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Diversity in Scholarship: Continued Interdisciplinary Research

Editors’ Notes

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This is the second issue of the Journal of Outdoor Recreation, Education, and Leadership to be published since moving to a quarterly format. Before providing an overview of the papers included in this issue, we want to extend our gratitude to Dr. Brent Bell and Dr. Geneviève Marchand for their recent service as guest editors. They edited the inaugural special issue, which included 10 manuscripts focused on various aspects of campus outdoor recreation programming. That special issue provided a unique opportunity for Sagamore Publishing to focus its marketing efforts to enhance subscriptions to the journal. We are grateful for Sagamore's efforts to extend limited, free access to JOREL as well as discounted subscription pricing for members of the Association for Outdoor Recreation and Education (AORE), the Wilderness Education Association (WEA), and the Association for Experiential Education (AEE). A special issue focused on international perspectives in outdoor education research is scheduled for January 2018. As the journal enters this first year as a quarterly publication, we encourage you to confirm that your academic institution holds a current subscription for its library.

JOREL includes three submission categories (Research Papers; Essays, Practices, and Commentaries; and Research Notes). This issue of JOREL is not unique in its underrepresentation of manuscripts outside of the traditional Regular Paper category. The editorial team and advisory board continue to encourage academics and practitioners to submit manuscripts in these additional categories.

This issue of JOREL continues to highlight the diversity in research efforts related to outdoor recreation, education, and leadership. This issue includes six Regular Papers and seven abstracts from the 2015 and 2016 AORE annual research symposia. Providing authors the opportunity to submit a complete abstract of their study presented at the research symposium convened at the annual AORE conference is a unique benefit for both the authors and the readers of JOREL. We are excited to bring this service back and include select abstracts from the past two symposia.

First, Houge Mackenzie et al. present a study highlighting underserved youth perspectives on connecting with nature, social media, and how social media can deliver nature-related messages of interest. The results of their focus group research are helpful for those interested in connecting urban minority youth to natural areas. Second, Frauman looks at environmentally sustainable practices among college outdoor programs and the degree to which college level policy and infrastructure support may be associated with these practices. This underexplored
area is gaining attention on campuses in higher education, and these results certainly should help program practice and future focused research efforts. Third, Schijf, Allison, and Von Wald provide a systematic review of sail training research—an area on the rise as a programming tool used to promote positive youth development. They provide an overview of the current sail training research within four categories (demographic characteristics, research strategies, process, and outcomes), attempt to quantify the related research, and provide recommendations for future inquiry.

Fourth, Bolliger and Shepherd investigate through staff interviews and student surveys how residential outdoor education program instructors and students utilize mobile technologies and Web 2.0 applications. Their results indicate disagreement among instructors and staff regarding the need for and use of mobile technologies in outdoor education on public lands, as well as trends in participant use of similar technologies—a very timely topic. Fifth, Rude, Bobilya, and Bell investigate the contribution of outdoor orientation experiences to student thriving. They utilized structural equation modeling to test a thriving model and found an initial poor fit resulting in an alternative model. Their results indicate that participating in an outdoor orientation program may contribute to students becoming more involved in campus life, which may foster a greater sense of community and result in thriving.

Sixth, Schimelpfenig, Johnson, Lipman, McEvoy, and Bennett provide an interesting and much needed evaluation of 23 Wilderness First Aid (WFA) practices. The strength of the evidence for these practices was found to vary widely due to little published research. Their work highlights the need for research to strengthen the level of evidence in numerous WFA topics, especially as the need for WFA training increases.

Finally, this issue includes seven abstracts representing oral or poster presentations from the 2015 and 2016 AORE research symposia. Authors were provided the opportunity to submit revised and complete abstracts for consideration for publication. The seven included in this issue even further highlight the diversity and interdisciplinary nature of the research in this field. A special thanks to Dr. Eddie Hill and Dr. Amy DiRenzo, AORE Research Symposium cochairs, for their efforts soliciting, reviewing, and preparing these abstracts for publication.

We wish to express our continued appreciation for the support given by the journal’s sponsoring organizations: the Association of Outdoor Recreation and Education, the WKU Research Foundation, and the Wilderness Education Association. We also appreciate the contributions of our current and past advisory groups, associate editors, reviewers, and authors. We hope you will consider serving as a reviewer or associate editor and/or authoring a manuscript under one of the three submission categories.

Thank you for supporting this journal,

Andrew Bobilya, PhD, Editor-in-Chief
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From Social Media to the Outdoors: Exploring Messages That Connect With Underserved Urban Youth

Susan Houge Mackenzie
Keri Schwab
Lindsey Higgins
P. Brian Greenwood
Marni Goldenberg
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Abstract

Despite the mental and physical benefits of visiting natural areas, and increases in outdoor activity participation among U.S. youth overall in the past decade, outdoor access is skewed toward nonurban, nonminority populations. This environmental justice issue is particularly pronounced for minority youth in urban areas, such as the Los Angeles Basin. While decreased contact with nature has been associated with increased technology use, the popularity of new technologies and social media outlets presents novel opportunities to connect underserved urban youth with natural areas. Seven focus groups with 42 urban youth in the L.A. Basin explored underserved youth perspectives on connecting with nature, social media, and how social media can deliver nature-related messages of interest to this population. Content analysis revealed commonly preferred social media platforms and Web-based activities, and six themes related to participants’ perceptions of nature: unique experiences, escape, social connections, challenge, adventure, and accessibility.

KEYWORDS: social media; technology; nature; youth development; environmental justice

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Natural areas provide essential benefits for physical and mental well-being (Charles, Louv, Bodner, Guns, & Stahl, 2008; Pretty, Peacock, Sellens, & Griffin, 2005; Ryan et al., 2010), and early experiences with nature can help cultivate environmental awareness among children and adults (Cheng & Monroe, 2012; Hinds & Sparks, 2008; Wells & Lekies, 2006). Numerous empirical studies have shown positive correlations between natural resource access and physical activity levels (Kaczynski & Henderson, 2007). Proximity to green space also improves mental health and reduces stress (e.g., Thompson et al., 2012). Consequently, promoting engagement with natural resources is an important component of maintaining and improving public health.

Despite overall increases in U.S. national park visitation (National Park Service, 2016) and time spent in nature among youth aged 6–17 years over the past decade (Outdoor Foundation, 2015), outdoor access is skewed toward nonurban, nonminority populations (Loukaitou-Sideris, 2006; Powell, Slater, & Chaloupka, 2004; Rigolon & Flohr, 2014; Wen, Zhang, Harris, Holt, & Croft, 2013; Wolch, Byrne, & Newell, 2014). In 2014, only 10% of African American and Hispanic youth participated in outdoor activities, compared to 70% of their Caucasian counterparts (Outdoor Foundation, 2015). Limited access to natural areas is particularly pronounced in the City of Los Angeles (L.A.), with many neighborhoods considered to be “park poor” (Sherer, 2006; Sister, 2007). Park poor has been defined as “three acres or less of parks per thousand residents” (Garcia, Rawson, Yellott, & Zaldana, 2009). Latino and African American neighborhoods in L.A. have an average of 0.6 and 1.7 acres of green space per 1,000 residents, respectively (National Recreation and Park Association [NRPA], n.d.). By comparison, predominantly Caucasian neighborhoods have an average of 31.8 acres per 1,000 residents (NRPA, n.d.).

Decreased contact with natural resources has been associated with increased technology use (Leseman, van Kruistum, & de Haan, 2014; Pergams & Zaradic, 2008). Technology use and online engagement is now pervasive in the United States. The Pew Research Center (2013) reported that 95% of teens 12–17 years of age are online, 81% of these teens use some form of social media, 77% of online teens use Facebook, and 94% of teen social media users have a Facebook profile. Among 8- to 12-year-old Internet users, the most popular websites include Facebook and video-based sites, such as YouTube (Blackwell, Lauricella, Conway, & Wartella, 2014). Technology use can predict youth “ill-being” and can negatively affect physical and psychological health, attention, and social behaviors (e.g., Rosen et al., 2014; Trainor, Delfabbro, Anderson, & Winefield, 2010). Over the past four decades, lifestyle changes characterized by increased technology use have been associated with decreases in youth outdoor play, in terms of frequency and time (Bassett, John, Conger, Fitzhugh, & Coe, 2015).

Although technology is often maligned for reducing contact with nature, the popularity of new technologies and social media outlets presents novel opportunities to engage with urban youth. Developing messages of interest to urban youth can help land managers increase engagement with underserved populations and encourage visitation to local natural resources. However, the development of effective multimedia strategies first requires research to explore (a) how today’s urban youth connect with natural resources, (b) key messages of interest to underserved urban youth, and (c) how social media and emerging technologies can effectively deliver these messages.

**Literature Review**

**Benefits of Nature and Green Spaces**

A large body of research indicates a positive relationship between green space and both physical and mental well-being. This research, including systematic reviews and meta-analyses of current literature, suggests that outdoor environments offer physical, mental, and cognitive benefits for youth and adults (e.g., Barton & Pretty, 2010; Bratman, Hamilton, & Daily, 2012; Jackson, Daniel, McCorkle, Sears, & Bush, 2013; Ryan et al., 2010). For example, youth who
spend more time outdoors engage in significantly higher levels of physical activity than youth who spend less time outdoors (Schaefer et al., 2014). In a meta-analysis of 28 studies on physical activity and youth, Gray et al. (2015) found that youth aged 3–12 years engaged in more physical activity when they were outdoors than indoors. Given that physical activity can improve fitness levels and motor skill development, ensuring that youth have regular access to natural areas for physical activity is critically important.

Time spent in natural settings can also affect mental and emotional health. In a review of literature dating back to 1970, Chawla (2015) summarized evidence supporting connections between time in nature and improved concentration, resourcefulness, cooperative and creative social play, emotional restoration, and place attachment, as well as reduced depression. Spending time in natural areas can also reduce stress; increase feelings of restoration, vitality, and creativity; and restore attention (Berto, Pasini, & Barbiero, 2015; Faber Taylor & Kuo, 2011; Tyrväinen et al., 2014). For instance, youth who played outside during recess reported increased concentration and stress relief (Chawla, Keena, Pevec, & Stanley, 2014). Nature-based adventure experiences have also been shown to increase engagement, intrinsic motivation, enjoyment, competence, relatedness, and autonomy in relation to science curriculum (Houge Mackenzie & Son, 2013, 2014). These documented benefits of outdoor experiences highlight the importance of inclusively engaging and strengthening youths’ connections to natural areas.

Environmental Justice Issues and Constraints Associated With Access to Nature

Despite the benefits of nature, access to natural areas has been recognized as an environmental justice issue (Rodriguez, Brenman, Lado, & Garcia, 2014). For example, low income and minority groups often do not have the same access to green areas or parks that White or higher income groups have (Wolch et al., 2014). The Outdoor Foundation (2015) found that only 7–10% of minority youth are recreating outdoors. Minority youth are also less likely to be physically active in general, are at higher risk for diabetes and other obesity-related diseases, and are often more mentally or emotionally taxed from living in crowded or stressful urban environments (Eaton et al., 2006; Kuo, 2001). In the L.A. Basin, access to green space has been specifically highlighted as an issue among Latino populations (Byrne, 2012).

Constraints to outdoor recreation and natural areas among various racial and ethnic groups have been well documented in the literature (Jackson, 2005; Shinew, Floyd, & Parry, 2004; Stodolska, Shinew, Floyd, & Walker, 2014; Wilhelm Stanis, Schneider, Chavez, & Shinew, 2009). Constraints may be structural, social, cultural, or simply due to lack of awareness of available resources or potential benefits. A common structural constraint for urban minority populations is the lack of access or transportation to green spaces. For instance, in a review of U.S. neighborhoods, Powell et al. (2004) found that those with higher percentages of African American residents had fewer built or natural settings for physical activity. Even in areas with access to green spaces, safety concerns can negatively affect park use (Ries et al., 2009). Traits such as poorly lit or monitored areas or perceptions of the neighborhood being unsafe can limit park use (Edwards, Theriault, Shores, & Melton, 2014). Additional issues such as lack of minority representation in park planning or distrust among residents can further detract from minority access to natural areas (Edwards et al., 2014).

In a study of minority public land users in Oregon, researchers found several distinct barriers to participation among African Americans, Asians, and Latinos (Burns, Covelli, & Graefe, 2008). For example, Latino adults commonly reported a fear of new places or different activities, a lack of information, and inadequate signage (Burns et al., 2008). Similarly, in a nationwide study of U.S. adolescents, researchers found that low physical activity levels in Hispanic and African American girls could be attributed to the schools they attend, a common proxy for neighborhood context (Richmond, Hayward, Gahagan, Field, & Heisler, 2006). Even when
parks are available, contributions to youth physical activity may be offset by social characteristics, such as including parental perceptions of personal risk (measured through neighborhood crime; e.g., Babey, Hastert, Yu, & Brown, 2008; Floyd et al., 2011; Ries et al., 2009).

**Diverse Youth Perspectives on Natural Areas**

A growing volume of research has explored youth and nature issues, as evidenced by the large repository of investigations related to youth benefits, motivations, disparities, and barriers to nature curated by the Children and Nature Network (see www.childrenandnature.org/learn/research-resources/ for review). These data illustrate that youth perspectives on natural areas are complex and distinct depending on a wide range of demographic factors including, but not limited to, race, ethnicity, gender, and geographical location. Concurrent with increasing research on youth and nature issues and benefits, youth participation in outdoor activities increased overall in the past decade (Outdoor Foundation, 2015). According to the Outdoor Foundation (2015), the most popular youth activities are running (25.6%), bicycling (road, mountain, and BMX, 21.2%), camping (car, backyard, and RV, 18.5%), fishing (18%), and hiking (12.8%).

Despite these positive trends, participation statistics do not apply uniformly to all youth. For instance, Hispanic and Caucasian youth have the highest participation levels in activities such as wildlife viewing, camping, and fishing, while team sports are more popular among African American, Hispanic, and Asian Pacific Islander youth (Larson, Green, & Cordell, 2011). Larson et al. (2011) also found differences in activity preferences between males and females and between African American youth and other racial and ethnic groups in terms of preferences for outdoor electronic device use. The documented diversity of youth perspectives on nature, outdoor activities, and access suggests that reflecting the unique perspectives of target populations through customized messaging may be the most effective means of engaging urban youth.

**Communication Strategies for Connecting Diverse Youth With Nature**

Although researchers have suggested a variety of ways to reach target populations, the most effective communication strategies and mediums depend on the target demographics. For example, Asian American and Latino focus group participants reported that additional written information about park access and benefits in languages aside from English could increase park use (Burns et al., 2008). Latinos also identified youth as effective messengers for park and recreation communications (Burns et al., 2008). Research with Latinos indicates they may have different participation and communication preferences than other groups (Chavez, 2002, 2005). Based on these findings, Chavez (2005) recommended implementing individualized and two-way communication strategies to enhance Latinos’ awareness of outdoor recreation opportunities. Chavez (2005) also suggested evaluating the effectiveness of Internet communication among diverse groups in facilitating outdoor recreation. These investigations indicate that social media may be a valuable tool for facilitating personalized communications with minority groups.

Communicating with underserved urban youth using social media presents unique challenges, such as identifying optimal content, scope, and mediums. Modern youth have access to more technology than do previous generations, consuming over 7.5 hr/day of media and spending over 10 hr/day multitasking (Vahlberg, 2010). A national survey reported that teenagers spend, on average, more than 8 hr/day using various forms of media, not including time spent doing schoolwork or talking and texting on a cell phone (Rideout, Foehr, & Roberts, 2010). Youth are continually exposed to media in the form of billboards; flyers; television commercials; e-mails; Internet advertisements; logos; social media such as Facebook, Instagram, and Snapchat; and text messaging. As myriad organizations compete for youth attention, communication strategies and mediums must be specifically targeted to gain attention and spark action.

Social media presents a viable means of reaching underserved urban youth and affecting behavior, partially because of the way digital media resonates with the developmental processes...
of youth (Mayer & Harrison, 2012; Montgomery & Chester, 2009; Vyas, Landry, Schnider, Rojas, & Wood, 2012). More than 80% of American teens own a cell phone and access social media services as daily sources of information (Pew Research Center, 2013). In a study of public health communications to Latino youth via text or social media, researchers found that 90% of Latino youth had access to a mobile phone, 97% had at least one social media account, and 75% checked that account daily (Vyas et al., 2012). Vyas et al. (2012) recommended conducting further research on the best ways to reach youth via social media and modern technology.

Marketing theory is a framework that can support the development of youth communication initiatives, regardless of the medium being used to convey the message. Fundamental to any messaging strategy is consistent messaging and knowing the audience (Fitzgibbon et al., 2007; Norris, 2015; Nowak & Phelps, 1994; Randolph & Viswanath, 2004). McCasland (2005) emphasized the importance of targeting youth “mindsets” and developing a deep understanding of their motivations prior to launching mobile-device campaigns. Understanding an audience's existing beliefs, knowledge bases, barriers to change, and communication patterns is essential prior to developing messages that resonate with that audience (Fitzgibbon et al., 2007). Focus group methodologies are an effective, and commonly used, method of gathering rich qualitative data regarding a target audience (Burroughs et al., 2006). These data help ensure that the audience is reflected in the final messaging strategy (Fitzgibbon et al., 2007). Focus group data should result in the creation of key themes, which can then be used to guide messaging strategies and content (Bradley, Curry, & Devers, 2007; Ritchie, Lewis, Nicholls, & Ormston, 2013; Williams & Koepke, 2006).

In summary, previous literature has documented (a) physical and mental benefits of contact with nature; (b) minority youth have much lower outdoor participation rates than Caucasian youth; (c) urban and minority youth have diverse motivations for, and constraints to, accessing natural areas; and (d) youth overall have high levels of engagement with technology and social media. Based on these findings, this study had two objectives: (1) to explore underserved urban youth experiences of social technology and natural areas and (2) to identify key messages of interest to underserved urban youth that could be developed into effective social media messages. This investigation ultimately sought to provide land managers with practical insights that could facilitate larger scale social media initiatives designed to engage underserved urban youth with natural areas.

**Method**

**Participants**

This study focused on underserved youth populations within the L.A. Basin because of the large environmental access disparities present in the L.A. region (e.g., Rodriguez et al., 2014). “Underserved” populations were defined as “communities that are specifically characterized by low-income populations and some racial/ethnic minority populations” based on the NRPA’s usage of this term (NRPA, n.d., p. 3). Predominantly, minority youth from underserved areas of the L.A. Basin were recruited to participate through purposeful sampling (Patton, 2002). Initial contact was made with a youth group leader in the L.A. Basin, who then extended the invitation to additional groups. The final sample consisted of 42 youth ranging in age from 11 to 20 years ($\bar{X}=15$ years; 42% female, 58% male). The self-reported racial/ethnic makeup of the sample was primarily Latino (55%) and African American (24%), with 5% Chinese, 2% Native American, and 14% self-identified as “other” or mixed ethnicities. According to recent U.S. Census Bureau (2010) data, this sample approximated the larger L.A. population, which was 48.5% Hispanic or Latino, 9.6% African American, 11% Asian, and 0.7% Native American. In comparison to U.S. census data, African American participants were somewhat overrepresented in this study, while Asian participants were underrepresented.

http://www.ejorel.com/
Procedures

Data were collected in focus groups using a semistructured interview guide. This exploratory method allowed researchers to obtain in-depth qualitative information regarding participant perceptions of natural areas and social media use. Prior to conducting the focus groups, a semistructured interview guide was piloted and revised. Two investigators initially developed a list of potential questions and probes related to youth perceptions of outdoor recreation, motivations to recreate outdoors, desired outcomes, barriers and facilitators, and social media interests. Researchers with expertise in youth development, outdoor recreation, and social media marketing then refined the interview guide before it was piloted with a youth group that was demographically similar to the population of interest. Feedback from the pilot session was used to remove unclear or overlapping questions. The final interview guide consisted of 15 questions and probes. Questions relating to outdoor participation included the following: What do you enjoy most about being outdoors? What keeps you from participating in outdoor activities? Given the opportunity, what would you ideally like to do in the outdoors? What, if anything, keeps you from going outdoors? Social media questions included the following: What applications do you use most often? Who do you communicate with online? What kind of applications, games, or websites are best for sharing information about outdoor experiences?

Seven focus groups, lasting between 45 and 75 min, were conducted with L.A. youth from underserved urban areas during February and March 2014. Focus groups consisting of three to nine participants were conducted at convenient times and locations for youth, usually in the afternoons at public schools. Informed consent was obtained via parental consent and youth assent forms. At the start of each focus group, researchers reiterated the study purpose, encouraged youth to ask questions about focus group procedures and research goals, and obtained participants’ informed assent. Participants were informed that conversations would be audio recorded and that all names and identifying information would be removed from data during analysis.

Data Analysis

Each focus group recording was transcribed verbatim and then used as the basis for content analysis. Content analysis is the process of distilling large amounts of data into themes and core consistencies to make sense of the ideas presented (Patton, 2002). Themes generated during analysis can emerge from either respondents’ own words or those supplied by the researchers; themes may also be created beforehand based on relevant frameworks (Kvale & Brinkman, 2009). In this exploratory study, data analysis focused on creating inductive themes based on emergent concepts. Two research assistants, with no previous involvement in the study’s design or data collection, were hired and trained in content analysis to reduce bias and enhance inductive analyses.

