****
Race (1= "Other")	-.23	.19	-.06	-.25	.18	-.06	-.26	.18	-.06
Education	.00	.02	.00	-.01	.02	-.04	-.02	.02	-.06
Sex (1=female)	.14	.05	**.13****	.14	.05	**.14****	.13	.05	**.12***
Age	.01	.00	**.17*****	.01	.00	**.14****	.01	.00	**.14****
Native language (1=English)	.39	.10	**.23*****	.40	.10	**.24*****	.33	.10	**.20****
# Parks visited				.00	.00	-.00	.00	.00	-.00
2-5 visits (past yr)[b]				.09	.06	.08	.14	.06	**.14***
6-10 visits (past yr)				.04	.09	.02	.07	.09	.04
> 10 visits (past yr)				.04	.07	.03	.07	.07	.05
Park name[c] (1=DEWA)				-.29	.11	**-.26****	-.25	.11	**-.22***
Park name (1=OLYM)				-.04	.11	-.03	-.04	.11	-.04
Guided Activity				.14	.04	**.17****	.11	.04	**.13****
Non-Guided Activity				.05	.05	.06	.08	.05	.10†
Reliance on Unofficial Comm.							-.18	.05	**-.24*****
Reliance on Official Comm.							.16	.05	**.21****
F change in R^2	7.32			6.05			9.20		
R^2	.11			.20			.24		

Note. Bold indicates significant coefficient. *$p < .05$. **$p < .01$. ***$p < .001$ † $p < .07$.
Regression coefficients based on weighted data.
[a]For race/ethnicity dummy variables, the reference category used was White/Caucasian.
[b]For number of park visits dummy variables, the reference category used was one visit in the past year.
[c]For park dummy variables, the reference category used was MORA.

Table 6

Summary of Block Regression Analysis for Variables Predicting Place Attachment (N = 422)

	Model 1			Model 2			Model 3			Model 4		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Constant	3.27	.22		2.93	.23		2.68	.25		1.33	.33	
Race[a] (1=Asian)	-.50	.19	**-.16****	-.22	.16	-.07	-.28	.16	**-.09†**	-.32	.15	**-.10***
Race (1=Hispanic)	.10	.15	.03	.16	.13	.06	.11	.13	.04	.01	.12	-.00
Race (1="Other")	.54	.28	**.09***	.23	.23	.04	.18	.23	.03	.28	.22	.05
Education	-.04	.02	**-.09†**	-.02	.02	-.05	-.02	.02	-.05	-.01	.02	-.03
Sex (1=female)	-.05	.07	-.04	.05	.06	.04	.04	.06	.02	-.01	.06	-.01
Age	.01	.00	**.08†**	.00	.00	.00	.00	.00	-.00	-.00	.00	-.05
Native language (1=English)	.24	.15	.10	.22	.13	**.09†**	.18	.13	.08	.06	.12	.03
# Parks visited 2-5 visits[b] (past yr)				.00	.00	.00	.00	.00	.02	.00	.00	.02
6-10 visits (past yr)				.58	.07	**.38*****	.57	.07	**.38*****	.52	.07	**.34*****
>10 visits (past yr)				.46	.12	**.17*****	.42	.12	**.16*****	.39	.11	**.15****
Park name[c] (1=DEWA)				.83	.09	**.44*****	.82	.09	**.43*****	.79	.09	**.42*****
Park name (1=OLYM)				-.08	.13	-.05	-.03	.13	-.02	.06	.13	.04
Guided Activity				.07	.14	.04	.07	.14	.04	.08	.13	.05
Non-Guided Activity				.09	.05	**.08†**	.04	.05	.03	-.00	.05	-.00
Reliance on Unofficial Comm.				.25	.06	**.20*****	.24	.06	**.20*****	.21	.06	**.17*****
Communication & Place												
Reliance on Official Comm.							.16	.06	**.15****	.10	.06	**.09†**
Place Meaning										.37	.06	**.26*****
F change	5.34			25.17			4.67			37.44		
R^2			.08			.39			.40			.45

Note. Bold indicates significant coefficient. *p < .05. **p < .01. ***p < .001 †p < .10

Regression coefficients based on weighted data.

[a]For race/ethnicity dummy variables, the reference category used was White/Caucasian.

[b]For number of park visits dummy variables, the reference category used was one visit in the past year.

[c]For park dummy variables, the reference category used was MORA.

Mediation Analysis

A mediation analysis was conducted to explore whether blended place meaning mediates the relationship between park-related communication and place attachment. Results suggested that place meaning mediates the relationship between reliance on official communication and place attachment (indirect effect, B, = .05, 95% CI [.02, .10], n = 422), but when reliance on unofficial communication was included as the predictor variable, the indirect effect was not different from zero. In other words, a visitor's reliance on official communication is related to his/her development of place meaning that, in turn, is related to place attachment.

Discussion

This study explored how place meaning and attachment may be created through communication, a variable that has received limited attention in the SOP literature, as well as through more traditional experience-based variables. Reflecting previous research, experiential variables helped to explain place meaning and attachment, but the results also indicate that communication, both produced by the NPS and by outside entities, plays a unique role in explaining these constructs.

