Is recreation a landscape value?: Exploring underlying values in landscape values mapping

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ABSTRACT

Landscape values mapping (LVM) is a participatory process used to gather public input for park and forest management. Respondents assign landscape values or ecosystem benefits to places on a map using a typology that usually includes the value "recreation." Whereas other landscape values in the typology reflect personal guiding principles and enduring beliefs, recreation represents a diverse set of human behaviors influenced by their values and beliefs. For a more accurate comparison to other mapped values, and to better inform land managers of the underlying factors determining people's preferences, it is important to deconstruct the values that people draw upon when mapping recreation. In this study, we compare maps that included and excluded "recreation" in the values options. In the absence of recreation, other values surfaced variably by individual, providing insight to its complexity and suggesting that LVM exercises that incorporate recreation may not be eliciting underlying, and often conflicting, values.

1. Introduction

People form attachments and assign meanings to places based on personal experiences (Stokowski, 2002), symbolic representations (Low, 1992; Mazumdar & Mazumdar, 2004), and shared narratives (Williams & Vaske, 2003). Conflict in landscape planning may occur when diverse groups appreciate different benefits from a shared common space, especially when there are a scarcity of benefits or when the extraction of one benefit diminishes another (Reed, 2008). When a place is important for identity-making, perceptions of conflict can be particularly strong (Kyle, Graefe, Manning, & Bacon, 2004). As such, understanding the diversity of values and uses associated with natural areas is critical for long-term, sustainable planning (Parkins & Mitchell, 2005).

In psychological literature, values refer to enduring beliefs and guiding principles that serve as standards or criteria that transcend specific actions and situations (Schwartz, 2012). They are the foundation of human cognition, forming the basis of value orientations (defined as patterns of basic beliefs), attitudes, and behaviors (Fulton, Manfredo, & Lipscomb, 1996; Jones, Shaw, Ross, Witt, & Pinner, 2016; Vaske & Donnelly, 1999). Values are slow to change compared to attitudes and behaviors, and are globally coherent. Schwartz (2012) described ten foundational values that were consistent across 82 countries. The relative importance assigned to these essential values differentially influences people's place-based behaviors, such as those associated with recreational activities (Schwartz, 2012).

To better understand where people use and value public lands for various activities, public agencies have utilized public participatory GIS (PPGIS) techniques, such as landscape values mapping (LVM). The LVM method asks respondents to assign landscape values to places on a map or aerial photo from a predetermined list (Brown & Reed, 2000; Brown, 2004). Final maps from this method inform forest and park planners of important areas for outdoor recreation, economic activity, scenery, and other forest uses (e.g., Brown, 2012; Brown & Reed, 2009; Brown & Weber, 2011). This approach has been adapted and modified for application in a variety of settings globally and has been well-synthesized elsewhere (Brown & Kyttä, 2014; Brown, 2012; McLain et al., 2013; Styers, Dobbs, Cerveny, & Hayes, 2018).

The original LVM typology included 13 landscape values: *economic, learning, historic, cultural, future, intrinsic, spiritual, therapeutic, subsistence, life supporting, biodiversity, recreation* and *aesthetic* (Brown & Reed, 2000). The researchers were cognizant that all landscape values did not represent true 'values' as defined by most environmental psychologists; the choice to include these terms was likely made to increase

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the tangibility or palatability of the LVM tool to land managers, whose mandates require managing resources for multiple functions. In fact, the original typology has been modified and adapted to suit local conditions and management priorities (See Brown (2012) for examples).

While LVM has become a popular tool to better inform planning and illuminate potential user conflicts, the use of "recreation" as a value does little to elucidate divergent or convergent stakeholder needs. In qualitative responses to LVM exercises, the use of recreation has been attributed to myriad behaviors, (e.g., horse-back riding, rock climbing, motorized off-road vehicles, birdwatching) each of which may be influenced by distinct or conflicting values (e.g., adrenaline, solitude, learning) (Cerveny, Biedenweg, & McLain, 2017).

When provided "recreation" as a landscape value option, studies have found that it is by far the most frequently mapped value, particularly in North America and Australia (Raymond & Brown, 2011). Rather than demonstrate the popularity of this value over others, however, we believe this trend is better attributed to recreation (a behavior) being higher on the cognitive hierarchy, thus encompassing many values, and making it the easiest response option for study participants.

To our knowledge, no experiment has explored whether landscape values maps would be significantly different without the inclusion of recreation as a potential value. Here we summarize the results from one such study, where 56% of participants were randomly provided a list of values similar to other lists used in LVM-based approaches, but without the recreation option, and the other 44% of participants received a commonly used list with recreation as an option.