Content analyses began with three researchers and two assistants individually analyzing one focus group transcript, followed by a collective discussion of the themes identified by each person. Through this process, the team established interrater reliability, determined the appropriate level of analysis (by question), and created a systematic organizing framework for content analysis. Data were analyzed by listing each question in a spreadsheet followed by each response or main idea. Some questions lent themselves to short responses (i.e., “What is your favorite app?”), and others required more in-depth descriptions (i.e., “What motivates you to spend time outdoors?”). Alongside each response or idea, quotations that described or expanded on the response were noted. After half the data were analyzed, the team again reviewed the process and themes to check for consistency. Once all transcripts were coded, analyses were summarized in a document that briefly described each higher order theme along with representative responses.
Results

Preliminary Findings

Data analysis identified how youth used technology, their perceptions of natural areas, and messages of interest to youth regarding the outdoors. Youth responded enthusiastically to initial questions regarding social media, website, and application preferences. Not surprisingly, Facebook, Instagram, Twitter, YouTube, Pandora, Amazon, Netflix, Google, Skype, ESPN, and Vine were all reported as examples of favorite websites or smartphone applications. Participants also reported that entertainment sites, such as iFunny or the Flappybird game, increased their time spent online. They primarily used mobile devices to access these sites, but some reported still using traditional desktop or laptop computers. Despite some restricted access to websites when using school Internet connections, youth reported having reliable access to the Internet at home, Starbucks, Jamba Juice, the airport, or “anywhere with Wi-Fi.” The most commonly cited reasons for using applications or social media were to keep in contact with family and friends, to find events, to meet people, and to play games.

Following a discussion of social media use, participants responded to questions regarding their perceptions of the outdoors, such as what they enjoyed most about being outdoors and what words or images “popped into their heads” when they thought about the outdoors. Common responses included “fresh air,” “sports,” “plants,” “animals,” “escape,” “freedom,” and different landmarks. Youth also associated specific activities with the outdoors (e.g., hiking, biking, scuba diving, or swimming). Barriers to spending time outside included homework, parents, and lack of transportation; for example, youth reported that it was difficult to find a ride and that public transport was inefficient and expensive. Time spent using technology (e.g., playing games or watching videos online) was reported as a barrier to going outside, and participants also reported getting distracted by technology while playing outside. For example, one participant reported, “When . . . someone messages me on my phone or Facebook, and it vibrates in my pocket, and I’m just playing, I just drop the ball and just be on my phone and never come back.” Some youth also described the outdoors in negative terms, such as seeing it as “dirty,” which reduced their desire to go outside. Safety was another barrier to outdoor access, with participants often expressing concern about being outside alone, when it was dark, or when gang violence occurred.

The final portion of each focus group was dedicated to understanding how social media could influence youth engagement with outdoor areas. Youth were asked how they would use technology to get their peers more interested in spending time outdoors, such as interesting or useful information, websites, applications, or online games that might generate interest in accessing natural areas. Participants suggested effectively organizing information about outdoor activities and enticing locations, facilitating social opportunities in natural areas, and/or incentivizing time spent outdoors. Although externally incentivizing time spent outdoors may seem counterintuitive, this finding suggests that urban youth may initially seek external rewards or recognition for accessing natural areas (e.g., winning a competition). Applications allowing users to identify plants or animals were also suggested, along with gamification of the outdoor experience, in the form of scavenger-type games and tests of knowledge. Finally, the use of celebrities to promote natural areas and outdoor activities was enthusiastically endorsed in each focus group.

Generation of Themes

During analysis, data were classified into six themes related to participants’ motives and interests regarding the outdoors: unique experiences, escape, social connections, challenge, adventure, and accessibility. The unique experience theme, which emerged in six of the seven focus groups, was the most common. Unique experience was characterized by participation in a new
or novel outdoor experience. Sample comments illustrating this theme include the following: “I just like when we’re out in the wilderness and we just see all these wonderful things, plants, flow-er, the views, it’s just amazing and especially since you like have an experience your first time will always be the best time” and “I like finding a lot of bugs, bugs that I don’t even know they existed.” This theme supports outdoor recreation literature findings that nature enhances individuals’ sense of wonder and natural curiosity (e.g., Carson, 1998).

Escape was the second most common emergent theme. Although the value of time spent outdoors has been recognized as a way for youth to reconnect with nature (Baker, 2005), these participants also saw nature as a way to disconnect from their lives and from technology. Urban youth in the current study expressed an interest in using the outdoors to unplug: “I always have this urge to want to get away like to get away from the city and to get away from the lights and just to get away from it all.” These youth viewed nature as an outlet to release stress and tension they experience at school and home: “I like not having any responsibilities; so, no homework, no more drama. It’s just me, who I’m with, and the outdoors.” As much as they were interested and eager to talk about their Internet and device preferences, participants also expressed a desire to escape these influences: “You just get tired of being on your phone a lot.”

Challenge and adventure were distinct but related themes that emerged in all focus groups. Challenge, which is associated with intrinsic motivation among adolescents, encapsulates the sense of achievement that accompanies attempting a difficult or demanding activity (Csikszentmihalyi, 2000). Youth recounted outdoor experiences when they either surprised themselves by doing something they thought was beyond their capabilities or engaged in some form of competition, such as challenging friends to do something, “because, like, everybody gets all competitive to beat each other at doing whatever it is they’re being challenged [to do].” Participants reported enhanced self-confidence as a result of these outdoor accomplishments. Adventure, on the other hand, related to the excitement associated with unusual experiences and exploration (Solly, 2014): “Kids just like go and have an adventure, they discover new things because there’s so many wildlife out there and they could have animal games and they could say oh I want to discover this or see it in real life.”

Embedded within participants’ adventure comments was also the desire to share these experiences using images or narratives: “Or just like when we went to the snow and brought back pictures and were showing people. And they were like, oh I want to do that next time.” These statements pertain to the social connections theme that emerged in all but one focus group. Comments such as the following reflected this theme: “Bringing my family to nature just really makes us grow as a family because we get to bond with each other more than [we would] in our homes” and “When you are in nature, you get to bond with them more, you know, have like a little picnic and, you know, share thoughts and experiences.” Although natural areas were seen as places where youth could experience challenge and adventure while escaping and disconnecting, the outdoors also provided opportunities to connect with family and friends. As discussed, even when family or friends were not present during outdoor experiences, communicating about outdoor adventures and accomplishments was reported as very important to these urban youth. Sharing outdoor experiences on social media appeared to provide another means of enhancing social connections for these urban youth.

The final theme that emerged from the data was accessibility. Youth frequently reported that “not having a ride,” their parents working long days and/or multiple jobs, and a lack of financial resources to do anything “extra” prevented them from accessing outdoor spaces. Although youth spent less time discussing this theme, participants clearly perceived that lack of resources (e.g., money or access to transportation) was a major barrier to engaging with natural areas. As enjoyment of natural resources is predicated on access, this theme appeared particularly salient to developing effective outdoor-related communications with urban youth.
Discussion

In the digital age, tracking youth interests may seem to be an ephemeral endeavor. The nuances associated with messages relating to *escape*, for example, may vary in an era dominated by technology. However, many of the themes reported by urban youth in this study appear somewhat timeless. Although technology has contributed to youth disengagement with natural areas (Leseman et al., 2014; Pergams & Zaradic, 2008) and decreases in outdoor play (Bassett et al., 2015), participants in this study expressed a desire to put down their “screens” and escape via the outdoors. Using social media to highlight the themes that resonated with youth in this study may be an effective way of increasing underserved urban youth engagement with natural areas. Thus, land managers may be able to foster urban youth engagement with natural resources by using technology and social media to communicate with youth through their preferred mediums using their preferred messages.

Youth in this study also expressed a desire to connect with family and friends through natural resources and outdoor activities. Despite arguments that technology can be detrimental to social connections, technology use during and after visits to natural areas may facilitate meaningful social connections and help youth share meaningful memories (Braun, Stopfer, Muller, Beutel, & Egloff, 2016; Brown & Bobkowski, 2011; Kross et al., 2013). Moreover, the mediums for land managers to connect with underserved urban youth are already in place through myriad established social media platforms at low or no cost. Mainstream social media sites provide a powerful, cost-effective means of communicating outdoor messages that resonate with underserved urban youth.

Although social media provides promising avenues for engaging underserved youth with natural areas, the data illustrate that messages must be coupled with adequate resources to access these places. The importance of developing enticing outdoor messages may be moot if urban youth cannot access natural areas due to issues such as poor access information, transportation, and/or lack of green spaces. Arguably, information about access could be the most important theme generated by this study. Garcia et al. (2009), Loukaitou-Sideris (2006), and Rodriguez et al. (2014) have documented the “park poor” characteristics associated with underserved populations in the L.A. Basin. The youth in this study affirmed that lack of information and resources (e.g., money, transport options) were barriers to natural areas. Lack of access can inhibit participation regardless of messaging effectiveness. However, pairing the themes identified in this study with access information may help alleviate this problem. Connecting individuals with the additional resources afforded through social connections may also help improve access for underserved urban youth. Therefore, any social media messaging or communication strategy targeting underserved youth needs to be firmly attuned to addressing access issues.

Additional practical considerations for land managers include the need to employ diverse staff from underserved urban areas to assist in creation and maintenance of social media messages and platforms. This will foster more relevant, dynamic, and effective social media communications. As social media is constantly evolving, content associated with social media initiatives and messages must also dynamically progress. Hiring diverse employees, including racial or ethnic minorities from underserved communities, will help land managers ensure they are attuned to the needs, wants, and communication styles of underserved urban youth, which may bolster the effectiveness of social media strategies. In addition to land managers hiring a diverse workforce, research suggests that using the same communication styles favored by target groups, professionally translating materials, and facilitating personalized and two-way communication may reduce barriers to outdoor recreation for underserved groups (Chavez, 2005). Social media may be an ideal medium for facilitating personalized two-way communication and instant feedback between land managers and the underserved urban populations they serve because of its interactive, fluid, and widely accessible nature.
Limitations

As this is an exploratory study, these findings have limitations. Although many of the results support previous findings, the themes generated through this study are not necessarily generalizable to other youth populations, because populations with different demographic characteristics may have unique perspectives, preferences, and cultural norms (Barnett, 2006; Byrne, 2012; Wardle & Steptoe, 2003). Access may also vary both qualitatively, with regard to the type of constraints, and quantitatively, with regard to the number of available natural spaces, in other metropolitan areas. For instance, the L.A. Basin has historically been considered an area with poor public transit (e.g., Kanter, 2015), which may contribute to these particular findings. In addition, the qualitative nature of these data does not allow for generalizability to a larger population.

Social desirability (e.g., Holtgraves, 2004) may have also influenced participant responses in two ways. One, participant responses may be affected by the presence of facilitators with whom they have a preexisting relationship (i.e., youth group leaders who cofacilitated focus groups in the current study). Two, participant responses may be affected by the presence of facilitators who are of a different race or ethnicity. In this study, the presence of Caucasian researchers alongside minority facilitators during focus groups may have influenced the data provided by participants. In a thorough review of literature relating to youth, the media, and the outdoors, Pozzoboni, Sikand, Reist, and Roberts (2014) emphasized the importance of identification and persuasion when communicating messages to youth. Minority youth may have responded differently to the researchers than if the team members were of the same race as the youth. Although the authors attempted to minimize this issue by cofacilitating sessions with minority youth leaders with whom the youth had established relationships, the approach may have also introduced biased responses based on youth perceptions of what leaders expected them to say.

Future Research Directions

In this investigation, the research team explored the perspectives of underserved urban youth in the L.A. Basin on natural areas and social media. In the future, the research team will evaluate whether communications based on these themes effectively resonate with underserved youth and if these communications foster behavioral change. The development and testing of social media messages based on these results is the next step in this line of inquiry, as well as monitoring the effectiveness of each theme across social media platforms. The research team anticipates that these investigations will provide more detailed insights into how youth engage different messages using social media, and whether pairing themes, such as social connections and access, reduces access barriers. Specifically, testing the effectiveness of messages that address access issues will be an important area of further study.

Future research should also evaluate whether the results of this exploratory study are representative of larger urban youth populations and if these themes inform effective communications in similar urban areas. This study provides unique underserved urban youth perspectives on technology, social media, and natural areas. Understanding these nuanced perspectives is the first step in creating effective social media messages that resonate with urban youth and strengthen their connection to natural resources.

References


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Environmentally Sustainable Practices Among College Outdoor Programs and Their Association With Organizational Support Structures

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Abstract

Sustainability has gained increasing importance amongst both academic research and organizational practice over the past two decades (Davis & Challenger, 2014). The primary purpose of this study was to examine environmentally sustainable practices among college outdoor programs, while also examining how college level policy and infrastructural support may be associated with such practices. Of additional interest was to examine how environmental policies established at the programmatic level may differentially influence practice versus policies at the institutional level. College and university outdoor program directors were sampled in 2014 concerning their engagement in various pro-environment practices and perceptions of institutional support. The findings revealed the organizational culture and infrastructural support at responding institutions does make a positive difference in outdoor program sustainable practices, as does the level environmental policy is established at. Future research efforts should consider a more systemic and systematic approach to studying this topic given its increasing importance and visibility on college campuses.

KEYWORDS: environmental behavior; higher education; sustainable initiatives

Acknowledgments. Thanks to the Association of Outdoor Recreation and Education (AORE) for their support of this study.
Sustainability in the business world has been defined as managing the triple bottom line where companies attempt to balance their financial, social, and environmental needs (Financial Times, n.d.). Wood and Peterson (2015) suggest sustainability speaks to “concerns about conservation, stewardship of the earth's resources, and public policy aimed at ensuring clean air and water for generations to come” (p. 15). While other interpretations suggest terms such as environmental and social justice, the concept of sustainability, be it focused on the triple bottom line or individual components, has gained increasing importance in academic research and organizational practice over the past two decades (Davis & Challenger, 2014). Ranging from organizational social responsibility to sustainable business models, organizational environmental sustainability and sustainable work behavior initiatives have proliferated, with Wood and Peterson citing over 200,000 articles linked to the sustainability movement.

Crane (2000) suggested environmental sustainability is increasingly being viewed as an important activity in relation to enhancing image and even meeting regulatory requirements. Davis and Coan (2015) more recently suggested that to understand organizational change as it relates to sustainability, one must examine the organizational culture, leadership and change agents, and the level of employee engagement in pro-environmental behaviors. Davis and Challenger (2014) believe that desired environmental behaviors can be assisted through the presence of a formal environmental policy. Similarly, Norton, Zacher, and Ashkanasy (2014) suggest that environmentally friendly behaviors result when organizations introduce sustainability policies, with employees’ organizational perceptions (i.e., how they perceive their organization's commitment to environmental sustainability) constituting the link between policy and behavior. The extent to which the organizational environment and its infrastructure are supportive of desired pro-environmental behaviors is also thought to be important in influencing pro-environmental behavior (Davis & Challenger, 2014). Davis and Challenger (2009) found employee engagement to be an important component in the success of individual and group-based pro-environment interventions. As such, organizational leadership and support are key determinants of the success of organizational environmental initiatives (e.g., Ramus & Steger, 2000) with the opportunities for employees to be able to engage in environmentally sustainable work behavior strongly influencing such action and ultimately the success or failure of behavior interventions (Davis & Coan, 2015).

In recent years, an increasing number of national bodies (e.g., Association for the Advancement of Sustainability in Higher Education [AASHE]) have developed tools to aid and assess college and university efforts concerning pro-environmental behaviors, with the general focus centered on sustainable initiatives linked to reducing one's carbon footprint. AASHE (n.d.) is a nonprofit membership organization that empowers the higher education community to effect change and encourage sustainability innovation. Among other things, AASHE's actions are designed to make sustainable practices the norm within higher education, while supporting all aspects of campus (e.g., teaching, operations, public engagement) in achieving sustainability goals (AASHE, n.d.). AASHE's STARS program provides a self-reporting framework for colleges and universities to measure their sustainability performance (STARS, n.d.).

Other organizations working with institutes of higher education to aid with sustainability efforts include Second Nature. Since 1993, Second Nature (n.d.) has sought formal commitments and facilitated innovative solutions among leadership networks (e.g., presidents of colleges) in higher education. They oversee the largest voluntary carbon neutrality commitment in any sector in the United States with a broad goal to influence sustainability on and off college and university campuses.

In light of efforts of organizations such as AASHE and Second Nature, college campus recreation nongovernmental organizations such as NIRSA have created new initiatives to examine more fully how they can aid members in higher education to be more conscientious about their sustainability related decision making (NIRSA, n.d.). Recent NIRSA efforts include facilitating

http://www.ejorel.com/
online sustainability discussion groups for members, hosting a sustainability summit, and the creation of a commission for sustainable campus communities. As NIRSA (n.d.) describes on its website, “Sustainable enterprises such as recreational sports and higher education as a whole can only be attained through the combined efforts of all” (para. 2).

Similar to NIRSA, the Association of Outdoor Recreation and Education (AORE, 2015), a nonprofit professional development organization, has crafted environmental stewardship statements and developed “green” initiatives to educate and recognize members as it pertains to sustainable operational and programmatic practices. With much of their efforts directed at college and university extracurricular outdoor programs, the AORE complements many of the trends in higher education where individual colleges and universities are developing and directing resources toward being more sustainable.

Wood and Peterson (2015) found that many campuses around the United States have students sign sustainability pledges, learn about sustainability during campus orientation, and participate in sustainability training in residence halls. They also found that many academic courses and student clubs are infused with sustainability related topics. College and university strategic plans are incorporating sustainability and environmental stewardship language whether as part of their mission, a formal statement, or a strategic direction and initiative (e.g., Appalachian State University, n.d.). College and university sustainability councils and offices of sustainability are growing in number, as are other efforts aimed at creating administrative positions dedicated to fiscal sustainability, producing sustainable infrastructure, and providing assessment and monitoring of sustainability efforts on campus (AASHE, n.d.; Wood & Peterson, 2015).

As part of the sustainable initiatives momentum at institutes of higher education, college and university extracurricular outdoor programs are positioned to participate given their operational and programmatic practices. With many operational and programmatic practices occurring in ecologically sensitive land- and water-based settings, outdoor programs should consider their efforts at being sustainable. Little research has specifically examined outdoor programs from this standpoint, with no published studies to date. As such, the primary purpose of this study was to examine environmentally sustainable practices among college outdoor programs, while also examining how larger campus recreation department and college level policy and infrastructural support is associated with such practices. A secondary purpose was to examine how environmental policies established at the programmatic versus institutional level may differentially influence practice. In other words, does the presence of an outdoor program environmental policy influence sustainable practices more than a similar policy that is at institutional or department level?

Method

A 20-question electronic survey was developed and administered to full-time directors/coordinators of college and university outdoor programs via the AORE electronic mailing list during Fall 2013/Winter 2014. The survey was developed based on a review of literature as well as an examination of other instruments that assessed participation in college-wide sustainable environmental practices. The invitation to participate in the study was directed specifically at full-time directors and coordinators of college and university outdoor programs. AORE is a United States–based professional organization whose membership primarily consists of college and university outdoor program professional and student staff. The survey included questions measuring the presence of guiding environmental policy or position statements, as well as items measuring outdoor program participation in varied sustainable practices. Additional questions measured college administration and campus recreation supervisor general support, as well as additional funding for outdoor programs to support sustainable practices. Questions were primarily posed in yes/no and 5-point Likert-scale format. SPSS 22 was used for data analysis.
Results

One hundred thirty respondents completed the survey, with over 25 states and each region of the United States represented including Alaska. It is not known how many directors or coordinators of college and university outdoor programs received the electronic invitation to participate in the study given the nature of the sampling via an electronic mailing list. There were no duplicate responses based on an examination of IP addresses. Descriptive analysis was performed (e.g., the percentage of respondents who checked yes to a sustainable practice versus no) including crosstab and a series of independent samples t tests.

Using a yes/no format, respondents answered how often they engaged in nine sustainable practices (Table 1). Few practices were engaged in more than 50.0% of the time, with four of the nine practices participated in by less than 25.0% of the respondents.

Table 1
Outdoor Program Participation in Sustainable Practices

<table>
<thead>
<tr>
<th>Practices by outdoor programs</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uses environmental protection standards to select and evaluate businesses we make purchases from.</td>
<td>22.1%</td>
</tr>
<tr>
<td>Uses labor/human rights standards to select and evaluate businesses we make purchases from.</td>
<td>22.1%</td>
</tr>
<tr>
<td>Has a shutdown policy/checklist that outlines all electronics to be powered off each night.</td>
<td>32.4%</td>
</tr>
<tr>
<td>Printer or copy paper contains 50% or greater post-consumer recycled content.</td>
<td>61.0%</td>
</tr>
<tr>
<td>Promotional materials display post-consumer recycled content percentage on the final product.</td>
<td>28.4%</td>
</tr>
<tr>
<td>Provides durable plates, silverware, and cups in the break room (no disposables).</td>
<td>66.7%</td>
</tr>
<tr>
<td>Requires trip participants to bring reusable plateware, silverware, and cupware.</td>
<td>80.1%</td>
</tr>
<tr>
<td>Has completed a carbon footprint calculation.</td>
<td>8.0%</td>
</tr>
<tr>
<td>Participate in carbon offset programs (e.g., tree planting) to negate/reduce carbon footprint.</td>
<td>15.8%</td>
</tr>
</tbody>
</table>

Note. Respondents had the option to check “I don’t know” for each of the nine practices. These percentages were not included in the Table, with 6.6% of respondents on average using the “I don’t know” option.

Crosstab analysis examining the association between having a university/college environmental policy or position statement (Note: 89.2% of respondents worked at an institution with one) and whether an outdoor program increased its participation in any of the nine practices described in Table 1 indicated greater participation for four of the practices (Table 2). This was particularly evident when the practice was something an outdoor program could have full control over (e.g., participate in carbon offset programs). On the other hand, participation in three other practices that outdoor programs could have complete control over slightly decreased (e.g., “Provides durable plates, silverware, and cups in the break room” dropped from 66.7% to 65.3%). Participation by outdoor programs in two practices linked to environmental or labor/human rights standards in selecting businesses from which to make purchases slightly decreased.