Contrary to expectation, based on the dualism apparent in the NPS mandate, visitors' place meanings blended natural and cultural aspects. These place meanings, however, might in fact be a more realistic reflection of how people interpret places such as national parks, in what Cantrill (1998) refers to as a "continuum between environmentally versus socially salient features" (p. 312). Many scholars have rejected the nature-culture dualism, preferring instead to speak of "socionatures" or "naturecultures" (e.g., White, 2006). Although some have criticized communication about national parks, and wilderness more generally, for perpetuating a false separation of "nature" from humankind (e.g., Cronon, 1996; DeLuca, 2010), the results here suggest that this dualistic interpretation was not operative for park visitors. Indeed, conceptualizing meanings as a blend of the material (i.e., "natural") and social (i.e., "peopled") may be applicable to how user groups encounter national parks, and supports the broader finding that the meaning of recreation is not determined solely by characteristics of the activity itself. Rather, the act of hiking, skiing, picnicking, or anything else is imbued with significance by virtue of (among other factors) of where we take part in the activity and who joins us (e.g., Ditton, Loomis, & Choi, 1992; Kyle et al., 2007).

Results also suggested that reliance on official communication fostered visitors' agreement with these blended place meanings. Visitor participation in guided activities, which often involve opportunities to interact with park staff, also was related to increased agreement with these meanings, suggesting that such events include more than the dissemination of facts, and represent opportunities to convey (implicitly or explicitly) the "kind of place a park is." Compared to those who visited the park just once in the past year, those who visited between two and five times were more likely, on average, to agree with blended place meanings, but the same was not true of those who made more than six visits in the past year. Possibly, for those who are less acquainted with the park, but not first-time visitors, meaning becomes particularly salient and may be more open to influences from particular forms of communication. Future research, ideally using a longitudinal or panel design, should explore the question of whether, when, and how level of visitation influences communication reliance and, in turn, place meaning.

In contrast, reliance on unofficial communication demonstrated an inverse relationship with the blended place meaning; those who relied more on unofficial communication, on average agreed *less* with blended place meanings. That official and unofficial communication can either support or erode a place meaning particular to national parks suggests that meaning creation is not confined to an institutionally sanctioned vacuum. Instead, how visitors come to know parks may be influenced by a wider variety of communication outside of the NPS, including tourism-based websites, non-profit agency messages, Twitter feeds, outdoor clothing advertisements, nature documentaries, or interactions with other park visitors. These results imply much for strategic place-related communication. Although certain NPS employees, such as interpretive rangers, likely understand their roles as promoting attachment to parks (National Association for Interpretation, 2009), the NPS might consider the contribution of communication beyond its

personnel in developing place meaning. Future research might explore the extent that unofficial information sources may complement or contrast with the institutionally delivered messages. If communication reliance contributes to place meanings that, in turn, support place attachment, and if place attachment may foster continued visitation and support of parks, then the NPS would be wise to examine unofficial communication.

With respect to place attachment, three findings support existing literature. First, place meaning was strongly predictive of attachment (e.g., Stedman, 2003a, 2008; Wynveen, Kyle, & Sutton, 2012). Second, the positive relationship observed between the number of park visits in the past year and place attachment lends support to the "developmental" view of attachment as a function of the time spent in a place (e.g., Hay, 1998). Third, the positive relationship between place attachment and participation in non-guided activities supports the contention that attachment may be, at least in part, based on use of these places for specialized recreation (e.g., Eisenhauer et al., 2000). In addition to the direct effect observed between place meaning and place attachment, results from the mediation analysis indicated that reliance on official communication influences place attachment indirectly, through increased agreement with certain park meanings. By virtue of these cross-sectional data, however, we cannot be certain that place meanings cause place attachment, and not vice versa. Future research, employing a longitudinal or panel design, would help further clarify the directionality of these relationships.

Park-specific differences, however, remain. Results suggested that being a DEWA visitor, as compared to a MORA visitor, was associated with less agreement with blended place meaning. Differences between park visitors may be based, at least in part, on each park's "designation," including as a national park or a recreation area (Schuett, Le, & Hollenhorst, 2010). Based on what is known about variation in place meanings and attachment by landscape (e.g., Brehm, 2007) and activity choice (e.g., Moore & Scott, 2003), the differences observed are not necessarily surprising. Both OLYM and MORA include large tracts of designated wilderness and opportunities to participate in remote and technical recreation, such as mountaineering. DEWA includes more visibly developed areas, such as lifeguarded beaches, and fewer opportunities for specialized activity. Interviews conducted with park staff for a separate component of this research suggested that certain attributes of DEWA, such as its proximity to urban areas, made it less emblematic to visitors (or would-be visitors) as federally protected land. Furthermore, unlike MORA and OLYM, DEWA has no central entrance where vehicles must stop, make contact with a park employee, and pay a fee; instead, entrances abound (i.e., 70 access points from adjoining rural roads and state highways) and signs indicating the park's boundaries are scarce. One can imagine that questions of park identity might influence how visitors both understand and build relationships with a place.