2. Methods

Our study had 207 respondents, most of whom were students in four different sections of three different natural resource management courses: 127 were on-campus students at a west coast university and 40 were on-campus students at an east coast university. The remaining 40 respondents were members of the public intercepted at a trailhead at Bent Creek Experimental Forest, North Carolina.

Following common LVM protocols, respondents were given a map of a relevant region printed from Google Maps – the county of residence for college students or the forest boundary for the public. Respondents were asked to mark five places that were important to them using a point, line, or polygon. For each of the five places, they were instructed to choose up to three landscape values they associated with that area from a predefined list. Respondents were randomly given one of two lists of landscape values; one list of 12 landscape values included recreation (the control group), and the second list of 11 landscape values omitted the recreation value (the experimental group) (Table 1). It should be noted that the landscape values selected for the study reflected the study group (primarily students) and did not include the full list of landscape values employed by traditional LVM studies. For

Table 2
Sample descriptors.

Location	Type	Number	Percent in control group	Mean age (SD)
University #1	Student	127	51%	22.9(5.2)
University #2	Student	40	50%	22.4(3.5)
Bent Creek E.F.	Public (forest user)	40	33%	44.2(14.6)
Total		207	44%	27(10.8)

example, the typology does not include the value 'economic' or 'subsistence' (i.e., gathering food and material for consumption).

To answer the research question: *"Do landscape values maps show significantly different information when recreation is provided as a response option?"* we conducted independent *t*-tests to examine mean differences in frequency of response between the control and experimental groups for each of the 12 values. To prepare the data for this step, we first calculated the percentage of mapped places that identified each value for each respondent. In addition, we collected general demographics (age, sex, number of years in region). For the *t*-tests, significance was determined at the $p = 0.05$ level. All data were analyzed using IBM SPSS 20.

3. Results

For the total sample, 115 respondents (56%) were in the experimental group (no recreation option) and 92 (44%) were in the control group (Table 2). Respondents were primarily white (85%) and skewed male (57%). The average age was 27, with a range from 18 to 79. The median number of years lived in the county they mapped was three.

Respondents in the control group listed recreation as one of their top three values for 47% of the locations they mapped, which is the highest proportion of all values listed (Fig. 1). The absence of recreation as a landscape values option in the experimental group resulted in a larger percentage of responses to other landscape values, especially fun, personal health, and spiritual connection to nature (Table 3). Only "learning" was less common in the experimental group than the control group.

4. Discussion

Although our results are based on a relatively small sample size that was heavily weighted toward university students, there was consistency in our findings across geographically dispersed groups and in both student and general public population types. We found that, indeed, the types of values people identify differ when recreation is offered as an option.

We suggest that the higher frequency of reporting recreation when it is an option is because recreation represents a cognitively simpler

Table 1
Place value options given to respondents.

| Place value	Description of Value (*"I value this place because it…"*)
Recreation (control group only)	Allows me to engage in the outdoor activities I enjoy
Learning	Provides opportunities to explore nature, learn new skills, or gain knowledge about the natural world
Achievement/Challenge	Offers a chance for me to test my skills or knowledge or inspires me to strive harder
Fun	Provides opportunities for fun, excitement, or exhilaration
Freedom/Self-reliance	Provides an opportunity to step away from society, rules, or norms and just be free
Personal Health	Enhances my physical or emotional health
Spiritual/Nature Connection	Allows me to connect to a force larger than myself (e.g., universe, God, deities, or other)
Heritage/Tradition/Culture	Connects me to culture, history, or tradition
Wildness	Is wild, pristine, or relatively untouched by human influence
Aesthetic	Beauty, scenery, or ability to engage the senses with the sounds, smells, sights of nature
Environmental Quality	Provides air, clean water, wildlife or fish habitat
Social	Allows me to connect with friends, family, neighbors or community
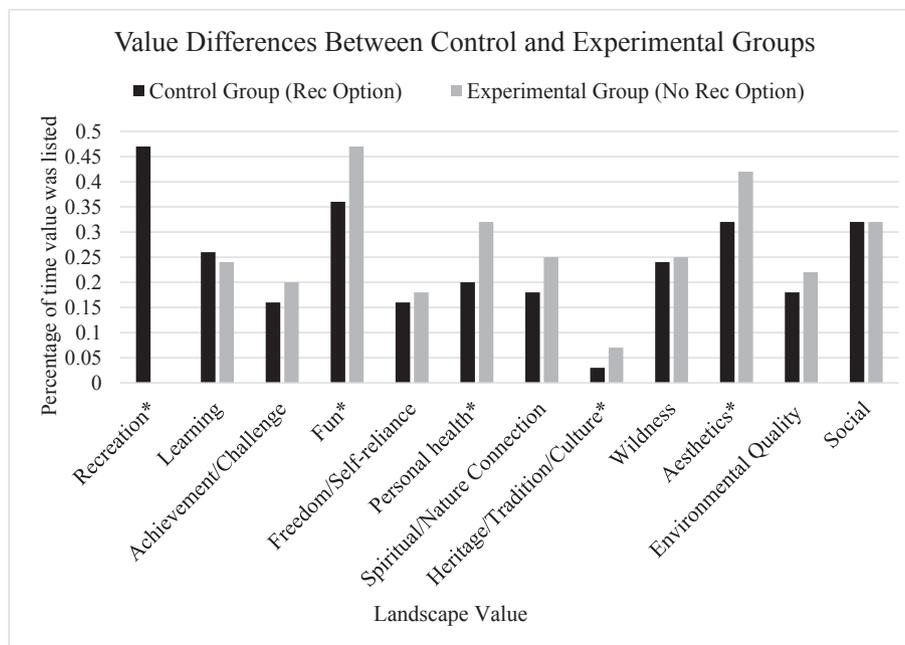
Fig. 1. Mean value differences between the groups with and without recreation as an option. Values with an asterisk represent a statistically different result based on independent samples *t*-tests at the *p* = 0.05 level. *Note:* Units are the mean percentage of time per location each group listed for that value.