Crosstab analysis examining the association between the presence of an environmental policy or position statement at the campus recreation department level (Note: 49.0% of respon-
dents worked at an institution with one) and the frequency of outdoor program practice engagement described in Table 1 was performed. The presence of a policy or statement revealed greater participation by outdoor programs for eight of the nine practices when compared to Table 1 percentages and when the policy existed at the university/college level (Table 2). Increases in percentages were most notable for practices linked to having a shutdown policy tied to powering down electronic devices at night (48.5% vs. 32.4% and 29.5%), using environmental standards in selecting businesses from which to make purchases, and displaying post-consumer recycled content percentages on promotional materials.

Crosstab analysis examining when an outdoor program has its own guiding environmental policy or statement (Note: 60.0% of respondents worked at an institution with one) and subsequent engagement in the practices as previously described indicated greater participation for five of the practices when compared to Table 1 percentages and when a policy or statement existed at the university/college or campus recreation department level (Table 2). Increases in percentages were most notable for practices linked to using environmental standards in the selection of businesses from which to make purchases (35.0% vs. 22.1%, 20.6%, and 28.6%) and participating in carbon offset programs. None of the practices were engaged in less often when compared to the overall percentages in Table 1.

Crosstab analysis examining whether the presence of a university sustainability office or coordinator (Note: 73.0% of respondents worked at an institution with one) was associated with greater outdoor program participation in the practices found in Table 1 indicated slight increases for eight of the nine practices (Table 2). Similar results were found when compared to the percentages found if the university had a guiding environmental policy or statement, but the percentages were generally lower when compared to campus recreation departments or outdoor programs that had their own policy.

A series of independent samples t tests was conducted to compare if university/college administration support for outdoor program operational decision making differentiated participation in the nine practices described in Table 1. University/college administration support was measured using a 5-point Likert scale for which 1 = never and 5 = all the time. (Note: The overall mean score regardless of participation in the nine practices was 3.45 or between half the time and most of the time.) Of the nine practices, there were two statistically significant positive differences (Table 3). Overall, for seven of the nine practices, participation revealed a perception of greater support from college administration.

Additional independent samples t tests were conducted to compare whether support from the respondent’s immediate supervisor (e.g., director of campus/university recreation) concerning outdoor program decision making differentiated participation in the nine practices. Immediate supervisor support was measured using a 5-point Likert scale for which 1 = never and 5 = all the time. The overall mean score was 3.87 or close to most of the time. While only one statistically significant positive difference was found (Table 4), six of the remaining eight practices revealed greater mean scores for outdoor programs that engage in the practices versus those that do not. In comparison to support at the college administration level (Table 3), perceived support was greater across all nine practices at the campus recreation supervisor level.

Using a Likert scale response format, respondents answered how often they engaged in 12 other environmental practices. Table 5 depicts the overall mean scores for the practices each evaluated on a 5-point Likert scale (1 = never to 5 = all of the time). Three practices had an average score greater than 4 or most of the time, and six of the remaining eight practices had an average score near 3 or half the time.
Table 2
Crosstab Between Different Levels of Environmental Policy/Position Statements or the Presence of a Sustainability Office/Coordinator and Outdoor Program Participation in Sustainable Practices

<table>
<thead>
<tr>
<th>Practices by outdoor programs</th>
<th>College has a guiding environmental policy or position statement</th>
<th>Campus recreation department has a guiding environmental policy or position statement</th>
<th>Outdoor program has a guiding environmental policy or position statement</th>
<th>College has a sustainability office or coordinator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uses environmental protection standards to select and evaluate businesses we make purchases from.</td>
<td>20.6 79.3</td>
<td>28.6 71.4</td>
<td>35.0 65.0</td>
<td>23.2 76.7</td>
</tr>
<tr>
<td>Uses labor/human rights standards to select and evaluate businesses we make purchases from.</td>
<td>20.4 79.6</td>
<td>25.6 74.4</td>
<td>29.5 70.5</td>
<td>23.5 76.5</td>
</tr>
<tr>
<td>Has a shutdown policy/checklist that outlines all electronics to be powered off each night.</td>
<td>29.5 70.5</td>
<td>48.9 51.1</td>
<td>46.1 53.9</td>
<td>33.3 66.7</td>
</tr>
<tr>
<td>Printer or copy paper contains 50% or greater post-consumer recycled content.</td>
<td>63.4 36.6</td>
<td>66.7 33.3</td>
<td>66.1 33.9</td>
<td>66.2 33.8</td>
</tr>
<tr>
<td>Promotional materials display post-consumer recycled content percentage on the final product.</td>
<td>31.4 68.6</td>
<td>37.2 62.8</td>
<td>34.4 65.6</td>
<td>32.9 67.1</td>
</tr>
<tr>
<td>Provides durable plates, silverware, and cups in the break room (no disposables).</td>
<td>65.3 34.7</td>
<td>71.1 28.9</td>
<td>71.2 28.8</td>
<td>67.0 33.0</td>
</tr>
<tr>
<td>Requires trip participants to bring reusable plateware, silverware, and cupware.</td>
<td>79.6 10.4</td>
<td>80.8 19.2</td>
<td>88.1 11.9</td>
<td>78.0 22.0</td>
</tr>
<tr>
<td>Has completed a carbon footprint calculation.</td>
<td>10.0 90.0</td>
<td>11.9 88.1</td>
<td>10.0 90.0</td>
<td>10.8 89.2</td>
</tr>
<tr>
<td>Participate in carbon offset programs (e.g., tree planting) to negate/reduce our carbon footprint.</td>
<td>17.4 82.6</td>
<td>14.3 85.7</td>
<td>21.3 78.7</td>
<td>18.6 71.4</td>
</tr>
</tbody>
</table>

Note. Respondents had the option to check “I don't know” for each of the practices. These numbers are not included in the percentages presented.
Table 3
*T Test Examining Difference in Practice Participation Given University Support for Outdoor Program Decision Making

<table>
<thead>
<tr>
<th>Practices by outdoor programs</th>
<th>College administration supports outdoor program operational decision making as it relates to pursuing environmentally sustainable practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Uses environmental protection standards to select and evaluate businesses we make purchases from.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>24</td>
</tr>
<tr>
<td>Uses labor/human rights standards to select and evaluate businesses we make purchases from.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Has a shutdown policy/checklist that outlines all electronics to be powered off each night.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>39</td>
</tr>
<tr>
<td>Printer or copy paper contains 50% or greater post-consumer recycled-content.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>62</td>
</tr>
<tr>
<td>Promotional materials display post-consumer recycled content percentage on the final product.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>32</td>
</tr>
<tr>
<td>Provides durable plates, silverware and cups in the break room (no disposables).</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>77</td>
</tr>
<tr>
<td>Requires trip participants to bring reusable plateware, silverware, and cupware.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>95</td>
</tr>
<tr>
<td>Has completed a carbon footprint calculation.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Participates in carbon offset programs (e.g., tree planting) to negate/reduce our carbon footprint.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>18</td>
</tr>
</tbody>
</table>

Note. $n$ may not add to total number of respondents because of a third choice of “I don’t know” for each practice. Scores were calculated based on a 5-point Likert scale where 1 = never and 5 = all the time.

*p < .05.
Table 4
*T Test Examining Difference in Practice Participation Given Campus Recreation Supervisor Support for Outdoor Program Decision Making*

<table>
<thead>
<tr>
<th>Practices by outdoor programs</th>
<th>Immediate supervisor supports outdoor program operational decision making as it relates to pursuing environmentally sustainable practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Uses environmental protection standards to select and evaluate businesses we make purchases from.</td>
<td>25 88 4.04 3.81 .373</td>
</tr>
<tr>
<td>Uses labor/human rights standards to select and evaluate businesses we make purchases from.</td>
<td>25 88 3.92 3.85 .797</td>
</tr>
<tr>
<td>Has a shutdown policy/checklist that outlines all electronics to be powered off each night.</td>
<td>40 77 4.00 3.80 .380</td>
</tr>
<tr>
<td>Printer or copy paper contains 50% or greater post-consumer recycled-content.</td>
<td>62 38 4.11 3.53 .010*</td>
</tr>
<tr>
<td>Promotional materials display post-consumer recycled content percentage on the final product.</td>
<td>32 77 4.16 3.73 .075</td>
</tr>
<tr>
<td>Provides durable plates, silverware and cups in the break room (no disposables).</td>
<td>78 39 3.95 3.82 .557</td>
</tr>
<tr>
<td>Requires trip participants to bring reusable plateware, silverware, and cupware.</td>
<td>96 24 3.93 3.71 .396</td>
</tr>
<tr>
<td>Has completed a carbon footprint calculation.</td>
<td>9 102 3.67 3.86 .627</td>
</tr>
<tr>
<td>Participates in carbon offset programs (e.g., tree planting) to negate/reduce our carbon footprint.</td>
<td>18 95 3.78 3.89 .690</td>
</tr>
</tbody>
</table>

*Note.* n may not add to total number of respondents because of a third choice of “I don’t know” for each practice. Scores were calculated based on a 5-point Likert scale where 1 = never and 5 = all the time.

*p < .05.*
Table 5
Average Scores for Respondent Participation in 12 Environmental Practices

<table>
<thead>
<tr>
<th>Practices by outdoor programs</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn off lights when not using a room/area.</td>
<td>4.36</td>
</tr>
<tr>
<td>Turn off computers and monitors when not in use.</td>
<td>3.43</td>
</tr>
<tr>
<td>Unplug small appliances when not in use.</td>
<td>2.97</td>
</tr>
<tr>
<td>Power down peripheral electronic equipment (monitor, scanners, printers, lamps, etc.) each night.</td>
<td>3.49</td>
</tr>
<tr>
<td>Seasonally turn down heat before leaving work.</td>
<td>2.64</td>
</tr>
<tr>
<td>Seasonally turn up air conditioning before leaving work.</td>
<td>3.11</td>
</tr>
<tr>
<td>Sleep mode is enabled on all copiers and printers after 5 minutes or more of inactivity.</td>
<td>4.38</td>
</tr>
<tr>
<td>Hang gear and clothes out to dry whether outside or on a drying rack inside.</td>
<td>4.37</td>
</tr>
<tr>
<td>Use reusable bags when shopping for trips.</td>
<td>3.25</td>
</tr>
<tr>
<td>Provide information to trip/program participants concerning outdoor program sustainable practice efforts.</td>
<td>2.92</td>
</tr>
<tr>
<td>Seek to purchase gear/equipment manufactured within 500 miles of campus.</td>
<td>2.42</td>
</tr>
<tr>
<td>Buy from locally owned businesses for trip food and supplies.</td>
<td>3.04</td>
</tr>
</tbody>
</table>

Note. Score based on a 5-point Likert scale for which 1 = never and 5 = all of the time. Respondents had the option to skip an item if the practice was out of their control.

Independent samples $t$ tests were then performed to compare respondents who worked at a college with an environmental policy or position statement (Note: 89.2% of respondents worked at an institution with one) versus those that did not and their level of participation across the 12 environmentally sustainable practices, delineated in Table 5. Respondents who worked at a college with an environmental policy or statement were more likely to engage in eight of the 12 practices versus those who worked at a college without a policy (Table 6).

Independent samples $t$ tests were performed to compare whether the campus recreation department had an environmental policy or not and participation in the 12 practices (see Table 5). Respondents that have such a policy (49.0%) were more likely to engage in 11 of the 12 practices than those without a policy, although only one practice was found to be statistically significant in difference (Table 7). Additionally, outdoor programs that worked under a departmental environmental policy were also more likely to engage in a practice at least half the time ($M > 3.0$) versus those that did not work with such a policy. When compared to the overall averages for practice engagement described in Table 5, respondents who worked at colleges with a department level environmental policy participated slightly more often for nine of the 12 practices.

Next, independent samples $t$ tests comparing whether the outdoor program had its own environmental policy or not and subsequent participation in the 12 practices indicated that respondents that have such a policy were more likely to engage in 11 of the 12 practices (Table 8). Three of the practices had mean scores greater than 4 or most of the time with three statistically significant ($p < .05$) positive mean differences found, suggesting that the presence of a program level environmental policy may positively influence practice engagement. Compared to the averages described in Table 5, respondents who worked under a program level environmental policy participated slightly more often for 10 of the 12 practices.
Finally, one fourth (24.3%) of all respondents, regardless of the presence of an environmental policy or sustainability office believed their college administration would provide a larger budget to make more environmentally sustainable purchases if they could justify such. Crosstab analysis measuring the association between the budget support question and having a guiding environmental policy indicated that respondents were much more likely to say they would receive administrative support for a larger budget (44.4%) if their campus recreation department had an environmental policy when compared to the overall response of 24.3% (Table 9). For outdoor programs that have an environmental policy, respondents said they would receive financial support to a greater degree in comparison to the overall response and their response linked to a college level policy or the presence of a sustainability office at their institution.

Table 6
*T Tests Examining Presence of a University Guiding Environmental Policy/Statement and Outdoor Program Practice Participation*

<table>
<thead>
<tr>
<th>Practices by outdoor programs</th>
<th>College has a guiding environmental policy or position statement</th>
<th>n</th>
<th>M</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Turn off lights when not using a room/area.</td>
<td>88</td>
<td>9</td>
<td>4.34</td>
<td>4.78</td>
</tr>
<tr>
<td>Turn off computers and monitors when not in use.</td>
<td>88</td>
<td>11</td>
<td>3.40</td>
<td>3.45</td>
</tr>
<tr>
<td>Unplug small appliances when not in use.</td>
<td>85</td>
<td>10</td>
<td>2.96</td>
<td>3.30</td>
</tr>
<tr>
<td>Power down peripheral electronic equipment (monitor, scanners, printers, lamps, etc.) each night.</td>
<td>81</td>
<td>8</td>
<td>3.43</td>
<td>3.13</td>
</tr>
<tr>
<td>Seasonally turn down heat before leaving work.</td>
<td>53</td>
<td>3</td>
<td>3.83</td>
<td>2.00</td>
</tr>
<tr>
<td>Seasonally turn up air conditioning before leaving work.</td>
<td>51</td>
<td>3</td>
<td>3.18</td>
<td>2.00</td>
</tr>
<tr>
<td>Sleep mode is enabled on all copiers and printers after 5 minutes or more of inactivity.</td>
<td>77</td>
<td>7</td>
<td>4.42</td>
<td>4.29</td>
</tr>
<tr>
<td>Hang gear and clothes out to dry whether outside or on a drying rack inside.</td>
<td>88</td>
<td>9</td>
<td>4.44</td>
<td>4.33</td>
</tr>
<tr>
<td>Use reusable bags when shopping for trips.</td>
<td>88</td>
<td>11</td>
<td>3.17</td>
<td>3.64</td>
</tr>
<tr>
<td>Provide information to trip/program participants concerning outdoor program sustainable practice efforts.</td>
<td>89</td>
<td>10</td>
<td>2.91</td>
<td>2.90</td>
</tr>
<tr>
<td>Seek to purchase gear/equipment manufactured within 500 miles of campus.</td>
<td>87</td>
<td>9</td>
<td>2.45</td>
<td>1.89</td>
</tr>
<tr>
<td>Buy from locally owned businesses for trip food and supplies.</td>
<td>85</td>
<td>9</td>
<td>2.99</td>
<td>2.67</td>
</tr>
</tbody>
</table>

Note. *n* may not add to total number of respondents because of a third choice of “I don’t know” for each practice. Scores were calculated based on a 5-point Likert scale where 1 = never and 5 = all the time.

*p < .05.*

http://www.ejorel.com/
Table 7  
*T Tests Examining Presence of Campus Recreation Department Environmental Policy/Statement and Outdoor Program Practice Participation*

<table>
<thead>
<tr>
<th>Practices by outdoor programs</th>
<th>Campus recreation department has a guiding environmental policy or position statement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Turn off lights when not using a room/area.</td>
<td>42</td>
</tr>
<tr>
<td>Turn off computers and monitors when not in use.</td>
<td>43</td>
</tr>
<tr>
<td>Unplug small appliances when not in use.</td>
<td>41</td>
</tr>
<tr>
<td>Power down peripheral electronic equipment (monitor, scanners, printers, lamps, etc.) each night.</td>
<td>39</td>
</tr>
<tr>
<td>Seasonally turn down heat before leaving work.</td>
<td>26</td>
</tr>
<tr>
<td>Seasonally turn up air conditioning before leaving work.</td>
<td>25</td>
</tr>
<tr>
<td>Sleep mode is enabled on all copiers and printers after 5 minutes or more of inactivity.</td>
<td>33</td>
</tr>
<tr>
<td>Hang gear and clothes out to dry whether outside or on a drying rack inside.</td>
<td>42</td>
</tr>
<tr>
<td>Use reusable bags when shopping for trips.</td>
<td>43</td>
</tr>
<tr>
<td>Provide information to trip/program participants concerning outdoor program sustainable practice efforts.</td>
<td>43</td>
</tr>
<tr>
<td>Seek to purchase gear/equipment manufactured within 500 miles of campus.</td>
<td>42</td>
</tr>
<tr>
<td>Buy from locally owned businesses for trip food and supplies.</td>
<td>40</td>
</tr>
</tbody>
</table>

*Note. n may not add to total number of respondents due to option to skip an item if the practice was out of respondent control. Scores were calculated based on a 5-point Likert scale where 1 = never and 5 = all the time.*

*p < .05

Table 8  
*T Tests Examining Presence of Outdoor Program Having an Environmental Policy/Statement and Outdoor Program Practice Participation*

<table>
<thead>
<tr>
<th>Practices by outdoor programs</th>
<th>Outdoor program has a guiding environmental policy or position statement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Turn off lights when not using a room/area.</td>
<td>59</td>
</tr>
<tr>
<td>Turn off computers and monitors when not in use.</td>
<td>60</td>
</tr>
<tr>
<td>Unplug small appliances when not in use.</td>
<td>58</td>
</tr>
</tbody>
</table>
## Table 8 (cont.)

<table>
<thead>
<tr>
<th>Practices by outdoor programs</th>
<th>Outdoor program has a guiding environmental policy or position statement</th>
<th>$n$</th>
<th>$M$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power down peripheral electronic equipment (monitor, scanners, printers, lamps, etc.) each night.</td>
<td>Yes</td>
<td>57</td>
<td>3.47</td>
<td>3.23</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>34</td>
<td>3.23</td>
<td></td>
</tr>
<tr>
<td>Seasonally turn down heat before leaving work.</td>
<td>Yes</td>
<td>32</td>
<td>3.84</td>
<td>3.54</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>24</td>
<td>3.54</td>
<td></td>
</tr>
<tr>
<td>Seasonally turn up air conditioning before leaving work.</td>
<td>Yes</td>
<td>32</td>
<td>3.00</td>
<td>3.18</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>22</td>
<td>3.18</td>
<td></td>
</tr>
<tr>
<td>Sleep mode is enabled on all copiers and printers after 5 minutes or more of inactivity.</td>
<td>Yes</td>
<td>48</td>
<td>4.54</td>
<td>4.22</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>37</td>
<td>4.22</td>
<td></td>
</tr>
<tr>
<td>Hang gear and clothes out to dry whether outside or on a drying rack inside.</td>
<td>Yes</td>
<td>60</td>
<td>4.40</td>
<td>4.33</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>42</td>
<td>4.33</td>
<td></td>
</tr>
<tr>
<td>Use reusable bags when shopping for trips.</td>
<td>Yes</td>
<td>59</td>
<td>3.27</td>
<td>3.26</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>43</td>
<td>3.26</td>
<td></td>
</tr>
<tr>
<td>Provide information to trip/program participants concerning outdoor program sustainable practice efforts.</td>
<td>Yes</td>
<td>61</td>
<td>3.25</td>
<td>2.44</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>43</td>
<td>2.44</td>
<td></td>
</tr>
<tr>
<td>Seek to purchase gear/equipment manufactured within 500 miles of campus.</td>
<td>Yes</td>
<td>58</td>
<td>2.50</td>
<td>2.22</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>41</td>
<td>2.22</td>
<td></td>
</tr>
<tr>
<td>Buy from locally owned businesses for trip food and supplies.</td>
<td>Yes</td>
<td>56</td>
<td>3.05</td>
<td>2.90</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>42</td>
<td>2.90</td>
<td></td>
</tr>
</tbody>
</table>

*Note. $n$ may not add to total number of respondents due to option to skip an item if the practice was out of respondent control. Scores were calculated based on a 5-point Likert scale where 1 = never and 5 = all the time.

*p < .05

## Table 9

<table>
<thead>
<tr>
<th>College administration would provide a larger budget to make more environmentally sustainable purchases if I could justify such</th>
<th>College has a guiding environmental policy or position statement</th>
<th>Campus recreation department has a guiding environmental policy or position statement</th>
<th>Outdoor program has a guiding environmental policy or position statement</th>
<th>College has a sustainability office or coordinator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>25.8%</td>
<td>44.4%</td>
<td>37.5%</td>
<td>26.0%</td>
</tr>
<tr>
<td>No</td>
<td>74.2%</td>
<td>55.6%</td>
<td>62.5%</td>
<td>74.0%</td>
</tr>
</tbody>
</table>

*Note. Respondents had the option to check “I don’t know” for the budget item. These numbers were not included in the table percentages.*
Conclusions and Implications

The concept of sustainability, be it focused on the triple bottom line or individual components (e.g., environmental stewardship), has gained increasing importance in academic research and organizational practice over the past two decades (Davis & Challenger, 2014). In higher education, campuses are embracing the concept at all levels of operation with sustainability councils and dedicated sustainability offices being created, strategic plans that speak to sustainability, and numerous ways of incorporating sustainability into classrooms, student clubs, and residence life. To complement such efforts, numerous nongovernmental organizations (e.g., AASHE, NIRSA) provide direction and strategic tools to initiate change, while also helping formally assess campus efforts. The extent to which the organizational environment (e.g., presence of a guiding environmental policy) and change agents (e.g., sustainability office coordinators) are supportive of desired sustainable initiatives can greatly influence the success or failure of pro-environmental interventions (Davis & Challenger, 2014; Norton et al., 2014). The findings from this study seem to support this statement, with respondents who work at colleges with a guiding environmental policy or position statement more likely to believe their respective institution would financially support their pursuit of environmentally sustainable purchases in comparison to the overall percentage of support. The positive response was more pronounced if the policy or statement was associated directly with the outdoor program or at the campus recreation department level, lending support to the idea that having a policy at or close to the operational level may influence practice to a greater degree. Similarly, the presence of a guiding environmental policy or statement at the campus recreation department or outdoor program level revealed that respondents were more likely to engage in environmentally sustainable practices in comparison to the overall percentage for each practice as well as when the policy or infrastructural support (sustainability office) was more removed from outdoor program operations (Tables 1 and 2).