Limitations and Future Research

Logistical issues, such as frequent road closures at MORA and OLYM due to avalanche hazards, made establishing a random sampling schedule untenable. Moreover, differences in seasonal visitation may have influenced results. Given these potential constraints, caution is needed in generalizing results to other visitors and national parks. Future research should make more concerted efforts to measure and account for differences in park facilities, rules and regulations, visitor recreation patterns, characteristics of the biophysical landscape, as well as distinctions between visitors who travel long distances to the park, and local residents.

Other limitations relate to measurement. It is possible that utilizing different "nonguided" park activities may have provided a more representative measure of visitor behavior. In addition, allowing participants to answer "not applicable" to questions of communication reliance

may have unnecessarily excluded respondents, and thus introduced error (see Note 4). Possible reasons for why participants deemed information sources not applicable could include prior familiarity with the park, lack of trust in the NPS, or lack of access to a website (among others). Future research should better account for these potential differences in interpretation.

Given that the identity of a place may be enabled not only through social and biophysical characteristics, but also through communication, future research is needed to explore this complex interaction. First, further study is necessary to analyze the production and interpretation of messages. In a national park context, research might ask more explicitly how certain forms of communication define the meaning of the park. Researchers might also speak with NPS employees charged with scripting communication (e.g., public information officers) to discern their motives and goals, implicit or explicit. Moreover, in-depth interviews or focus groups with visitors, or groups of visitors, might shed light on message interpretation, as well as capture social dynamics. To address potential recall problems, researchers might approach visitors directly after exposure to communication (e.g., following interpretive programs).

Second, the differences observed between DEWA and the other parks provide fodder for considering how these results could be extrapolated to recreation contexts outside of national parks. In other state and federally protected areas or even privately owned land, communication about the place may emanate more from unofficial than official sources. Town and city parks, for example, often lack resources to staff visitor centers, produce up-to-date interpretive displays, or make brochures available. Without the type of enabling legislation bestowed upon national parks, these places also may lack a discernable identity, including how visitors should interact with them. Because holding particular meanings about a place, as well as being attached to it, may predict pro-environmental behavior (e.g., Brehm, Eisenhauer, & Stedman, 2013), future research should consider possible interactions between socio-demographic, experience, and communication-related variables, and determine how these relationships might differ across recreation landscapes. To this end, researchers should also examine how the results reported here may be verified or change, given the inclusion of the "place bonding" concept. For instance, individuals may be "experienced" and "familiar" with a particular recreation site, yet not necessarily "dependent" on or "rooted" to it (i.e., they could just as easily go hiking elsewhere) (Hammitt et al., 2006). Further exploring the relationship between reliance on communication and these multiple place bonding dimensions may add nuance to the story told by this study, and assist park managers seeking to better understand their visitor base.

Finally, future research should account for not only current park users, but also *potential* park users (e.g., residents of surrounding communities or traditionally underrepresented populations in national parks). Given that official communication may influence place meanings, how might these meanings, perhaps conveyed in a park website and viewed in one's home, contribute to intentions to visit a national park? Is "blended" place meaning emblematic for those who have never visited a national park and, moreover, can potential visitors develop attachment to a park that they have not visited? Exploration of these and related questions is warranted not only for developing SOP theory, but also for assisting park managers with attracting and maintaining visitors.

Notes

[1]Parks were selected because they were predicted to produce similar (i.e., MORA and OLYM) and contrasting results (i.e., DEWA and the OLYM and MORA). Officials from all three parks had demonstrated an ongoing interest in social science research, thus making accessing these parks' visitors somewhat easier than those at other parks.

[2]Due to scheduling and resource constraints, park visitors were sampled during the winter/early spring at MORA and OLYM, and during the summer at DEWA. At all three parks, recruitment took place almost exclusively on Fridays, Saturdays, and Sundays due to higher visitation, with the exception of President's Day and the 4th of July.

[3]Weights were calculated as follows:

	Population: NPS Recorded Visitation (2011)[a]	Population %	Sample: Survey Responses	Sample %	Weight (Population %/Sample %)
MORA	Feb. – April: 57,355	.037	411	.532	.0695
OLYM	March – April: 233,721	.151	171	.221	.683
DEWA	July – August: 1,251,903	.811	191	.247	3.283
Total	1,542,979	1.0	773	1.0	

[a]NPS tracks "recreation visits per month" by multiplying the number of vehicles recorded in traffic loop counters by a persons-per-vehicle multiplier, which varies seasonally. See https://irma.nps.gov/Stats/

[3]Data analysis employed listwise deletion, the SPSS default for OLS regression, which deletes any cases with incomplete information on one of the variables included in the regression. Moreover, visitors who answered that a communication source was "not applicable" were excluded. For four of the categories (interpretive program, Traveler Information Systems, chambers of commerce/private businesses/outside visitor centers, and recreational guides/trip leaders) this meant excluding greater than 10% of the responses. For these reasons, the sample size utilized for the regression analyses and mediation analysis was much lower than that used for the descriptive statistics, and that of park visitors overall.

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