response. It is far easier to identify a behavior or set of activities than it is to elicit the values influencing that behavior. Moreover, as a behavior, recreation can naturally encompass multiple values, potentially feeling like a more comprehensive and satisfying option. In other words, recreation is akin to 'one-stop shopping.' Those without recreation as an option in the typology were forced to have a more complicated conception of the benefits and values that are derived from the places they referenced on the maps.

Within these populations, our findings suggest that recreation may be substituting for the values of fun, health, spiritual connection, aesthetic, and heritage, among other values. This is quite interesting in that previous studies using the LVM approach have regularly included health, spiritual, and heritage in the typology with lower rates of response compared to recreation (Brown, 2012; Cerveny et al., 2017; Styers et al., 2018). By taking away recreation as an option, these recreation 'cousins' become more frequently selected, and potentially more representative of the underlying values associated with recreation. Similarly, Cerveny et al. (2017) identified recreation to be the top landscape value ascribed to 53% of special places, and that for those places open-ended responses to the question, '*Why is this place meaningful to you?*' identified diverse themes related to access, subsistence/

provisioning, family, social connection, and scenic beauty.

Our understanding of the specific values making up the construct "recreation" is limited to the values we chose for this experimental typology. It is likely we have neglected to include additional core values in our typology that would also feature prominently in lieu of the recreation option. Some values listed in our modified LVM typology may also represent a suite of behaviors and complicated cognitive constructions, especially 'learning' and 'heritage.' We might argue that learning is closely linked to a core value and that it is more straightforward in its meaning than recreation, which embodies a broad range of activities and benefits fueled by diverse and potentially conflicting values. Only a typology loyal to Schwartzian root values would confirm this assumption.

Due to these likely omissions in our typology, and our limited sampling frame, specific results for substitutive values cannot be generalized beyond this study. We feel that our results provide some evidence to suggest that offering recreation as a value option masks the underlying values associated with that behavior. As Brown and Reed (2000) understood, environmental planners and land managers seek answers to questions about benefits gained by parks, public lands, and protected areas. While LVM typologies that include recreation appear to

Table 3
Independent *t*-test results comparing percentage.

	Control *M* (*SD*)	Experiment *M* (*SD*)	*t*	DF	*p*
Values					
Recreation [*]	0.47(0.27)	–	−16.75	93.00	< 0.01
Learning	0.26(0.23)	0.24(0.22)	−0.85	207.00	0.40
Achievement/Challenge	0.16(0.20)	0.20(0.22)	1.28	207.00	0.20
Fun [*]	0.36(0.27)	0.47(0.30)	2.86	207.00	0.01
Freedom/Self-reliance	0.16(0.20)	0.18(0.22)	0.89	207.00	0.38
Personal health [*]	0.20(0.26)	0.32(0.33)	2.99	206.82	< 0.01
Spiritual/Nature Connection	0.18(0.24)	0.25(0.31)	2.77	206.71	0.08
Heritage/Tradition/Culture [*]	0.03(0.10)	0.07(0.14)	2.05	199.34	0.03
Wildness	0.24(0.24)	0.25(0.37)	0.07	207.00	0.94
Aesthetics [*]	0.32(0.26)	0.42(0.28)	2.62	207.00	0.01
Environmental Quality	0.18(0.20)	0.22(0.26)	0.83	207.00	0.41
Social	0.32(0.25)	0.32(0.29)	0.01	207.00	0.99

Note: Means are in percentages.

 * Indicates statistically different means at the *p* = 0.05 level.

make LVM research policy-relevant, they actually do little to elucidate the underlying values associated with priorities and potential land-use conflict.

5. Ethics statement

The authors declare no conflicts of interest.

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