Concerning college administration supporting outdoor program operational decision making and actual practice engagement, outdoor programs that did engage in the practices generally were more likely to believe they would receive administrative support versus those that did not (Table 3). In other words, the greater the perceived support from the college administration concerning operational decision making, the greater the likelihood an outdoor program participated in pro-environmental practices. Similar findings were determined when the question focused on perceived support from a supervisor at the campus recreation level (e.g., director of campus recreation), with those engaged in the practices believing they would receive greater support (Table 4). As such, practice and perceived support seemed linked, and when perception of support is at the immediate supervisor level, those that engaged in the practices believe they would be more supported in comparison to perceived support at the college administration level. This again pointed to how an additional degree of separation from operation may influence perception of support.

Additional analysis comparing whether the presence of an environmental policy or not and subsequent participation in 12 pro-environmental practices indicated that respondents that have such a policy were more likely to engage in the practices, particularly when the policy was at the campus recreation department or outdoor program level (Tables 7 and 8). When compared to the overall averages for practice engagement described in Table 5, respondents who worked under a program or campus recreation level environmental policy were also slightly more likely to engage in the practices, suggesting not only the value of an environmental policy but also its association with outdoor program administration.

While the findings are generally encouraging, there were many practices that were engaged in only about half of the time or not often. This is despite that a majority of respondents work with outdoor programs that operate under a guiding environmental policy or position statement linked to sustainability. Although the presence of an environmental policy or position...
statement was positively associated with greater engagement in many of the practices, it seems guiding policies as well as the presence of campus sustainability offices may not be enough on their own. Davis and Coan (2015) suggest that beyond examining the organizational culture and support and individuals and groups already engaged in pro-environmental behaviors that researchers study other considerations such as the role of government regulation, financial and technological constraints, and the processes and procedures that among other things reward, permit, and ensure engagement, advocating a more “socio-technical systems thinking” approach (Davis, Challenger, Jayewardene, & Clegg, 2014). While not within the scope of this study, future research efforts should consider more broadly examining the systemic nature of college outdoor programs engagement in environmental initiatives (e.g., including environmental education in staff trainings and then in the field with participants), as it may reveal some of the reasons behind low practice engagement while also offering solutions.

Given a recognition that individual and group pro-environmental behavior is commonly linked to positive perceptions of a larger body (e.g., college outdoor program) supporting sustainable practices, a future initiative for an organization like the association studied (AORE) may be to pursue the creation of an accreditation or certification process aimed at college outdoor programs—a process that not only recognizes outdoor programs, their staff’s, and their participants’ commitment to the environment, but may also influence their respective colleges to take a more systemic approach in their commitment to sustainable initiatives, possibly one similar to what Davis et al. (2014) advocate.

Beyond the conclusions and implications drawn from this part of the study, additional analysis should consider how the size, type (private vs. public), and geographic location of the responding institutions might have factored into their responses. For instance, a small private liberal arts college located in an environmentally progressive area (e.g., Portland, Oregon) may be more likely to have greater institutional support and engage in sustainable practices more so than a midsize public institution located in the rural South. In addition, the community or county the institution is housed within may have an influence on support and practice as well. With the larger survey including questions tied to institution type, community support, and locale, further analysis could provide a clearer understanding of their influence on sustainable practice engagement and perceptions of institutional support.

The survey also included questions centered on food and equipment purchasing, recycling, energy, and transportation, as well as environmental and social justice. Additional analysis concerning university and college support (i.e., presence of guiding environmental policy; existence of a sustainability office or coordinator) and each of these areas should be performed to gain additional insight and a broader understanding of outdoor program engagement in sustainable operational practices.

Finally, this study has some limitations. The instrument designed for this study was not psychometrically tested and its use should be considered exploratory. Though the number of respondents was adequate for the analysis performed, the overall number is not large enough to generalize for the larger population of college and university outdoor programs in the United States. Indeed, the nature of the data collection prevents this, as no random sampling approach was used. It is also possible that respondents interpreted the presence of an environmental policy or statement differently than intended. Some respondents may have only thought of mission or vision statements, when the policies or position statements could have been couched within organizational goals and objectives or as part of a strategic plan. In addition, including a third choice of “I don’t know” for some of the questions may have influenced the results more profoundly than known, with some questions revealing a third of respondents using this choice.

In closing, the primary purpose of this study was to examine environmentally sustainable practices among college outdoor programs, while also examining how larger campus recreation department and college level policy and infrastructure may be associated with such practices. At
a minimum, it seems that the organizational culture and infrastructural support at responding institutions makes a difference in terms of engagement in sustainable practices, as does the level at which environmental policy is established.

References


Association for the Advancement of Sustainability in Higher Education. (n.d.). About AASHE. Retrieved April 1, 2016, from http://www.aashe.org/about


Sail Training: A Systematic Review

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Abstract

Starting around 2000, research activity about sail training increased such that there is now sufficient research on the subject to constitute a foundation upon which an emerging body of literature can be identified. The literature has the potential to be utilized to influence program design, policy, theory, and practice— a growing area of youth development practice. This systematic review of the current literature on sail training (post-2000) aims to (a) provide a single work for researchers and practitioners to consult for an overview of the current research on sail training; (b) perform a thematic analysis of the current trends for sail training research within the categories of demographic characteristics, research strategies, process, and outcomes; (c) quantify the greater discourse on sail training; and (d) suggest directions in which sail training research can go to build upon the current foundation. The main findings from this systematic review are that a limited set of methods are used in sail training research; participants experience a positive long-term effect in regard to personal and social domains; structured program design can lead to better specified outcomes; and the effects of demographic characteristics such as gender, age, or socioeconomic background remain unexplored. Much of the research is noncumulative and the related theoretical frameworks lack coherence.

KEYWORDS: youth development; sail training; experiential learning; adventure; personal and social development

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Sail training is an educational experience that occurs on board sailing vessels of various sizes in various contexts around the world. The educational experience has particular focus on personal and social development; “requires participants to confront many demanding challenges, both physical and emotional”; and “uses the experience for being at sea principally as a means to help people learn about themselves” (Sail Training International, 2010, para. 1, 4).

Sail training has its historical roots in the early 1900s (Merk, 2006), and there are currently over 100 tall ships operating around the world (Rowe, Dadswell, Mudie, & Rauworth, 2014). Sail training operators provide a variety of sail training experiences ranging from day sails in protected waters to yearlong voyages across oceans. These can take place on Class A, B, C, or D vessels ranging in size from yachts to four-masted barques. The United Kingdom alone has more than 25 sail training providers engaged in different types of sail training activities (McCulloch, 2007).

Activities on board fit broadly under the banner of sail training mainly for their educational purpose and their use of the sailing environment as a medium for eliciting positive change for participants. Although sail training experiences are available to people of all ages and abilities, sail training is predominantly connected with youth development (McCulloch, 2002).

The international nature of sail training, the wide range and large number of vessel operators, and program choices around the world pose problems for defining the theoretical framework for literature and research. Increasing expectations of research-informed practice and recent literature from fields related to sail training may have helped to instigate new studies and contribute to an interest in research directly about sail training. For example, Gordon, Harvor-Smith, Hay, and Priest (1996) looked at sail training as an outdoor education experience, making explicit connections between the literature in outdoor education and sail training and establishing the theoretical framework for sail training as related to outdoor and adventure education.

As the body of literature on sail training grows, it is useful to summarize current research so that practitioners, policy makers, and funding sources can make evidence-informed decisions. A summary at this point will also encourage a cumulative view of the current research and offer more coherence to inform future research.

At this time, a systematic review of literature on sail training has never been performed. The purposes of this review are to
(a) provide a single work for researchers and practitioners to consult for an overview of the current research on sail training;
(b) perform a systematic review of current sail training research with a focus on demographic characteristics, research strategies, and processes and outcomes; and
(c) suggest directions for future research on sail training.

The following questions guided this research:
(a) What does the literature say regarding the demographic characteristics in sail training?
(b) What research strategies have been employed in sail training?
(c) What does the extant literature say about the processes and outcomes of sail training?
(d) What might be useful directions for future research that builds on the extant literature?

Method

Systematic Review

A systematic review is a well-established methodology within the education field (Suri & Clarke, 2009). The Review of Educational Research is a journal entirely dedicated to this type of research, consistently publishing articles that summarize research using various methodologies.
from within the field of education. A number of other noteworthy organizations are gaining considerable momentum in the form of funding and political support for their efforts to produce systematic reviews (Harlen & Crick, 2004). Most notable are the Cochrane reviews, which are now well-established within the medical field.

Criticism of systematic reviews are plentiful (see Suri & Clarke, 2009). Pawson, Greenhalgh, Harvey, and Walshe (2005) wrote one of the strongest of these critiques. Pawson et al. noted that the criteria for inclusion or exclusion of articles from the review can impose bias on certain types of research methodologies.

This systematic review used an inductive approach with the focus on generating theories from data collected about the subject (Saunders, Lewis, & Thornhill, 2012). The inductive approach allowed for the identification of all themes within the extant literature. The selection of articles for this research was based on four criteria. First, pre-2000 articles were excluded because of developments in course delivery. These developments were apparent in the works by Bacon (1983) and Kalisch (1979), which were later followed by a number of works that have helped drive some of this change (see Greenaway, 1997; Hopkins & Putnam, 1993). Second, articles must be written in English because of the lack of resources and time available for translation. Third, articles must have a recognizable referencing system. Limited restrictions were placed on what type of literature could be included, meaning that the review included organizational research documents and other unpublished research as well as any literature that had the potential to provide quality data. Fourth, the literature needed to be directly related to one or more of the following: sail training programs, sail training outcomes, sail training policy, sail training theory, or sail training research.

Research Process

The research for this article was conducted in six phases.

**Article collection.** Initially, a search was conducted through different electronic databases, particularly those available through The University of Edinburgh (i.e., Edinburgh University Library Searcher, JSTOR, and Google Scholar). The keywords searched were anything related to sail training such as sail training, sailing, voyages, adventure education, and tall ships. The search resulted in 24 articles to be included in the study.

**Data collection: Initial reading.** Data collection and analysis consisted of an initial reading of the collected articles to gain a general understanding for the research in accordance with Gilligan, Spencer, Weinberg, and Bertsch (2003).

**Data collection: Secondary reading.** The secondary reading can be broadly categorized as open coding (Corbin & Strauss, 2008). For each article, a summary table was created. The initial table was piloted by checking for accuracy against the original article.

**Data validity check.** This phase consisted of a final reading of the article and comparison with the summary table to ensure data in the table were an accurate representation of the article. It also helped to minimize researcher bias.

**Initial data analysis.** First, basic data of the articles were collated. Second, a thematic coding method was used, as per Robson (2011), who stated that “thematic coding analysis [is] where the codes and themes emerge purely based from your interaction with the data” (p. 475). Third, the claims and discussions column was analyzed, which proved to be challenging.

**Secondary data analysis.** The final phase consisted of analyzing thematic findings using axial coding, the linking together of the categories that were developed during Phase 4 (Robson, 2011).

Ethical Considerations

This study received ethical approval from The University of Edinburgh Ethics Committee.
Results

The 24 articles used in this systematic review are marked in the reference list with an asterisk (*). Of the 24 publications, two were from a philosophical perspective, meaning they did not report empirical work (Allison & Von Wald, 2013; Wojcikiewicz & Mural, 2010). The remaining 22 publications reported empirical work from 16 studies, showing that single studies produced multiple articles. For example, McCulloch (2002) used the research for his PhD dissertation in publications in 2004 and 2007. The analysis of data from the systematic review of the 24 publications resulted in findings related to the themes of demographic characteristics of sail training, research methodologies, process, and outcomes, each of which is described below.

Demographic Characteristics of Sail Training

Vessels. Vessels of all rigs and sizes are represented in the research on sail training, and both small and large ships of all rigs are represented in individual articles and in the collection of articles. For example, the research by Allison, McCulloch, McLaughlin, Edwards, and Tett (2007) involved 17 vessels from around the world of all sizes and rigs; McCulloch (2004) used small boats; and Capurso and Borsci (2013) used a 61-meter brigantine.

Participants. The gender distribution was compiled for all the studies that provided gender data, and it was found that 58.43% of participants were female. However, this does not mean that both genders are represented roughly equally within sail training research. First, in some cases the program studies were for females only (e.g., Arbour, 2007; Grocott & Hunter, 2009). Second, some of the studies, particularly those with small sample sizes, did not have equal representation of genders among their participants. For example, the work of Grinkeviciute (2013) consisted of five males and one female.

The age of participants across all research studies is similar. Most are in the age range of 15–25 years at the time of participation in sail training. Allison et al. (2007) stated that the ages of their participants ranged from 15–25, and Hunter et al. (2013) stated that they had an average participant age of 16.48. However, participants in other studies may have been outside this age range at the time of data collection. For example, Cleland (2011) used subjects who participated in sail training voyages in 1985 who might have been more than 40 years of age at the time of the research but would have been between the ages of 17 and 23 at the time of participating in sail training.

Socioeconomic background of participants is not discussed in detail in any of the research, although two papers provided some of the basic demographic characteristics noted earlier (see Arbour, 2007; Hindle, 2014). Hindle (2014) briefly discussed the funding methods for participants and the socioeconomic status of the areas around the schools where participants lived. Of the 33 schools used in Hindle’s research, 13 were from high socioeconomic backgrounds with none in the highest 20% and the other 20 were from low socioeconomic backgrounds with 15 in the lowest 20%. Although this information provides an idea of the socioeconomic background of the schools’ pupils, it does not provide information about the socioeconomic backgrounds of sail training participants per se or a detailed breakdown of the demographics of those on board.

Location. There is limited variability in the location where research studies occurred, with all of the studies included in the review having a focus on vessels from Western countries. Western refers to countries that are predominantly European and also includes North America and parts of Australasia. Therefore, generalization beyond this context should be done with caution.
Research Methodologies

Two articles were philosophical, and these are excluded from this section. Of the 16 studies remaining, 11 used mixed methods and the other five were quantitative. Of the 11 that used mixed methods, four were qualitative and the rest combined qualitative and quantitative data.

Six sources of data are present: logbooks, interviews, focus groups, observations, document analysis, and self-reported questionnaires (SRQ). SRQs are the most commonly used method for collecting data within sail training research. SRQs are used in 12 out of 16 of the studies and in four cases represent the only method used.

Although the overwhelming majority of the research used SRQs, the origin of these vary considerably. There is no universal questionnaire used by all of the studies, although there is evidence that some of the research utilized questionnaires adapted from other sail training research projects. For example, Hindle (2014) discussed the use of a questionnaire adapted from the work of Allison et al. (2007). In other cases, researchers went outside the sail training research to find questionnaires or information on which to base their questionnaires. Examples of this include Capurso and Borsci (2013), who used Bracken's (1992) self-concept scales, and Grocott and Hunter (2009), who used the Self-Description Questionnaire (SDQ III; Marsh & O'Neill, 1984).

Another common method used in the reviewed research is the interview, which was used in nine studies. For example, Finkelstein and Goodwin (2005) used a combination of open and closed questions as part of an interview, with questions focusing on predetermined categories such as demographics and social skills.

Observation was mentioned in six of the studies, although there was minimal information on the specifics of the observations and limited discussion of what the observations entailed. For instance, Finkelstein and Goodwin (2005) mentioned the use of observation, but then described nothing further in their method. Allison et al. (2007) demonstrated how they approached observation:

Associates were asked to record observations of a range of activities and situations aboard their vessel, including for example how trainees were dealt with on arrival, how safety briefings and technical instruction was conducted, how meals and other aspects of domestic life were arranged, and so on. (p. 15)

Chiu (2012) and Liu (2012) both used participant logbooks in their research. The logbooks used for both research projects came from the same participants, but were analyzed with different research aims and therefore provided different data sets. Chiu in particular discussed the use of the logbook extensively, adopting an open format as per Corti (1993).

Document analysis and focus groups each only appeared once. McCulloch (2004) used document analysis, which consisted of the analysis of organizational documents for the relevant sail training providers. Grinkeviciute (2013) used a focus group, which was “conducted in an open and semi-structured manner, and included questions about changes in natural behaviour and group dynamics due to researcher’s presence on board and repeatedly completed questionnaires” (p. 8).

These findings show there is a heavy reliance on self-report data in the current sail training research. Further, in all cases except one, data were collected only from participants. Hindle (2014) is the exception, giving a questionnaire to the parents of participants in an effort to triangulate the findings.

Philosophical research. Of the 24 articles identified, two are philosophical (see Allison & Von Wald, 2013; Wojcikiewicz & Mural, 2010). Both used previous literature and research to discuss a number of points. Allison and Von Wald (2013) focused on the process elements (i.e., practices) of sail training, and Wojcikiewicz and Mural (2010) attempted to develop a framework for youth development based on the writings of John Dewey.
Long-term research. Of the 16 studies, seven performed some form of longer term research to study the longevity of the changes experienced by participants as the result of a sail training voyage. This mainly took the form of a delayed, postcourse SRQ or an interview 3 or more months after the completion of the voyage. For example, Kafka et al. (2012) repeated their SRQ 4–5 months after the completion of participants’ voyages. In other cases, such as the study by Cleland (2011), interviews were done with students who participated in courses as long as 26 years ago. This review shows longer term research ranges from around two months to 30 or more years postvoyage.

Single or multivoyage research. Of the 16 studies, 13 used a single sail training provider and of those, five used a single program. Allison et al. (2007) is at one end of the scale incorporating 34 voyages from 17 vessels, and a number of studies (e.g., Arbour, 2007; Chiu, 2012; Grinkevicuie, 2013; Henstock, 2012; Liu, 2012) are at the other end of the scale incorporating a single voyage from a single provider. The dominant approach has been to incorporate a number of voyages from the same provider.

Process Themes

Unique environment of sail training. One emergent theme was that sail training programs provide a unique environment for education (e.g., Cleland, 2011; McCarthy & Kotzee, 2010; McCulloch, 2007; McCulloch, McLaughlin, Allison, Edwards, & Tett, 2010), with four of the 16 studies specifically discussing this claim. Cleland (2002) went further by linking specific sail training activities with experienced outcomes. McCulloch (2007) specifically asserted that sail training forms a unique environment for learning, and he provides evidence to support this idea by using themes of space, movement, and privacy as the main elements that contribute to the unique nature of the experience.

Structured voyage design. Four papers discussed the relationship between structured purposeful learning on sail training voyages and student-related outcomes (see Allison et al., 2007; Cleland, 2002; Henstock, Barker, & Knijnik, 2013; Wojcikiewicz & Mural, 2010). These studies each took a different approach, but showed general consensus that structured purposeful education on a sail training voyage is effective in regard to student outcomes.

Allison et al. (2007) described purposeful education as a conscious choice to have an activity within a program that is intended to elicit certain outcomes. The authors did not suggest all activities must be precisely planned or specifically designed, but did suggest a program is more likely to achieve specific outcomes with purposefully chosen educational experiences known to contribute to achieving such specific outcomes (Allison et al., 2007).

Other research in the review mentioned similar concepts. Capurso and Borsci (2013) discussed in detail the effects of activities on students and related these effects to the works of Bronfenbrenner (1979). Henstock et al. (2013) made vague suggestions of links between specific activities (e.g., experiential learning activities) and specific outcomes (e.g., improved team performance).

Cleland (2002) took this line of discussion further by specifying the outcomes experienced by students and relating them back to specific sail training processes based on the activities in which students participated. This approach of connecting process/sail training practices to eliciting particular outcomes can provide the basis for further research of interest to providers.

Outcome Themes

Personal. The strongest theme related to the outcomes of sail training is the reported experience of personal change following participation in sail training programs. Of the 16 studies, 12 found evidence of personal change. Grocott and Hunter (2009) found that “participants experienced increases in the esteem in which they held their feelings of global self-worth, opposite sex relations, physical appearance, emotional stability and mathematical self-esteem” (p. 455).

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Hunter et al. (2013) found “. . . that participants who completed the voyage experienced elevated self-esteem” (p. 1960).

Additionally, data also suggest that benefits in personal domains are sustained over time (see Cleland, 2011; Grocott & Hunter, 2009; Hunter et al., 2013; Kafka et al., 2012). Hunter et al. (2013) also discussed the sustained effect of this change in self-esteem: “Study 2 replicated these results and further revealed that (a) elevated self-esteem was still apparent over 12 months; and (b) perceived self-efficacy and belonging each made a unique contribution to these findings” (p. 1960). Capurso and Borsci (2013) contradicted this finding, which is discussed in the following section.

Social. Another theme evident from data relates to participants’ experience of social change following their voyage, with 12 of the 16 studies reporting benefits in social domains. Social findings are evident in the research by Finkelstein and Goodwin (2005):

The data showed that nearly all the respondents (94%) claimed the voyage assisted them to cultivate friendships with people from different backgrounds. They reported they felt more successful in social situations, that they made friends more easily and communicated well with others. (p. 13)

Similar examples were illustrated by Allison et al. (2007), who stated that “analysis of the changes in trainees’ assessments of their own social confidence consistently shows that there is an increase in this measure between the beginning of a voyage and three months later” (p. 30). In addition, from the 12 articles reporting benefits in social domains, three found benefits were sustained over time. The most significant of these is the retrospective study by Cleland (2011) in which participants completed their voyage between 2 and 36 years ago. One study found no sustained changes to social benefits (see Capurso & Borsci, 2013).

Discussion

Demographic Characteristics of Sail Training

Three demographic characteristic issues are evident in the literature included in this review. The term demographic characteristics is used here to encapsulate these aspects: vessel size and rig type, age and gender, and socioeconomic status.

First, Allison et al. (2007) found that the vessel size or rig type does not affect program outcomes. This review provides support for this notion, particularly related to themes of the experience of personal and social change outcomes. Twelve studies found personal and social outcomes related to sail training programs, and each study included vessels of different sizes and rigs.

Second, issues related to age and gender do not feature frequently within sail training research. Finkelstein and Goodwin’s (2005) study is the only example with a significant gender focus. The authors suggested that gender has an effect on participants’ experience, whereas Hunter et al. (2013) stated the opposite. Evidence is minimal and contradictory in this area and hence further investigation is needed before claims of significance can be made.

Third, there is a notable lack of information related to relationships between socioeconomic status and sail training. Hindle (2014) gave a brief description of the socioeconomic environment around the schools of the sail training participants, noting that the majority of participants were from low socioeconomic areas, but not making significant claims related to socioeconomic status and sail training. Further research into Class Afloat, the sail training program used in the Cleland (2002) study, shows that current tuition fees are C$45,000 (see http://www.classafloat.com/section/join-our-crew/tuition-fees). Other programs such as the 10-day voyages on the Spirit of Adventure in New Zealand cost around NZ$1,900 (see http://www.spiritofadventure.org.nz/voyages/10-day-youth-development-voyage). Without further investigation, it is
not clear whether these fees are high or low relative to similar levels of activity and whether participants are from high socioeconomic backgrounds or gain considerable funding from other sources. Funding for sail training activity surely has a role in participation, but limited data on the socioeconomic backgrounds of participants or on any patterns of relationship between socioeconomic status and sail training allow for no substantive conclusions to be drawn.

Research Methodologies

This review highlights two methodological critiques for the current sail training research: overreliance on self-report data and generalizability of findings. There is a heavy reliance on self-report data, and this can be problematic. Though relatively easy to acquire and rich with information, SRQs are subject to skepticism: “We were aware that the questionnaire, at best, provides ‘soft’ data, perhaps better than mere opinions with no data at all, but vastly inferior to most other kinds of data” (Podsakoff & Organ, 1986, p. 531). Self-report data can be affected by the nature of the respondent unrelated to the subject under investigation (Robson, 2011). This includes individual variables such as cognition, participants’ past experience, personality, and current mood. These critiques demonstrate the potentially problematic nature of the heavy reliance on self-report data in sail training research. A number of other data collection methods for which data are not reported by the participant have been used effectively in research on other activities, and these have achieved similar outcomes to sail training (see Qiao & McNaught, 2007).

The second critique relates to how researchers have approached the generalizability of findings. Some of the sail training research makes generalized statements beyond the scope of the research:

Taking into account the results of this study combined with the literature detailing the influence of motivation, confidence, social networks and academic self-concept on engagement it can be concluded participation in a structured sail training programme containing key activities has a positive effect on engagement with learning and education that can be of benefit to students involved with school, university, TAFE who are at risk of disengagement. (Henstock, 2012, p. 80)

Similarly, Capurso and Borsci (2013) claimed, “Even brief sail training programmes, headed by good inland preparation activities, can have marked positive short-term effects on the participants’ Social and Competence self-concepts” (p. 22). Though evidence exists to support the findings of their current research, the generalizations extend beyond the scope of the research.

The idiosyncrasies of each vessel and crew present a particular challenge to the generalizability of findings, as pointed out by McCulloch (2002). Representative sampling may help to achieve more generalizable results (Falk & Guenther, 2006; Schofield, 1993; Watt & van den Berg, 1995), yet the ability to achieve a representative sample in sail training may prove challenging. Not only are the populations of providers, voyages, and participants involved in sail training and sail training research relatively small in number, but also the people involved in sail training are a self-selecting sample of the wider population of young people, and those who agree to participate in research are normally self-selecting. These issues of potential sample bias are unavoidable, but should be noted (Alreck & Settle, 1985; Rogekberg, Luong, Sederburg, & Cristol, 2000).

Process Themes

Unique nature of sail training. There appears to be a theme in the sail training research regarding the unique nature of sail training experiences. The unique environment of educational experience is not a new area of study within the education world. Higgins, Hall, Wall, Woolner, and McCaughey (2005) identified over 200 articles concerned with learning environments, addressing the relationship between the educational environment and student learning.
Some of the current sail training research suggests that the learning environment used for sail training is unique (Cleland, 2002; McCarthy & Kotzee, 2010; McCulloch, 2007; McCulloch et al., 2010). McCulloch (2007) suggested, “It is that combination of limited space and restricted privacy, the movement of the vessel and the inescapability of the whole experience that makes living at sea so profoundly different from any dry land context” (p. 300). Prijoan Vives’ (2013) work seems to support this notion, indicating that a subtle relationship exists between the ship and its crew.

However, the characteristics that are described as making the sail training environment unique could be applied to a number of other experiences. For example, a long-distance train journey would combine limited space, restricted privacy, constant movement, and inescapability. Similarly, this applies to a wilderness journey for which participants live in a tent and are constantly moving day to day.

Allison et al. (2007) suggested that “sail training experience transcends national and cultural boundaries and is not much influenced by the size or rig of the vessel” (p. 6). While aspects of sail training are different than those in other learning activities (e.g., the boat itself), the claim that it is unique may need further investigation. In this regard, it may be helpful to consider the sail training environment in light of complementary research in similar areas such as wilderness expeditions (Allison, Stott, Felter, & Beames, 2011).

Structured voyage design. The research on sail training demonstrates that structured purposeful programs are more effective at delivering personal and social outcomes. A wealth of literature has been developed over the past few decades specifically related to adventure education that supports the idea that a purposeful structured program benefits outcomes (Bacon, 1983; Kalisch, 1979; Greenaway, 1997; Hopkins & Putnam, 1993; Priest & Gass, 2005; Veevers & Allison, 2011).

The suggestion that structured purposeful program design provides a more effective learning environment is not without contention. For example, some authors (e.g., Priest & Gass, 2005) suggest that a more structured approach to adventurous learning experiences is preferable. This position might be summarized as experiences created and used for learning. Others, for example, DeLay (1996), consider such approaches to be pseudo experiential learning and promote a purer form, which might be summarized as experiences as the foundation for learning.

However, the stronger the move toward structured purposeful program design, the harder it is to find empirical evidence to support this approach as providing a more effective learning environment. Only Allison et al. (2007) and Cleland (2011) provide some details on how specified outcomes may be related to specific process elements (e.g., Cleland, 2011, “Factors Contributing to Personal Growth,” p. 48), which suggests this is an area for fruitful further investigation.

Outcome Themes

The experienced benefits in personal and social domains post–sail training voyage is the strongest outcomes theme within the current research. Additionally, it was shown that this theme extends to the longevity of the experienced changes. Although Capurso and Borsci (2013) contradicted this theme by presenting their findings that showed no sustained effects, they also suggested their sample was not big enough to make claims about long-term effects: “We are not able to identify effects on the social and competence self-concepts after two months of sailing activities because our sample size is not large enough” (p. 21).

The findings of the current research raise a question about whether developments in personal and social domains are beneficial. Specifically, several researchers argued that raised self-esteem can lead to undesirable behavior (Baumeister, Campbell, Krueger, & Vohs, 2003; Karatzias, Power, & Swanson, 2001; Lambird & Mann, 2006).

Follow-up research by Kafka et al. (2012) demonstrated that participants who participated in a sail training voyage had increased levels of self-esteem and decreased levels of risky attitudes,
aggression, and racial and gender bias, showing that self-esteem increased positively in this case without an increase in socially unacceptable behavior post-sail training program.

Research in the field of adventure education is consistent with research in sail training regarding participants experiencing change in personal and social domains, creating further connections between the literature in sail training and adventure education. Hattie, Marsh, Neill, and Richards’ (1997) meta-analysis of adventure education (primarily in Australasia) demonstrated the long-term positive effects of adventure education, which included the personal and social domains discussed in regard to sail training research. Their review involved a sample of 96 studies within adventure education. More support can be found in the work of Cason and Gillis (1994), who produced a meta-analysis of 43 studies and who suggested that “adolescents who attend adventure programming are 62% better off than those who do not” (p. 40). Their study also included social and personal domains similar to those discussed in this review.

Conclusion

This research set out to conduct a systematic review of the literature on sail training with a focus on research strategies, process, and outcomes. The intent was to provide a single port of call for interested parties to access an overview of the current research on sail training. Additionally, the intention of this research was to identify themes across the current research. These themes were then related to each other and where appropriate related to literature beyond sail training.

From this review, conclusions are as follows:

(a) Participants experience change in personal and social domains post-sail training program. Support for this is provided throughout the literature for single voyages and providers and for multiple voyages and providers. Evidence also suggests that these experienced changes are sustained over time. This is consistent with findings from research about similar programs in adventure education.

(b) Research on sail training relies heavily on self-report data and certain methodologies. Relying heavily on any one source of data or method of data collection can be methodologically problematic.

(c) Structured and deliberate program design is more effective than an unstructured approach in achieving specific outcomes. This theme was demonstrated within the current sail training research and is supported by related research in adventure education.

(d) The unique nature of sail training remains a repeated claim within the current research. Such a claim can be made about similar or related activities, for example, adventure education in general. However, what is unique about youth development through sail training remains unclear.

The current research has a limited focus on the role of demographic characteristics—such as gender, age, socioeconomic background, and class of vessel and rig—in the experience of sail training. Although contextual factors are often mentioned as descriptive characteristics of the experience, the role they play in the effects of sail training has not been adequately demonstrated nor sufficiently explored.

Future Research

Current research suggests that purposeful structured programming is better at achieving outcomes, yet minimal research focuses on what processes elicit what outcomes. More research into the processes involved in sail training could provide valuable insights for the purposes of program design, practice, and policy. If providers need to structure and plan activities to gain better outcomes, it will be beneficial to understand sail training processes better and how they relate to outcomes.
The focus on using self-report data has led to the finding that sail training participants experience change in social and personal domains. Research that explores these findings by using methodologies and strategies other than self-report will be welcome additions to the literature. In addition, further research into the longevity, sustained nature of change, or connections to research design from the related relevant field of adventure education would be a positive contribution.

This review illustrates a theme in the current research of claims regarding the “unique nature” of sail training. It also discussed how this claim is not fully supported, because many of the characteristics of sail training can also be attributed to experiences that do not occur on a boat. This suggests that either sail training is not unique or that there is something going on that the research has not yet identified. Priorao Vives (2013) discussed the nature of the vessel and its relationship with participants’ experience and suggested this is unique, whereas Allison et al. (2007) suggested that the experience is not necessarily related to the vessel or its rig. These views are not necessarily conflicting, but merit further investigation to understand the effect of the vessel size and rigging on the experience of participants and thereby to potentially articulate the unique nature of sail training.

This review shows that when socioeconomic data are included they are not necessarily relevant to the findings, which supports the idea that socioeconomic background of participants plays only a limited role in the current research on sail training. Future studies can include demographic characteristics of participants, as this will encourage consideration of any influence on findings and their generalizability. It may also be useful for future meta-analyses.

This review focuses entirely on research published in English since 2000. Further work summarizing research published in other languages and reviewing work prior to 2000 may be worth considering. Both of these areas for further research might usefully be approached in a progressive manner to confirm the potential value of undertaking the work prior to expending time and resources.

Finally, it is important to note that although the body of literature directly related to sail training is not large, there is evidence that it is growing and momentum is building. It will be useful to policy makers, providers, and practitioners for researchers to build on the nascent literature to continue the move toward coherent, cumulative approaches to further research. Making explicit connections between evidence-informed practice and practice-informed research in sail training would be useful for all involved in it.

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An Investigation of Mobile Technologies and Web 2.0 Tools Use in Outdoor Education Programs

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Abstract

This study examined how instructors and learners in residential outdoor education programs utilized mobile technologies and Web 2.0 applications. Twenty semistructured interviews were conducted with instructors, support staff, and administrators at a nonprofit institution that provides outdoor education programs. Sixty-five participants in those programs completed a questionnaire with open-ended questions. Results indicate that full-time instructors who were assigned an iPad utilized mobile technologies effectively and frequently. In contrast, seasonal instructors who had to check out iPads used them less frequently. Most instructors encouraged program participants to share digital media and use Web 2.0 tools. Program participants utilized a variety of mobile devices and applications during the programs. There was disagreement among instructors and staff, however, pertaining to the need for and the use of mobile technologies in outdoor education on public lands and in wilderness areas.

KEYWORDS: outdoor education; instruction; mobile technologies; ubiquitous learning; Web 2.0
Outdoor education emerged in the later 1800s to teach individuals of all ages about nature, its inhabitants, and the interrelationships among them (Gilbertson, Bates, McLaughlin, & Ewert, 2006; Hammerman & Hammerman, 1973). “The objective is to teach the student to see the land, to understand what he sees, and enjoy what he understands” (Leopold, 1942/1991, p. 302). Learning in the outdoors can be more active, relevant, personal, and meaningful than textbook learning because students use all their senses to interact with and explore their surroundings (Day & Petrick, 2006; Gilbertson et al., 2006; Hammerman & Hammerman, 1973). However, Louv (2008) found that many individuals, regardless of age, experience a disconnect with nature. Indeed, when investigating trends in outdoor education and adventure programs in the United States, Bobilya, Holman, Lindley, and McAvoy (2010) found that youth are increasingly disconnected from nature and outdoor leaders may lack sufficient training to engage their audience. Some people blame technology for this disconnect (Day & Petrick, 2006; Shultis, 2012). Pergams and Zaradic (2006) found that 16-year reductions in nature-based recreation at U.S. national parks negatively correlated with rises in Internet, video-game, and media consumption. They further suggested that when adults failed to spend time in nature-based settings, a “generation of children is also likely to follow suit” (Pergams & Zaradic, 2008, para. 5). Additionally, 21% of 368 surveyed National Wilderness Preservation System Managers stated that visitor experiences management, including “dealing with new technology,” was a major challenge they would face over the next 20 years (Ghimire, Green, Cordell, Watson, & Dawson, 2015, p. 25). Yet, others view technology as instrumental for teaching wilderness and outdoor learning principles to individuals (Dawson, 2007; Oblinger, 2003; Walter, 2013).

Abundant literature describes the selection, integration, and utilization of technologies in learning environments and the appropriate design of technology-enhanced instruction (e.g., Smaldino, Lowther, & Russell, 2012; Smith & Ragan, 2005). However, in a topic analysis of major outdoor education journals, Poff, Stenger-Ramsey, Ramsing, and Spencer (2013) failed to mention the integration of technology in outdoor education programs, focusing instead on program outcomes, curriculum, orientation programs, place, environmental ethics, experiential learning, leadership development, learning, risk, service learning, and wilderness therapy. A comprehensive literature search revealed that literature on the integration and utilization of mobile technologies and Web 2.0 tools in outdoor education programs is scarce. The purpose of this article is to report results of an investigation pertaining to the use of mobile technologies and Web 2.0 tools by instructors and program participants in outdoor education programs delivered at a U.S. national park.

**Mobile Learning**

The ubiquity of portable, wireless computing devices (e.g., tablets, smartphones, media players) allows individuals to consume and produce information constantly while they connect to others (Koole, 2009; Traxler, 2011). Mobile learning occurs when learners interact and engage with curricular, pedagogical, and social resources at various locations through portable electronic devices (Crompton, 2013; Koole, 2009; O’Malley et al., 2003). Though often associated with informal, spontaneous, and on-the-go learning, mobile learning can occur in face-to-face, formal settings (Brown & Mbati, 2015; Kukulsa-Hulme & Traxler, 2005).

Through mobile learning, individuals can study in flexible and interactive ways; immerse themselves in meaningful, applicable learning environments; work toward immediate learning goals by completing meaningful real-world activities; engage with the location that is being studied; and respond to tailored learning activities based on individual differences (Brown & Mbati, 2015; Traxler, 2011). Mobile learning can extend communication and leverage student downtime.

Museums use mobile technologies to highlight collections and vary patron experiences. Naismith and Smith (2009) and Rennick-Egglestone et al. (2016) leveraged mobile devic-
es to present varied museum tours to patrons without compromising the curated aesthetics. Interested patrons leveraged Internet devices to receive audio commentary about specific exhibits, to role-play events, and to differentiate collaborative experiences. Through tablet computers, social media, and related technologies, learners can interact with rich content when they desire uniquely tailored learning opportunities, troubleshoot problems with help from support staff and instructors, and expand learning environments without affecting the aesthetics of existing spaces (Alden, 2013; Brown & Mbati, 2015).

**K–12 Education**

Mobile technologies are also gaining traction in K–12 education settings. A survey of 2,462 Advanced Placement and National Writing Project teachers in both middle and high school settings revealed that 73% use and/or allow their students to use mobile phones in their classrooms, 45% use e-readers, and 43% use tablets, mostly for Internet research (Purcell, Heaps, Buchanan, & Friedrich, 2013). K–12 teachers use mobile devices to extend lessons beyond the schoolroom, differentiate learning, manage resources and grades, give feedback and support, and provide supplemental activities (Ferrer, Belvis, & Pàmies, 2011; Kennedy & Levy, 2008; Liu et al., 2014). Mobile devices create a playing field where individuals can communicate and connect with others, express themselves, share ideas, and create knowledge collaboratively (Caladine, 2008; Jones, 2008). This phenomenon has considerable social impacts and has redefined the production of knowledge.

Yet mobile technologies are not without challenges in educational settings. Although teachers allow for their uses in formal activities, they often worry about students’ abilities to filter results and identify relevant and credible information (Purcell et al., 2013). Mobile devices may also exacerbate socioeconomic differences among students, labeling those with older or rented devices and preventing them from the same level of access as their peers (Liu et al., 2014). However, Ferrer et al. (2011) mention that these differences are erased through one-to-one computing policies in which all students receive the same device. Additionally, mobile devices may serve as distractions to learning if the environment is not adequately designed (Eliasson, Cerratto-Pargman, Nouri, Spikol, & Ramberg, 2011; Nouri, Cerratto-Pargman, Eliasson, & Ramberg, 2011). These authors found that mobile devices can interfere with student interactions in the physical environment because of the many apps, tools, and features on the device (Eliasson et al., 2011; Nouri et al., 2011). Additionally, they found that interpersonal communication and collaboration can be compromised by mobile devices if the learning tasks are not planned effectively (Eliasson et al., 2011; Nouri et al., 2011).

**Outdoor Education**

Mobile learning and Web 2.0 tools are used in outdoor education programs similarly to how they are used in other settings. Blackwell (2015), Dawson (2007), and Walter (2013) indicate that outdoor educators use mobile devices to access maps and location services, access guidebook information, document surroundings through photography and video footage, disseminate information, offer just-in-time support, and communicate with emergency personnel. Thus, educators use mobile devices to supplement the physical environment. Lai, Chang, Li, Fan, and Wu (2013) for example used QR codes to provide additional information in location-based settings for elementary students completing outdoor training. Hsiao, Lin, Feng, and Li (2010) also used Internet resources to provide multimedia information about physical surroundings. In their situation, those who used mobile devices to access learning resources outperformed on subsequent assessments than a group that relied on a knowledgeable guide that interpreted the surroundings (Hsiao et al., 2010).
Yet challenges with mobile technologies also arise in outdoor education settings. Although Dyment, O’Connell, and Boyle (2011) found that Web 2.0 tools can facilitate reflective processes in outdoor programs, they questioned the expense of tool integration. Others feel that an expectation for instant feedback and/or support results in a false sense of security and leads to careless and potentially dangerous behavior in outdoor settings (Blackwell, 2015; Shultis, 2012). Becoming overly reliant on electronic devices, at the expense of orienteering skills and common sense, may put individuals at risk if these devices fail or become unusable in harsh conditions (Dickson, 2004).

**Program Evaluation**

Program planners need to document the effectiveness of programs and their outcomes (Bobilya et al., 2010). They should also pay attention to outcomes that program participants expect. Hence, evaluators express the need for “evidence-based research” to establish literature on and about program evaluations and to improve practice over time (Bobilya et al., 2010; Patton, 2002). There are several challenges associated with conducting research in field-based outdoor education settings because of their dynamic nature (Bialeschki, Henderson, Hickerson, & Browne, 2012). These challenges include gaining access to sites and support from association staff, obtaining permits from national park services and approval from institutional review boards at higher education institutions, dealing with unforeseeable events, creating appropriate instruments for data collection, and conducting research across multiple sites and/or programs. To reduce these challenges, Bialeschki et al. (2012) suggested selecting a “window” or specific time to collect data. They also suggested involving staff and ensuring that there are no discrepancies between expectations of administrators and researchers.

The purpose of this study was to investigate the use of mobile technologies and Web 2.0 tools by instructors who teach place-based outdoor education programs and by individuals who participate in those programs. Research questions included the following:

- How important are mobile technologies in outdoor education programs?
- How are instructors using mobile technologies?
- How comfortable are instructors with mobile technologies?
- How do instructors and program participants personally use mobile technologies?
- How do instructors and program participants share information using digital media and Web 2.0 tools?

**Method**

**Setting**

Data were collected during a 16-day period in January 2014 at one U.S. national park. The participating organization was a nonprofit educational institution that offers outdoor education programs in the national park and surrounding areas. The organization offers youth, college, and family programs; residential seminars for which participants are housed in hotels or a field campus; and private tours. Instructors are hired permanently, on a seasonal basis, or through contract work (e.g., for specific programs based on their expertise).

The organization recently integrated mobile devices in their outdoor education programs. Eight iPads were purchased after obtaining grant funding in 2013. These were issued to permanent instructors. Seasonal instructors were able to check out iPads for the duration of their program. Contract instructors provided their own equipment. At the beginning of the summer season, returning instructors participated in a 1-week refresher training course; new instructors received training for 2 weeks. In these training sessions, seasoned instructors provided training on the use of iPads, including file management, applications, and potential uses. These instruc-
tors also served as user support to answer questions and troubleshoot iPad issues. Additionally, the organization utilized a variety of Web 2.0 tools such as Facebook, Twitter, Pinterest, Flickr, and Instagram. Park visitors had cell phone reception in developed areas only, and wireless Internet access was limited to hotel guests.

Data Collection and Analysis

After obtaining permission from the university's institutional review board, members of the organization (directors and managers) and the researcher engaged in dialogue to explore issues and possibilities (Bobilya et al., 2010). One of the directors and the researcher collaboratively narrowed the scope of the study, selected research methodology, and developed interview and survey questions. Additionally, the director chose the time during which data collection took place. This decision was based on the number of program offerings and enrollment numbers.

A qualitative case study strategy was used during natural inquiry to collect data from administrative and instructional participants (Creswell, 2012; Patton, 2002; Yin, 2003). Semistructured interviews were conducted with instructors, administrators, and support staff during work hours. The interview protocol included 13 questions and interviews lasted between 20 and 40 min. The main researcher took extensive notes during each interview and transcribed them immediately after the interview concluded. Data from outdoor program participants were collected with a 16-item questionnaire that included one 5-point Likert-like item, three polar questions, eight open-ended questions, and four demographic questions (Guba & Lincoln, 2005). The survey was distributed to participants at several sites within the park, depending on the type of educational program and lodging facility selected.

Responses to interview and open-ended survey questions were coded by the main researcher according to Flick (2006) to find common themes among two units of analysis, administrators/faculty and students (Yin, 2003). Data were initially organized by research questions. Responses that aligned with these questions were grouped together in worksheets in Microsoft Excel. An initial read through these grouped responses allowed the researcher to further code them based on statements made (Richards, 2009). This resulted in a set of initial codes grouped by data from interview and open-ended responses. The Excel workbook was then given to another researcher who was asked to examine it for agreement and make modifications to the codebook as needed (Patton, 2002). Following this review, both researchers continued to examine codes and refine categories, subcategories, and emergent themes using constant comparative techniques (Creswell, 2012). Descriptive statistics were generated for responses to the four demographic questions on the survey to describe characteristics of the sample.

Sample

Participants included instructors employed by the organization to teach outdoor education programs, support staff, administrators (directors and managers), and program participants. Twenty individuals participated in interviews: nine instructors, six administrators, and five support personnel. Of the instructors, five were full-time, permanent instructors; three were hired for the winter/spring season; and one taught programs on a contract basis. Twelve individuals were female; eight were male.

Participants who enrolled in hotel-based programs and field-campus seminars were invited to participate in the study. The foci of the eight winter programs were photography, skiing, snowshoeing, and wildlife watching. Sixty-five program participants completed the paper-based survey, which resulted in a 68.4% response rate.

Most survey respondents were female (66.1%), 29.0% were male, and three individuals (4.8%) preferred not to answer the question. Their ages ranged from 22 to 94 (M = 57.1) and they lived in 20 different states; only one person lived outside of the United States. Individuals had participated in one to 25 educational programs offered by the organization (M = 2.65); however,
36 people (57.1%) were new to the organization’s programs, and 13 individuals (20.1%) were completing their second program.

**Results**

**Importance of Mobile Technologies in Outdoor Education Programs**

**Perspectives of instructors.** Participants indicated the use of mobile technologies in educational programs offered by the organization was anywhere from *moderately important*, *important*, to *very important*. One instructor mentioned it was “a toss-up.” Individuals saw the value of using mobile technologies, but also stated that programs without them did not lack anything. In the past, instructors had to carry field guides, books, and laminated pictures in their backpacks. Today, they are able to store this information on an iPad.

Permanent instructors were issued personal iPads. Seasonal instructors were able to check out one of three iPads for the duration of their program. Contract instructors were not able to utilize organization-supplied iPads. The use of iPads, therefore, varied. Most permanent instructors used their iPads “a lot,” whereas seasonal instructors had just begun to work with them. One person did not use iPads at all, and one instructor mentioned she would like to use them more often. Another instructor preferred to use his smartphone; another used his own iPad in addition to other devices.

Seven individuals spoke about the use of mobile technologies in programs with children. Five instructors felt iPads were a good tool to connect with children and helpful or fun to use with them in the field. They liked introducing children to applications and showing them videos. However, two instructors wanted to “unplug kids completely,” believing that children “should look out there [in the wilderness]” rather than at the iPads.

**Perspectives of support staff.** Answers from support staff to the question how important is instructors’ use of mobile technologies ranged from *super important* or *very important* to *not important at all*. Two interview participants did not want instructors to use mobile technologies in the field, because “the whole point about outdoor education is ‘outdoors.’” Those who thought it was important to use mobile technologies mentioned it was pertinent for the organization to use more modern technologies and that instructors connect learners.

Some had mixed emotions about technology use or thought its use depended on the program. In their opinion, instructors used iPads to supplement instruction—to help participants understand or visualize a concept; however, “courses,” they said, “can run without them.” One person was less concerned about the integration of mobile technologies as opposed to the proper selection and appropriate use of devices.

**Use of Mobile Technologies by Instructors**

**Responses of instructors.** Five instructors used the iPad provided by the organization and two used their personal iPads. Two participants used personal cell phones or smartphones in addition to iPads, and two others used personal smartphones instead of iPads. Mobile devices (iPads or smartphones) were heavily used by five instructors; they used them in each program and indicated the devices were used several times a day but not all day. Others either did not use them often or rarely used them. Devices that were used in addition to iPads and smartphones included temperature guns, radios, Global Positioning Systems (GPS), geographic information systems (GIS), and digital cameras.

Seven instructors used iPads on the bus and/or snow coach. They passed the device around while driving or discussing topics of interest. One person used a cell phone to call a local event hotline or access the park’s website. These individuals mentioned they do not take iPads on hikes because the screen cannot be viewed in sunlight. Individuals, however, had other reasons for not taking iPads on hikes. One instructor thought it was not a proper setting; others had too
many other things to carry in their packs or feared they might break the equipment. One person never used iPads on private tours because the outings were of relatively short duration. Another instructor preferred to use his smartphone because he could access the Internet.

Seven instructors showed animal videos or videos of animal and human interactions to entertain and educate about safety issues. Videos were usually used on the bus at the end of the day when program participants were tired. Six instructors used digital field guides to identify mammals, flowers, and birds based on images and sounds. The same number of instructors used images to show historical pictures, maps, and geological features or to illustrate an idea. The integrated iPad application Notes was used by three instructors to write down field sightings, inspirational quotes, or interesting facts. Two instructors used Night Sky, primarily in the early morning or late night, to identify stars. Other applications included PeakFinder, iPhoto, Google Drive, and NASA’s Earth Now. One instructor used interactive quizzes to identify animal species.

One instructor selected a technology savvy participant to pull up files while the instructor drove. Another loaned his smartphone to children in his group and encouraged them to find information about certain topics or animals. According to the interviewee, these materials generated interesting discussion and dialogue. One instructor used mobile technologies to collect data for participant-generated reports.

Responses of support staff and administrators. According to administrators and support staff, resident instructors used mobile technologies frequently, whereas seasonal instructors used them rarely. Contract instructors did not use the organization’s devices. However, they may have provided and used their own equipment.

Instructors used iPads primarily on the bus because a large amount of time was spent touring the park. While program participants were on the bus, the iPads were passed around. Most administrators or support staff indicated instructors did not use iPads on the trail; only one person believed they used them in the field. For the most part, mobile technologies were used as enrichment items. Instructors used iPads when program participants had special interests, had specific questions, or asked about something that they did not encounter. They also indicated that some instructors used mobile phones in the field, for example, to take a picture through a telescope.

Support staff stated that instructors used digital field guides to show pictures, identify animals or plants, play animal sounds, or provide information about animals (e.g., tracks or scat). They also confirmed the use of video clips to demonstrate animal interaction or interaction between animals and humans. Some used topographic applications or pulled up poems or quizzes. One person did not know how instructors used mobile technologies.

Responses of program participants. Thirty-three participants indicated their instructors used mobile technologies, whereas 32 persons responded no to the question. Instructors used iPads or tablets, smartphones, and GIS systems during programs to support “narrative explanations,” “enhance” instruction, and “help” participants “understand” what they experienced. Program participants mentioned that instructors used photos, graphs, videos, and maps. Photos were used to identify animals and plants, show historical events, show geological formations, or provide technical details. A GPS device was used for tracking. Participants also used instructor-provided tablets for data analysis.

Most participants (69.7%) were either satisfied or very satisfied with their instructor’s use of mobile technologies; only 18.2% were neither satisfied nor unsatisfied, and 12.1% were either unsatisfied or very unsatisfied. The majority of participants (91.7%) did not have expectations regarding mobile technology use during programs; only five (8.3%) expected their use. Only 19 of the 65 participants offered instructors suggestions for the use of mobile technologies.

Participants thought mobile technologies could be used to share trail and topography maps or routes for daily activities; provide interactive maps, tables, and charts; view more information and pictures on the tablets; locate and identify wildlife; record animal videos; create documenta-
tion and share pictures; and serve as a resource for instructors to search for answers to participants’ questions. Others suggested tablet use to show examples while in the field, load applications on participants’ devices, or use the GPS a lot more.

**Instructors’ Comfort With Mobile Technologies**

When asked about their level of comfort with mobile devices, two instructors responded they had a very high comfort level, two said they had a high comfort level, and one felt her level of comfort was good. Two individuals were not very comfortable; these individuals commented that they were not technology savvy and struggled personally.

When speaking about use of iPads, one instructor was pretty comfortable with the iPad. Another indicated she has not had the time to go through the iPads and create her own “flow.” The other instructor was not comfortable syncing the iPad with the desktop computer and creating folders. The owner of the iPod Touch was comfortable using it. Three individuals mentioned they were comfortable with their smartphones; however, one mentioned she was not comfortable using smartphones for teaching purposes. One suggestion was that the organization should pay for seasonal instructors to purchase applications for their personal smartphones instead of purchasing additional iPads.

Instructors were asked what additional technology tools they would like to use in their teaching. Four instructors were content with the tools they used. One stated he was not able to see the iPad screen in bright sunlight and indicated that it would be nice to find ways to use iPads in outdoor field-based activities. Two individuals wanted additional iPads assigned to them. Others wanted smartphones “because of Internet connectivity” and because they “would be much easier to carry.” The need for two to three additional radios was mentioned by two participants. Two instructors stated that they wanted two digital cameras or tablets with scope mounts, and one person wanted a GoPro camera in the field for wildlife watching and recording.

Other suggestions focused on how instructors interacted and shared information with program participants; however, participants did not suggest specific programs or applications. One instructor wanted to connect with program participants before the program began. She mentioned participants would be able to get their questions answered “before they get here.” Another instructor wanted to discover easier processes to collect and share participants’ media with each other. She also wanted future participants to be able to access previous program participants’ media from a shared space.

**Personal Utilization of Mobile Technologies**

**Instructors.** Seven individuals used iPads and six had their own personal smartphones or iPhones. One person owned an iPod Touch. Three of them described their level of use with iPads, smartphones, or iPods as a lot or to the fullest extent. Only one person said he did not use it constantly. The iPads—whether they were assigned or personally owned—were used to surf the Internet, visit social networking sites, create photo albums, watch videos or movies, check or send e-mails, and connect to friends and family with FaceTime or Skype.

Smartphones or iPhones were used to access social networking sites or websites; send e-mails or text messages; listen to music; play games; write notes, reminders, or lists; read documents including recipes; and take pictures. One person used her smartphone to teach outdoor education programs for school children in a neighboring state. Another instructor said she recently started blogging and tweeting.

**Program participants.** Some users reported their general use of mobile technologies; others listed the devices they used. The level of use varied considerably (Table 1), and participants utilized a variety of devices. Many individuals reported using smartphones or tablets (Table 2). Twenty-two individuals did not use mobile devices while they were in the park; however, five of them stated they did not use them because they did not have cellular reception. Program participants who used mobile technologies used them for the purposes listed in Table 3.
Table 1

**Level of Use**

<table>
<thead>
<tr>
<th>Usage</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very high</td>
<td>6</td>
</tr>
<tr>
<td>High</td>
<td>5</td>
</tr>
<tr>
<td>Average</td>
<td>7</td>
</tr>
<tr>
<td>Low</td>
<td>6</td>
</tr>
<tr>
<td>None</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 2

**Devices Utilized by Program Participants**

<table>
<thead>
<tr>
<th>Device</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smartphone</td>
<td>40</td>
</tr>
<tr>
<td>iPad</td>
<td>25</td>
</tr>
<tr>
<td>Tablet</td>
<td>6</td>
</tr>
<tr>
<td>Cell phone</td>
<td>5</td>
</tr>
<tr>
<td>All kinds</td>
<td>3</td>
</tr>
<tr>
<td>Kindle</td>
<td>2</td>
</tr>
<tr>
<td>iPod</td>
<td>1</td>
</tr>
<tr>
<td>Satellite phone</td>
<td>1</td>
</tr>
<tr>
<td>Global Positioning System</td>
<td>1</td>
</tr>
<tr>
<td>Ultra book</td>
<td>1</td>
</tr>
<tr>
<td>Laptop</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 3

**Program Participants’ Activities**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>check/send e-mails</td>
<td>12</td>
</tr>
<tr>
<td>read</td>
<td>6</td>
</tr>
<tr>
<td>search the Web</td>
<td>5</td>
</tr>
<tr>
<td>check the weather</td>
<td>5</td>
</tr>
<tr>
<td>send/receive text messages</td>
<td>4</td>
</tr>
<tr>
<td>take pictures</td>
<td>4</td>
</tr>
<tr>
<td>check in with home</td>
<td>3</td>
</tr>
<tr>
<td>e-mail pictures</td>
<td>2</td>
</tr>
<tr>
<td>record videos</td>
<td>2</td>
</tr>
<tr>
<td>use travel applications</td>
<td>1</td>
</tr>
<tr>
<td>listen to music</td>
<td>1</td>
</tr>
<tr>
<td>write a journal</td>
<td>1</td>
</tr>
<tr>
<td>play games</td>
<td>1</td>
</tr>
<tr>
<td>bank</td>
<td>1</td>
</tr>
<tr>
<td>check with work</td>
<td>1</td>
</tr>
<tr>
<td>take notes</td>
<td>1</td>
</tr>
<tr>
<td>listen to books</td>
<td>1</td>
</tr>
<tr>
<td>listen to podcasts</td>
<td>1</td>
</tr>
<tr>
<td>download podcasts</td>
<td>1</td>
</tr>
<tr>
<td>check news</td>
<td>1</td>
</tr>
<tr>
<td>download mobile applications</td>
<td>1</td>
</tr>
</tbody>
</table>
Instructor Satisfaction With Access to Mobile Technologies

The satisfaction with access to mobile devices varied based on employment type. Permanent instructors with issued devices were satisfied with their access. They mentioned they were able to select applications and organize files; they liked to have control over their iPads. Seasonal instructors were less satisfied because they were not always able to check out devices and could not check them out for long periods. Limited availability was the reason why one person used his personal smartphone instead of an iPad. Another person wished that more iPads were available for check out. During the winter season, only three seasonal instructors are employed; however, during the summer, 10–12 seasonal instructors compete for the same number of iPads.

Satisfaction With Internet Access in the Park

Instructors. When asked how satisfied they were with Internet access points in the park, four instructors rated their level of satisfaction as satisfied, one was very satisfied, and one was not satisfied. One instructor was not at all satisfied with access at the field campus. One person described access issues as “a give and take.” Two individuals expressed that as employees, they need and want to have good access; however, visitors do not need access everywhere during the programs. Others thought that “access is sufficient as it is.” There were two areas of improvement that interviewees mentioned. One was emergency and safety issues. Three individuals described the importance of having a signal for safety reasons and emergencies. “Better access,” one individual explained, “would be better for radio systems with emergencies.” The other was the insufficient access at developed areas. In areas with hotels, campgrounds, restaurants, visitor centers, and retail stores, “there should be better access.”

Program participants. The majority of individuals (63.3%) were satisfied with Internet access. Twenty-nine program participants were satisfied with Internet access, and two were very satisfied. Five individuals were not very satisfied, eight were not satisfied, and five were not at all satisfied. Two participants stated the question was not applicable, and one person was not sure. Not everyone was aware that Internet access points existed in the park or knew where they were located. One person wrote she had reception for her mobile phone only. Others were satisfied that access was very limited.

Media Sharing

Instructors were asked whether they encourage program participants to share media during or after the program. Eight instructors encouraged participants to share media after the program. Some passed around an e-mail sign-up sheet and e-mailed everyone on the list after the program. Others e-mailed the entire group with a thank-you note and, perhaps, additional information requested. One instructor asked a program participant to collect e-mail addresses. Most participants shared photos via e-mail or created photo albums on photo sharing websites (e.g., Shutterfly, Flickr, Google Photos). One instructor, instead of using e-mail, created a Google+ events page and signed up everyone in a particular program. Seventy percent of program participants were interested in sharing media with other program participants via social media sites, 27.9% were not interested, and 1.6% did not know.

Use of Web 2.0 Tools

Instructors. Six instructors encouraged program participants to use social media to access the organization’s information or stay in touch. Those who did mentioned Facebook or Twitter; others either forgot or did not mention it unless someone asked. One instructor handed out a two-sided sheet with websites that participants could access to learn more about various topics. Others shared websites about citizen science projects, park reports, U.S. Geological Survey sites, and the organization’s website.
Support staff. The organization uses Facebook, Flickr, Instagram, Pinterest, and Twitter. Ten of the 11 interview participants thought that social media—particularly Facebook—was valuable, beneficial, or important. Four of those individuals, however, were not sure how effective or valuable social media was. Staff members mentioned several benefits of social media. They stated that participants have the ability to share information and experiences with others. People with similar interests can connect with one another or get involved in programs such as citizen science programs. Organizations can use social media to market programs through word of mouth (important to nonprofit organizations that may not have large marketing budgets). It allows organizations to reach new, diverse audiences for field education. Individuals may access online rating sites, and if programs are rated highly, this can have a positive effect on enrollment numbers.

Currently the use of social media is very structured in the organization. Some felt the need for structure because the organization needs to project and protect an image and to send a consistent message. Others wished their use was less structured. One person thought that “social media has more impact when the administrator and other people input information.”

One person mentioned that the organization shares interesting and timely stories (e.g., wildlife sightings) with the use of social media. Two individuals did not know how the organization used social media. Two individuals cautioned that they need to be hesitant with its use. Instructors should keep it in the forefront of their minds, however, and share the information with program participants. Another person thought that the use of social media needs more attention in the organization and that a strategy for its use is necessary.

Program participants. Sixty-one individuals completed the questions regarding the use of social media. Forty-five program participants (73.8%) did not use it to stay in touch with the organization; 16 individuals (26.2%) did.

Discussion and Conclusion

Some outdoor education organizations have recently integrated mobile devices, applications, and Web 2.0 tools in field-based programs to support and enhance instruction; to provide rich, meaningful learning experiences; and to actively engage learners (Dawson, 2007; Walter, 2013). It is possible that others may consider integrating them in the near future.

Results of this study show that full-time instructors who utilized mobile technologies used them effectively and frequently. Part-time instructors used devices and applications much less. Support staff and administrators confirmed these results. Part-time instructors who had limited access to mobile devices were less experienced and less comfortable with them than those who either were assigned or owned a mobile device. This finding is important in light of research by Eliasson et al. (2011) and Nouri et al. (2011), who found that mobile technologies get in the way of outdoor education if insufficient time is spent considering the role of the devices and desired communication and collaboration with them. To effectively integrate mobile technologies, instructors must have sustained access and training. Researchers found that comfort with computer technologies is an important predictor of their successful integration (Mueller, Wood, Willoughby, Ross, & Specht, 2008). Because technology use is expected to increase in wilderness areas (Ghimire et al., 2015; Oblinger, 2003), instructors need to have access to the ubiquitous technologies others are using. Otherwise, they may continue to lack proper training and implementation strategies to engage their audiences, particularly youth (Bobilya et al., 2010).

One issue associated with using iPads in outdoor settings was that instructors could not read the screen in direct sunlight. Kukulsa-Hulme and Traxler (2005) noted this issue in their handbook. Because of this usability issue, the use of smartphones may be more appropriate in field-based settings because their small size can be more easily shielded.

In general, the benefits of mobile devices include being able to connect to others and share and access information—instant and just-in-time information—independently of time.
and location (Malladi & Agrawal, 2002). However, even with the use of smartphones, access in national parks and wilderness areas may be limited because not all areas provide Internet access (Bialeschki et al., 2012; Shultis, 2012). Therefore, users cannot always rely on using their Internet-enabled devices, particularly in emergency situations (Blackwell, 2015).

Many program participants were satisfied with their instructor’s use of mobile technologies. They thought instructors used them appropriately and their use enhanced instruction. These findings are consistent with those of Walter (2013) and Dawson (2007), who believe that digital technologies and media can be used to enhance adult learning in outdoor education and actively engage them in meaningful ways. Most instructors encouraged program participants to share digital media and stay connected with the organization, its members, and the park through Web 2.0 tools. Web 2.0 tools, in general, were perceived as valuable marketing and communication tools. Thus, consistent with research by Liu et al. (2014), mobile devices were often used to extend the learning environment and community beyond the confines of the course.

Consistent with the participants in Purcell et al. (2013), many program participants in this study utilized mobile devices, mobile applications, and Web 2.0 tools in their personal lives and were comfortable using them. Although Dyment et al. (2011) pointed out that instructors may be ill-prepared to integrate mobile technologies into their educational programs, this appears to not be the case among program participants. An entire generation of young adults has grown up with computers and the Internet. Technology is deeply integrated into their lives and they desire connectivity with friends and family via Internet-enabled mobile devices (Black, 2010; Oblinger, 2003).

Some respondents were satisfied with Internet access throughout the park, whereas others were dissatisfied. However, satisfaction (or lack thereof) was based on different personal values. Some were satisfied with Internet access points because they could utilize the service in a few areas, whereas others experienced satisfaction because access was limited to developed areas only. Others were dissatisfied because there was Internet access and/or cell phone reception in the park; these individuals came to the park to disconnect from busy lives or get unplugged. They perceived the impact of technology use in wilderness areas as negative, a major theme that can be found in literature pertaining to wilderness experiences (Day & Petrick, 2006; Pergams & Zaradic, 2006). Yet, these same participants might rely on other devices (locator beacons and GPS units) to feel secure in outdoor areas (Blackwell, 2015; Shultis, 2012).

Not all respondents in this study agreed that mobile technologies and Web 2.0 tools were valuable or had a place in outdoor education programs. Based on participants’ responses, their use may even be considered controversial. For example, respondents’ perspectives about the use of mobile technologies varied greatly, ranging from “they have no place in outdoor education” to “they are super important.” These wide ranging and contrasting perspectives warrant additional research in this area. Practitioners, however, need to carefully balance the use of mobile devices in outdoor settings in order to not take away from the full outdoor experience of program participants. The use of devices needs to have a purpose; support a specific learning objective; and create meaningful, enjoyable learning experiences for participants.

Additionally, unlike mobile technology uses in museum and K–12 settings reported by Liu et al. (2014), Naismith and Smith (2009), and Rennick-Egglestone et al. (2016), some mobile technology uses require changes to the physical landscape of wilderness areas to foster those changes (e.g., cell towers, unnatural noise through technology use, increased traffic in areas with wildlife sightings). It is important to consider and weigh perspectives of naturalists in the integration and appropriate use of technologies in outdoor education.

Practitioners need to select and integrate devices and applications carefully because the focus must be on the methods, not media. Lessons need to be based on sound instructional design principles. Training and support should be provided to educators throughout these phases. Once the integration process is complete, it is important to evaluate the use and effect of these
devices and applications during formative and summative evaluation phases (Smaldino et al., 2012; Smith & Ragan, 2005). The use of technology in outdoor education programs should support active learner engagement; it cannot distract from participants’ educational experiences or interfere with others’ enjoyment of the setting or ethical considerations and park resources.

Some study limitations need to be pointed out. First, the study was geographically limited to one national park in the United States and one outdoor education institution. Other researchers may collect data from a number of institutions of similar nature to validate the findings of this study. Second, the data collection period included a 16-day window. This enabled the researcher to collect data from participants enrolled in eight winter courses. Future research could include a longer data collection period or data collection phases at different seasons (because they may attract participants with different perspectives or preferences). Third, the data were self-reported and of qualitative nature. Therefore, results of this study may be applied to settings of similar nature, but are not generalizable to other outdoor education programs.

As illustrated in the literature and reflected in the findings, the integration and utilization of mobile technologies and Web 2.0 tools in outdoor education programs is a complex issue. Future research is needed to investigate perceptions of educators and learners pertaining to the appropriateness of the use of mobile technologies in wilderness areas, particularly outdoor education programs. How much technology can be used without affecting users’ wilderness experience negatively? Which mobile devices and applications can be used to support or enhance learning? How can Web 2.0 tools be used by nonprofit organizations to connect program participants to the park and market programs? Which user behaviors are deemed appropriate or inappropriate? Which technologies, if any, should be banned because they may diminish other visitors’ enjoyment? These are questions to which we seek answers.

References


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An Investigation of the Connection Between Outdoor Orientation and Thriving

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Abstract

This study explored the contribution of outdoor orientation experiences to student thriving. Participants included 295 first-year college students from three institutions across North America. A thriving model was tested using structural equation modeling and included the following variables: outdoor orientation, thriving, involvement, spirituality, psychological sense of community, student–faculty interaction, and control variables. Although the predictive importance of outdoor orientation is modest (β = .048), it contributes significantly to a model explaining 72.8% of the variance in thriving levels. Outdoor orientation directly predicted campus involvement (β = .246) and spirituality (β = -.146). Findings indicate that participating in an outdoor orientation may create a propensity for students to become more involved in campus life, which may foster a greater sense of campus community, culminating in thriving. These results suggest that practitioners should enhance both a psychological sense of community among students and the durability of outdoor experiences back on campus.

KEYWORDS: outdoor orientation; student thriving; outdoor adventure education; student development; student success; college students
Over the past 60 years, student success outcomes have been primarily measured by academic grades. This narrow focus on academic performance has neglected the importance of noncognitive factors in the educational experience of students (Yazedjian, Toews, Sevin, & Purswell, 2008). As a result, holistic educational efforts have often been pushed to the margins of the modern academy’s core endeavors (Bok, 2006; Schreiner, 2010; Tagg, 2003). Yet holistic student development has historically been the focus of higher education in North America and the medieval university in Europe. Only within the last half-century have the outcomes narrowed to student grades and graduation rates (Schreiner, 2013; Strange, 2010), national college rankings (Bok, 2006), knowledge acquisition and credentialing (Smith, 2014), and successful enrollment numbers (Strange, 2010).

Recognizing this shift had resulted in a significant aspect of student success being overlooked, researchers at the turn of the millennium once again began to explore the role of psychosocial predictors of student success (Robbins, Oh, Le, & Button, 2009). Representing the intersection of positive psychology, flourishing, and psychological models of student retention, the concept of thriving also emerged at this time (Schreiner, 2010). Although thriving is a relatively new construct in higher education, it offers an expanded and more holistic view of student success and incorporates cognitive and noncognitive factors predictive of other college success outcomes (Schreiner, 2013).

As the conceptualization of student success has shifted toward a more holistic perspective, so too has the campus programming designed to enhance student well-being. One example of an emerging area of cocurricular campus programming is outdoor adventure education. Although this programming has been in existence since the 1940s in the United States (Ewert & Sibthorp, 2014), in the last decade outdoor adventure education programs have expanded significantly in higher education, primarily through efforts such as outdoor orientation programs (Bell, Gass, Naftziger, & Starbuck, 2014). Outdoor orientation is a high-impact experience-based practice with an emphasis on holistic student development.

Despite the holistic emphasis of outdoor orientation programs, outcomes research on these programs has primarily focused on interpersonal outcomes, rather than intrapersonal or intellectual outcomes (Bell et al., 2014). In recent research on college student thriving and the role of various campus experiences, researchers have found these experiences to contribute to thriving in small but significant ways. Through studies with thousands of college students across the United States, Canada, and Australia, researchers have documented that thriving is a mediating variable that predicts college students’ academic performance, intent to graduate, and belief that tuition is a worthwhile investment (Schreiner, Kalinewicz, Cuevas, & McIntosh, 2013).

However, to date, no researchers have explored the role of outdoor orientation programs in first-year students’ thriving. Research exploring the connection between outdoor orientation and thriving will expand the scope of outdoor orientation research to include academic and psychological outcomes. Moreover, to date, researchers have sparingly used structural equation modeling as a methodological approach in outdoor orientation research. Understanding the connection between outdoor orientation experiences and holistic well-being might inform future research and guide practitioners in designing optimal experiences that promote student thriving. This study fills an important scholarship gap by answering the following research question: What is the contribution of participation in an outdoor orientation program to the variation in thriving among undergraduate college students, after controlling for race, gender, high school grades, major certainty, first choice at enrollment, living on campus, and institutional selectivity?

**Literature Review**

Although the thriving and outdoor orientation bodies of literature are growing, they are still nascent. This study explores a high-impact practice that may represent a pathway for stu-
dent thriving. The literature review, therefore, concentrates on two major constructs: (a) student well-being, the dependent variable, operationalized as student thriving (Schreiner, 2014) and (b) outdoor adventure–based experiences, the independent variable, operationalized as outdoor orientation participation (Bell et al., 2014). Additionally, the literature review also includes a brief section on the control variables included in the study.

Outdoor Orientation

Outdoor orientation is “defined as orientation or pre-orientation experiences for small groups (15 or fewer) of first-year students that use adventure experiences and include at least one overnight in a wilderness setting” (Bell, Holmes, & Williams, 2010, p. 3). O’Connell (2011) further suggested that outdoor orientation exposes students to unfamiliar environments, similar to the curriculum of Outward Bound, in which students can learn skills that are transferred back to the college environment. Although outdoor orientation programming is primarily a U.S. phenomenon, it has recently been introduced in Canadian higher education and is growing in popularity globally. A recent census of U.S. programs revealed that 25,164 students participated in outdoor orientation programs in 2012, up from 17,547 in 2006, which represents a 43% increase in student participation (Bell et al., 2014). In this study, outdoor orientation is a dichotomous variable because first-year students were asked to self-identify whether or not they have participated in an adventure-based outdoor orientation program.

Effectiveness of Outdoor Orientation Programs

The effectiveness of outdoor orientation programs has been assessed through a variety of methods. Although most of the studies focused on the social and relational benefits of these programs, additional outcomes of such programs included persistence rates, student levels of spirituality, academic success, and psychosocial qualities. A summary of the outdoor orientation effectiveness literature is listed in Table 1.

Table 1
Overview of Outdoor Orientation Program Outcomes (adapted from Bell, et. al, 2012)

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Findings of outdoor orientation participants</th>
<th>Researcher(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retention</td>
<td>• No attrition in either group</td>
<td>• Stogner, 1978</td>
</tr>
<tr>
<td></td>
<td>• Higher retention rates for outdoor orientation (1 year)</td>
<td>• Gass, 1987</td>
</tr>
<tr>
<td></td>
<td>• Higher retention rates of outdoor orientation</td>
<td>• Gass, 1990</td>
</tr>
<tr>
<td></td>
<td>• Higher retention rates and graduation rates</td>
<td>• Brown, 1998</td>
</tr>
<tr>
<td></td>
<td>• Higher retention rates (p = .06; 3 years)</td>
<td>• Vlamis, Bell, &amp; Gass, 2011</td>
</tr>
<tr>
<td></td>
<td>• Non significant results (p = .07; 1 year)</td>
<td>• Hill, Nolan, &amp; Scrogin, 2010</td>
</tr>
<tr>
<td></td>
<td>• Higher retention rates of outdoor orientation</td>
<td>• Bell &amp; Chang, 2017</td>
</tr>
<tr>
<td></td>
<td>• Higher retention rates</td>
<td>• Michael, Morris-Dueer, &amp;</td>
</tr>
<tr>
<td></td>
<td>• Higher retention rates than first-year experience course</td>
<td>Reichart, 2017</td>
</tr>
<tr>
<td>GPA</td>
<td>• Participants had higher GPA after 1 year</td>
<td>• Stogner, 1978</td>
</tr>
<tr>
<td></td>
<td>• Participants had higher GPA after 1 year</td>
<td>• Gass, 1987</td>
</tr>
<tr>
<td></td>
<td>• Nonsignificant, but trending higher GPA after 6 months</td>
<td>• Vlamis, 2002</td>
</tr>
</tbody>
</table>

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### Table 1 (cont.)

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Findings of outdoor orientation participants</th>
<th>Researcher(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship Development</td>
<td>- Closest on-campus friends came from program</td>
<td>- Devlin, 1996</td>
</tr>
<tr>
<td></td>
<td>- Increased number of friendships</td>
<td>- Austin, Martin, Mittelstaedt, Schanning, &amp; Ogle, 2009</td>
</tr>
<tr>
<td></td>
<td>- Friends as a consequence of participation</td>
<td>- Lien &amp; Goldenberg, 2012</td>
</tr>
<tr>
<td></td>
<td>- Peer friendships as a support network</td>
<td>- Gass, Garvey, &amp; Sugerman, 2003</td>
</tr>
<tr>
<td></td>
<td>- Development of positive relationships</td>
<td>- Wolfe &amp; Kay, 2011</td>
</tr>
<tr>
<td></td>
<td>- Strong connections with peers</td>
<td>- Bell &amp; Holmes, 2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Bell, 2012</td>
</tr>
<tr>
<td>Adjustment to College</td>
<td>- Significant higher scores on personal-emotional adjustment, goal commitment/institutional attachment, and overall adjustment to college</td>
<td>- Bobilya, Akey, &amp; Mitchell, 2011</td>
</tr>
<tr>
<td></td>
<td>- Significant higher scores on First Year Initiative scale, with high effects sizes on factors “connection to peers” and “knowledge of wellness”</td>
<td>- Bell, 2012</td>
</tr>
<tr>
<td></td>
<td>- Significant higher scores in overall adjustment to college, social adjustment, and attachment to the institution (medium effect size)</td>
<td>- Ribbe, 2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Ribbe, Cyrus, &amp; Langan, 2016</td>
</tr>
<tr>
<td>Spirituality</td>
<td>- Increase in spiritual development of participants</td>
<td>- Bobilya et al., 2011</td>
</tr>
<tr>
<td></td>
<td>- Increase in spiritual development of leaders</td>
<td>- Starbuck &amp; Bell, 2017</td>
</tr>
<tr>
<td>Social Support and Social Skill Development</td>
<td>- Higher social support levels on Campus Focused Social Provisions Scale</td>
<td>- Bell, 2006</td>
</tr>
<tr>
<td></td>
<td>- Increased self-efficacy</td>
<td>- Jones &amp; Hinton, 2007</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Gass, 1987</td>
</tr>
<tr>
<td></td>
<td>- Significantly higher levels on the variables developing autonomy, interdependence, appropriate relationships with the opposite gender, and tolerance</td>
<td>- Vlamis et al., 2011</td>
</tr>
<tr>
<td></td>
<td>- Significantly higher levels of the variable tolerance</td>
<td></td>
</tr>
</tbody>
</table>

### Student Thriving

In this study, thriving is the dependent and ultimate endogenous variable. When students are thriving in college, they are energized by the learning process because they connect what they are learning to their life and the world, regulate their learning to enhance success, develop a positive perspective during times of failure and challenging circumstances, develop healthy relationships with others, appreciate difference in others, and make a meaningful contribution to their community (Schreiner, 2012). The construct of thriving comprises five empirically demonstrated and malleable factors that represent the academic, interpersonal, and intrapersonal domains of thriving: (a) Academic Determination, ability to regulate one’s own learning and make the appropriate effort to succeed; (b) Engaged Learning, capacity to deeply process and
make sense of course material contribute to academic thriving; (c) Positive Perspective, ability to view challenges with an optimistic perspective contributes to psychological thriving; (d) Diverse Citizenship, desire to make a meaningful contribution to community while being open to diverse others and perspectives; and (e) Social Connectedness, capacity to cultivate healthy interdependent relationships (Schreiner, 2010) is connected to social thriving.

Thriving aligns with the primary goal of positive psychology, to increase the number of people in the world who experience enhanced levels of emotional, psychological, and social well-being (Seligman, 2011). The ultimate goal of thriving research is to design, develop, and implement in- and out-of-class high-impact interventions that positively affect college student success (Schreiner, 2010, 2012, 2013). In this way, a focus on thriving shifts the role of educator from deficit remediation to strengths development (Schreiner, 2010). Holistic student well-being, operationalized as thriving, was measured using 23 items from the Thriving Quotient™ (Schreiner, 2014). Items were answered on a 6-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = somewhat agree, 5 = agree, 6 = strongly agree).

Four particular factors are known to contribute to student thriving: psychological sense of community, spirituality, interaction with faculty, and campus involvement (Schreiner, 2013). Each of these factors is represented to some degree in the activities or goals of outdoor orientation programs. The link between outdoor orientation programming and thriving is strengthened by including these factors in the model tested in this study.

**Psychological Sense of Community**

Psychological sense of community (PSC) refers to students' belief that their needs are fulfilled, they matter, they have influence, and they have what Baumeister and Leary (1995) described as a sense of belonging within the campus community (McMillan & Chavis, 1986; Sarason, 1974). The construct of PSC is known to contribute to student thriving (Schreiner, 2013). Some research has also suggested a strong link between outdoor educational pursuits and PSC (Breunig, O'Connell, Todd, Anderson, & Young, 2010). O'Connell (2014) argued that PSC can be used as a framework for outdoor adventure programming. First proposed by Sarason (1974), PSC is defined as a “readily available network of one's relationships that one can call on for support at any time, and is characterized by a sense of belonging, dependence of members on one another, needing each other, and each identifying with common overarching values” (p. 1). Yet it was the landmark paper by McMillan and Chavis (1986) that propelled the construct of PSC into scholarly prominence. In McMillan and Chavis's theoretical framework, they proposed that PSC includes the following criteria: (a) Membership, when college students feel they are full members of a community and have strong and stable relationships, they experience a greater sense of belonging; (b) Influence, the capacity of students to exert influence through expressing their own voice; (c) Integration or Fulfillment of Needs, individuals are drawn to communities in which the abilities and skills of others will serve their needs; and (d) Shared Emotional Connection, bonding is enhanced when the quality of the interaction is positive, when the shared event is important to all individuals, and when the interaction is frequent.

In this study, PSC is a latent construct hypothesized to have a direct effect on student thriving. Because PSC is a theoretical construct that cannot be observed directly, this factor is operationally defined by combining several observable items to statistically measure this latent variable. PSC, therefore, consists of the following four items: (a) I feel like I belong here, (b) being a student here fills an important need in my life, (c) I feel proud of the college or university I have chosen to attend, and (d) there is a strong sense of community on this campus (Schreiner, 2014).

**Campus Involvement**

Student involvement theory has become one of several prominent student development theories shaping research and practice in higher education. Involvement is characterized by the investment of physical and psychological energy in the learning process (Astin, 1999). Tinto
(2012) concluded that involvement is “perhaps the most important condition for student success” (p. 7). Although involvement is often directly related to academic endeavors, it can occur in the cocurricular college environment through residence, honors programs, athletics, and student government (Astin, 1999). Involvement theory provides a linkage between campus practices and student outcomes (Wolf-Wendel, Ward, & Kinzie, 2009).

Campus involvement in this study represents the frequency of participation in certain cocurricular activities. Campus involvement is another latent construct measured through a combination of four items asking, how often have you participated this semester in the following: (a) student organizations on campus, (b) campus events or activities, (c) leadership of student organizations, (d) community service (Schreiner, 2014)?

**Spirituality**

Although Strange (2013) asserted “interest in spirituality is ancient as life itself” (p. 199), spirituality within the modern academy “may be a foreign or novel goal for many educators” (Bowman & Small, 2013, p. 30). In response to a growing criticism of the lack of commitment to whole person development in higher education, a recent surge in interest in spirituality has occurred within the broader academy (Astin, Astin, & Lindholm, 2011; Bowman & Small, 2013; Rude, Parra, Lommel, Edens, & Kim, 2014).

Most striking among this burgeoning research activity is the 7-year landmark study conducted by Astin et al. (2011). They explored the role of spirituality in the lives of over 100,000 college students in the United States—a first of its kind (Astin et al., 2011). Spirituality has been defined as a multifaceted quality that involves a quest for answers to the big questions in life, a global worldview, compassion for others, service to others, and the ability to stay centered (Lindholm, 2013). The most notable finding in the landmark Astin et al. study is the high expectations for spiritual development reported by the majority of college students.

In this study, spirituality is conceptualized as a belief system that gives meaning and purpose to life and a sense of strength in difficult circumstances. Because spirituality is an abstract phenomenon that cannot be measured directly, it is considered a latent variable within this model. Spirituality is operationally defined through the inclusion of three items: (a) my spiritual or religious beliefs provide me with a sense of strength when life is difficult, (b) my spiritual or religious beliefs are the foundation of my approach to life, and (c) my spiritual or religious beliefs give meaning/purpose to my life (Schreiner, 2014).

**Student–Faculty Interaction**

The impact of student–faculty interaction has been widely explored in higher education research (Kim & Sax, 2009). In a recent study, Schreiner et al. (2013) found student interaction with faculty was the second most influential factor predictive of student thriving among 4,845 traditional-age sophomore students; student–faculty interaction accounted for 11% of the variation in thriving, behind sense of community (27%) but just ahead of spirituality (8%). In the current study, student–faculty interaction is yet another latent construct because it is a theoretical construct that cannot be measured directly. Student–faculty interaction is hypothesized in the model to directly impact student thriving. Student–faculty interaction is operationalized by measuring the frequency with which students interact with faculty. Six items measured how often students have (a) met with their academic advisor, (b) discussed career or grad school plans with faculty, (c) discussed academic issues with faculty, (d) met with faculty during office hours, (e) e-mailed, texted, or Facebooked faculty, and (f) interacted with faculty outside the classroom (Schreiner, 2014).
Control Variables

Entry characteristics. High school academic performance seems to in part predict university academic performance (Pascarella & Terenzini, 2005). Furthermore, in a regression analysis with 3,924 first-year college students using the National Survey of Freshmen, high school grades (for all racial/ethnic groups) were a significant predictor of academic success in college (Fischer, 2007).

In addition to academics, race/ethnicity is predictive of student success outcomes (Berger, 1997; Lundberg & Schreiner, 2004). In a recent quantitative dissertation exploring thriving in students of color, findings revealed that pathways to thriving varied between four racial groups (McIntosh, 2012). However, Schreiner et al. (2013) found that certain demographic variables such as race and gender become nonsignificant in predicting student success outcomes when thriving functions as a mediating variable.

Gender, in addition to grades and race, is included as a control variable in this study because of some empirical evidence supporting the premise that gender has conditional effects on student success outcomes (Berger, 1997; Pascarella & Terenzini, 2005); however, the findings are mixed. The results of McIntosh’s (2012) thriving study revealed gender was not predictive of sense of community, student–faculty interaction, campus involvement, spirituality, or thriving. In contrast, Bell (2006) discovered that women who participated in an outdoor orientation program had higher levels of social support compared to male students. Moreover, Lien and Goldenberg (2012) found differential outcomes between male and female students in examining the outcomes of college student outdoor wilderness orientation participation, corroborating Bell’s (2006) findings.

The final demographic variable included in the hypothesized model is whether students were attending the college that was their first choice of institution. The notion of first choice indicates a student’s top priority in enrolling in a particular institution. In the omnibus model of thriving, first choice of institution was predictive of PSC (McIntosh, 2012). In other thriving research, first choice of enrollment contributed directly to the student success outcome of intent to graduate (Schreiner et al., 2013).

Environmental Interaction

In addition to four demographic variables, two environmental interaction variables were included in the model: living on campus and major certainty. First, the connection between on-campus living and positive student learning outcomes has been widely acknowledged (Pascarella & Terenzini, 2005). Living on campus is linked to student gains in artistic interests, self-esteem, interaction with faculty, involvement in student government, and satisfaction with their experiences and friendships in particular (Astin, 1999). Living on campus contributes to a greater sense of community (Lounsbury & DeNeui, 1995). In a longitudinal study with 718 first-year students at a highly selective, residential college in the Southeast of the United States, findings revealed a significant correlation between sense of community in residence halls and social integration (Berger, 1997). Second, major certainty was included because it has been found to contribute directly to PSC and thriving (McIntosh, 2012). An outdoor orientation setting may provide ample opportunity for healthy student–faculty interaction, which might include conversations about selecting a major. Schreiner et al.’s (2013) study suggested student thriving and persistence can be enhanced when students are aided in choosing a major that is a good fit for them.

Institutional Variable

Finally, in addition to four demographic variables and two environmental interaction variables, institutional selectivity was included as an institutional variable. Institutional selectivity is often connected with the perceived quality of the student body, and researchers have found that institutions that are more selective are associated with higher retention rates (Pascarella &
Terenzini, 2005). Examining specific thriving research, McIntosh (2012) found that institutional selectivity contributed directly to student–faculty interaction and campus involvement.

**Method**

To determine how the latent constructs and observed variables contributed to thriving among college students and to explore the contribution of outdoor orientation participation on thriving, the researchers of this study developed a model (see Figure 1) based on recent college student thriving research (Cuevas, 2015; Derrico, Tharp, & Schreiner, 2014; McIntosh, 2012). This study seeks to answer the following research question: What is the contribution of participation in an outdoor orientation program to the variation in thriving among undergraduate college students, after controlling for race, gender, high school grades, major certainty, first choice at enrollment, living on campus, and institutional selectivity?

![Figure 1. Hypothesized path model of thriving.](image)

**Population and Sample**

Upon institutional ethics approval, data were collected from 295 first-year undergraduate students in the fall of 2014, six to eight weeks after the outdoor orientation was complete, using the 'Thriving Quotient™'. Of the 295 study participants, 87 participated in an outdoor orientation program prior to the standard orientation on campus, and the remaining 208 study participants did not participate in an outdoor orientation program. An individual from each of the three institutional research partners collected the data on behalf of the principal researcher through
an e-mail invitation to students that included a hyperlink to the informed consent form and the survey.

Institution A \( (N = 61) \) was a private university located in the Midwestern United States \( (n = 30 \) outdoor orientation participants and \( n = 31 \) non-outdoor orientation participants). Their outdoor orientation program started in 1974 and takes place in a state park in New York. The Outward Bound–style program is 18 days in length and includes backpacking, canoeing, rock climbing and rappelling, and a 48-hour solo (time spent alone for the purpose of rest and reflection) or service project. Program goals include transition success, personal development, wilderness appreciation, outdoor skills, awareness, teamwork, responsible decision making, and fun.

Institution B \( (N = 80) \) was a private, faith-based university located in the Midwestern United States whose outdoor orientation program started in 1969. Participants from two outdoor orientation tracks at Institution B were included in this study \( (n = 28 \) outdoor orientation participants and \( n = 52 \) non-outdoor orientation participants). The wilderness track (outdoor orientation) is a wilderness experience 10 days in length including backpacking and canoeing/kayaking in remote Minnesota and Wisconsin wilderness locations. This track also includes a 24- to 48-hour solo and 5 days at an outdoor leadership center. The second outdoor orientation is a camp track 8 days in length and located at the outdoor leadership center. This track includes activities such as sailing, biking, climbing, archery, and ceramics, along with adventure programs that facilitate group conversation and bonding, and finally an 8-hour solo.

In contrast to the other institutions that participated in this study, Institution C \( (N = 154) \) was a large research-based university in western Canada \( (n = 29 \) outdoor orientation participants and \( n = 125 \) non-outdoor orientation participants). Their outdoor orientation program is camp based and 3 days in length, and it was started in 2011. Activities include experience-based activities such as low ropes challenge, leadership development, strengths assessment, zip-lining, group challenges and skits, and campfire conversation. Currently, only 1.4% of the first-year student body participates in this program. In alignment with the other programs, a small-group approach is utilized with five to eight students per group. Program goals include leadership development, personal development, university transition success, and personal empowerment. Student leaders (paraprofessionals), along with staff and camp counselors, assume the role of instructors.

**Thriving Quotient Instrument**

To measure the construct of thriving, the reliable and valid Thriving Quotient™ instrument was utilized (Schreiner, 2014). Schreiner et al. (2013) conducted a confirmatory factor analysis using 2,889 subjects and concluded that the instrument has demonstrated construct validity as summarized by model fit indices, \( \chi^2 (114) = 1093.83, p < .001, \) CFI = .954, RMSEA =.054, 90% CI [0.052, 0.058]. Since the 2008 pilot version was initially administered, the instrument has been under testing and refinement (Schreiner et al., 2013). A slightly revised Thriving Quotient™ that included 23 items was utilized for this study (Schreiner, 2014).

**Data Analysis**

After the data were downloaded and merged into Predictive Analytics Software Statistics 22.0 and before SEM inferential analysis was conducted, exploratory data analysis was conducted based on an ungrouped data screening process recommended by Tabachnick and Fidell (2013). The screening process helped to address the following potential issues: missing data, normality, and outliers (Ullman, 2013).

SEM is a quantitative statistical analysis that allows researchers to fit more than one regression equation simultaneously and is an extension of regression analysis (Byrne, 2010). SEM tests the fit of a hypothetical or proposed model, built upon careful review of theory and research on the part of the researcher (Ullman, 2013). The analysis conducted in SEM tests the assumed re-
relationships proposed within the model including direct, indirect, and total effects. An advantage of SEM over other statistical techniques is that computer modeling allows the proposed model to be represented graphically in which arrows represent direct relationships between variables: a pictorial representation of a series of multiple regression equations. The direction of the arrowhead on the straight line indicates the directional effect of the relationship between the two variables; in other words, it indicates which variable is being regressed on the other.

Results

Upon initial analysis using data from the sample population \((N = 295)\), the hypothesized model for thriving demonstrated a poor fit, \(\chi^2 = 371.436 (df = 96, p < .00)\), CFI = .661, RMSEA = .099. Respecification of the model (adding and removing pathways between variables) was needed to improve the goodness-of-fit statistics. Modification indices indicated the potential for improvement of the model by adding predictive and covariance pathways. In addition, a number of nonsignificant \((p < .05)\) regression and covariance pathways were eliminated. Model respecification resulted in a significantly improved and parsimonious model, \(\chi^2 = 136.161 (df = 88, p < .001)\), CFI = .939, RMSEA = .044, which can be characterized as a very good fitting model (see Figure 2).

As hypothesized in the model, the findings did not suggest a direct pathway between outdoor orientation and thriving. However, an indirect pathway between an outdoor orientation experience and college student thriving in the first semester was found. Thriving directly predicted campus involvement \((\beta = .246)\), campus involvement directly predicted psychological sense of community \((\beta = .241)\), and psychological sense of community predicted thriving \((\beta = .739)\). Although the predictive importance of outdoor orientation is modest and indirect \((\beta = .048)\), it contributes significantly to the model that explains 72.8% of the variance in thriving levels. One of the unexpected findings suggested that an outdoor orientation experience negatively predicted spirituality \((\beta = -.146)\). Direct, indirect, and total effects of the variables on the thriving outcome variable are detailed in Table 1.

Table 1

<table>
<thead>
<tr>
<th>Variables</th>
<th>Direct effect</th>
<th>Indirect effect</th>
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<td>Gender (FEMALE)</td>
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<td>.035</td>
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<td>.048</td>
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<tr>
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<tr>
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<tr>
<td>Student–Faculty Interaction</td>
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<tr>
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<tr>
<td>Diverse Citizenship (DC)</td>
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<td>Social Connectedness (SC)</td>
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<tr>
<td>Engaged Learning (ELI)</td>
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<tr>
<td>Academic Determination (AD)</td>
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<td>.651</td>
</tr>
<tr>
<td>Positive Perspective (PP)</td>
<td>.367</td>
<td>.00</td>
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</tbody>
</table>
Figure 2: Final structural model for thriving.
Discussion

Participating in outdoor orientation appears to set in motion a propensity for students to become more involved in campus life, which fosters a greater sense of community, which then culminates in thriving. The intersection of outdoor orientation with campus involvement, psychological sense of community, and spirituality are discussed in the context of the findings of this study.

Outdoor Orientation Experiences and Student Involvement

The illumination of a significant pathway between outdoor orientation and campus involvement is the most salient finding in this study. A student's level of involvement is one of the most critical variables that affects the college experience (Astin, 1999; Tinto, 2012; Wolf-Wendel et al., 2009). Previous research by Soria, Troisi, and Stebleton (2012) established a strong link between involvement in campus organizations and subsequent student involvement in community service. It appears the primary means of continued student involvement is through the gateway experience of another student organization on campus. In this study, that gateway experience was outdoor orientation. Campus involvement then had a direct effect on students' psychological sense of community, which in turn had a direct effect on thriving. Involvement represents a pivotal mediating variable between an outdoor orientation experience and students' sense of community on campus, as well as their intellectual, interpersonal, and psychological well-being.

Based on this finding, outdoor orientation programming, currently limited to 191 programs, or about 10% of residential colleges in the United States (Bell et al., 2014), may represent a potent yet underutilized college practice that can indirectly influence student thriving through involvement and psychological sense of community. Before university classes even begin, the experience-based pedagogical practice of outdoor orientation can be a catalyst for cultivating early college student engagement. This finding is consistent with those in numerous studies, including Bell and Holmes (2011), Bobilya, Akey, and Mitchell (2011), and O'Connell (2011).

Involvement and Psychological Sense of Community

The illumination of a pathway between student involvement and PSC in this study also corroborates DeNeui's (2003) study in which a clear link between student involvement and PSC was established in college students. Student organizations, clubs, and community service projects are often endorsed by the institution or student associations and would be characterized as educationally purposeful activities (Kuh, Schuh, & Whitt, 2005).

This linkage between involvement and PSC seems plausible for two reasons. First, students who voluntarily join an organization or club on campus are likely intrinsically motivated (Ryan & Deci, 2000), based on their individual choice to participate and the potential for connection to a group of peers with similar interests. A student's level of internal motivation would influence not only a student's decision to join, but also a student's level of involvement within the joined group. The level of student involvement in out-of-class experiences, such as community service, intramural athletics, student organizations, clubs, and student government, is associated with gains in perceived sense of community (Elkins, Forrester, & Noel-Elkins, 2011). For example, a student who joins a student club and has a positive experience may develop a capacity and desire to assume leadership responsibilities within the group. A student may begin recruiting other members, planning activities, writing policy, mentoring other group members, or liaising with the institution—all activities marked by the exertion of influence on others, policy, or culture. A sense of community, especially for first-year students looking for a place of connection as they begin their college tenure, could easily be cultivated through group involvement in which a student makes a substantial contribution to the group.
Second, under the right conditions, student involvement might include deeper levels of interpersonal and emotional connection, both elements included in the concept of PSC. If interdependent relationships are positive, meaningful, and frequent, then a shared connection can be fostered (McMillan & Chavis, 1986). Involvement can cultivate the conditions in which quality intergroup interactions can unfold (Denson & Chang, 2015). Although the gateway to involvement might have been a shared interest in an activity, the environment in which the students connected may have been conducive to the development of deeper levels of interpersonal trust.

**Psychological Sense of Community and Student Thriving**

PSC had the largest direct effect on thriving of any variable in this study, which aligns with the findings from the Nelson and Vetter (2012) study in which PSC significantly predicted thriving among 908 first-year college students. The strong connection between PSC and thriving as discovered in this study corroborates the Cuevas (2015) study with 945 participants among 11 institutions in the United States in which PSC was found to be the strongest predictor of honors student thriving and the Petridis (2014) study with 2,918 graduate students in which students’ PSC was the strongest predictor of thriving.

Psychological sense of community is a comprehensive and integrated construct that reflects the experiences of students who feel they belong, have influence, matter, and are connected to others in relationally and emotionally significant ways (DeNeui, 2003). Students who experience PSC are engaging in authentic community where self-awareness, authenticity, and vulnerability are cultivated in a nonjudgmental relational ecosystem. From this position of psychological and relational strength, a student is able to thrive—to develop academic, social, and psychological well-being. In contrast, students who do not experience PSC are likely only surviving, perhaps attempting to find a place to belong, to find their voice, and to connect with faculty and peers on a deeper level, but not succeeding in these tasks. Based on the connection between PSC and thriving established in this study, first-year students who are experiencing higher levels of PSC are likely connecting socially with other peers in educationally meaningful activities in and outside the classroom and are intrinsically motivated because they have exercised their volitional capacity to choose the kinds of academic courses and activities they enjoy (Ryan & Deci, 2000). In addition, they are positively reframing setbacks and failures because they have mentors and friends who encourage them to pursue a positive perspective, and they are not threatened by diverse viewpoints because they have developed a healthy view of themselves in the context of diverse community.

**Outdoor Orientation and Spirituality**

It was hypothesized that participation in an outdoor orientation experience would predict levels of spirituality in students. However, the findings revealed the opposite: Outdoor orientation participants reported lower levels of spirituality. The findings suggest that students who participate in an outdoor orientation program are less likely to report a reliance on spirituality as defined in this study. The predicted pathway between outdoor orientation and spirituality was based on two studies that demonstrated this link within an outdoor orientation program (Bobiya et al., 2011) and a wilderness experience program (Fredrickson & Anderson, 1999). Although this finding was unexpected, variation in results can easily occur in a newer area of research. Because the results did not align with previous research, further statistical analysis was conducted to uncover possible explanations. The overall correlation between outdoor orientation participation and spirituality was $r = -.017$. A correlational analysis by institution revealed a positive relationship between an outdoor orientation experience and spirituality among students attending the faith-based college ($r = .153$), but a negative relationship among students attending the research institution ($r = -.022$) and the private institution ($r = -.172$). Because of these correlational patterns, an explanation accounting for the negative pathway between outdoor orientation and spirituality seems most related to outdoor orientation program differences.
and goals regarding the programmatic emphasis on spirituality or spiritual development as an intended outcome.

Control Variables

Grades, major certainty, and student–faculty interaction positively and directly predicted thriving. First choice of institution directly and negatively predicted thriving. Living on campus directly and positively predicted spirituality, involvement, and psychological sense of community. The relatively strong and positive connection between living on campus and holistic well-being corroborates the link between a residential experience and positive student learning outcomes, as widely acknowledged (Pascarella & Terenzini, 2005). The findings in this study corroborate McIntosh’s (2012) research that major certainty predicted thriving and psychological sense of community.

Recommendations

Educators are increasingly pursuing experiential learning pedagogies as a means of reforming higher education (Bok, 2006). The findings of this study seem to provide helpful insight to improve higher education practices that enhance thriving and to guide additional research efforts.

Recommendations for Practice

The following recommendations for higher education faculty and student affairs personnel are suggested based on the findings of this study. These recommendations focus on two major areas: enhancing the durability of outdoor orientation experiences on campus and enhancing the psychological sense of community among students.

Enhance the durability of outdoor orientation experiences back on campus. A hallmark of adventure education is the transference of learning from the outdoor experience into the everyday life of the participant (Walsh & Golins, 1976). Student participation in outdoor orientation experiences is not designed to be an end, but rather a means to an end, the ultimate goal being learning and holistic student development. Outdoor orientation staff need to focus even more effort toward facilitating the transfer of learning so that the benefits gained from the outdoor experience can positively influence campus life. Ewert and Sibthorp (2014) argued, “Developing ways to enhance the durability of the positive effects often experienced in OAE [outdoor adventure education] programs will be increasingly important for OAE professionals in the future” (p. 174). Several programmatic strategies could be implemented to maximize the gains from outdoor orientation experiences back on campus.

First, it is recommended that outdoor orientation programs support reflective activities that allow students to apply learning from their orientation experience. Many popular activities have been successfully utilized by outdoor orientation programs. For example, participants are asked to write a letter to themselves toward the end of the outdoor orientation program reflecting on their experiences—what they have learned, how they have grown, and how they think their growth and development will positively affect their college experience. This type of reflective exercise fosters deeper processing (McKenzie, 2000) of the connection between their outdoor orientation experiences and their anticipated experiences as first-year college students. The letters would be collected by the instructors and then given to students when they are back on campus.

Second, additional “mini-experiences” can help reinforce the benefits from an outdoor orientation, especially those that emulate some of the core features of the outdoor experience including (a) being “unplugged” from technology, (b) meeting with their outdoor orientation small group, and (c) reconnecting with their instructor. The intent of this reconnection would not focus on the element of task accomplishment associated with an optimally challenging environment, but rather on interpersonal connection and continued personal reflection. Mini-experiences
may include a walk within an urban park or forestland setting in close proximity to the campus in which participants would be free from technology. Benefits may include informal opportunities for more social connection. The instructor could also lead a pedagogically robust intentional group processing session. A small group reflection could prompt students to consider how their outdoor orientation experiences have contributed to their life and studies as a first-year student.

**Enhance psychological sense of community.** In this study, the contribution of PSC to thriving was powerful. Yet, within the field of outdoor adventure research, there is scant research linking outdoor experiences and PSC. O’Connell (2014) recently suggested that McMillan and Chavis’s (1986) framework for PSC integrates well with outdoor adventure education. Bell (2012) complements O’Connell by suggesting that belonging and status are key components of psychological sense of community and should be viewed as an organizing principles in outdoor orientation design and implementation. The second recommendation for policy and practice is that outdoor orientation leaders and student affairs professionals should cultivate the four components of PSC more intentionally into outdoor orientation programs. Furthermore, PSC could be used as a framework in designing and implementing all in- and out-of-classroom college experiences.

**Increase membership.** Outdoor orientation program experiences have the potential of uniquely marking students as members in this experience by engendering a sense of belonging. Examples of marking include students receiving T-shirts, bracelets, or pins that are infused with meaning in the program. For example, a rope bracelet may mark membership in a community of students who have completed challenging activities together such as summiting a mountain, engaging a low-ropes course, or cooking a meal in the backcountry. Ritualized items can be successfully used to create powerful shared experiences and interpersonal connections (Bell & Holmes, 2011; Bell & Nafziger, 2014).

**Cultivate influence.** Program designers and instructors should contribute to the creation of a culture in which each participant can find his or her voice and exert influence. Influence is part of healthy interdependent relationships in which the individual influences the group and the group influences the individual and in which trust is at the epicenter of these reciprocal relationships (McMillan, 1996). The fear of social isolation in first-year college students (Bell & Williams, 2006) will cause many to hide their voice and seek conformity, not influence. The outdoor program instructor has primary responsibility for creating a safe environment in which students can find their own voice as full and valued members of the group (Kalisch, 1999). Outdoor orientation leadership training curriculum should include a significant section on the development of facilitation skills such as diversity, sensitivity, listening, interpersonal conflict resolution, and group dynamics.

**Foster integration and fulfillment of needs.** For a group to achieve and sustain a sense of cohesion, the needs of an individual must be met within the group through reinforcement. Risk and challenge should be defining characteristics of an outdoor educational experience (Walsh & Golins, 1976), because the palpability of needs is heightened as students are confronted with a novel and unfamiliar environment that requires interdependence. For example, the basic human requirements for nutrition and sleep give tangible opportunities for service to others, resulting in the need for adequate food preparation and the establishment of weatherproof shelters. A well-designed outdoor orientation experience provides opportunities for individuals to demonstrate competence through activities such as meal preparation, meal clean-up, camp set-up, and group debriefing.

**Enhance shared emotional connection.** Communal emotional connection is cultivated through shared experiences that are positive, meaningful, and frequent (McMillan & Chavis, 1986). This concept aligns with the second question students will ask as they transition into the college environment—after students wonder if they belong, they then wonder how they belong (Bell et al., 2014). Students may sense they belong in ways that are not comfortable to them (I belong only if I pretend to be something I am not). Belongingness is enhanced “where a group
shares power among participants in a just and equitable manner” (Bell et al., 2014, p. 41). Yet the level of investment on the part of an individual, whether with time, vulnerability, or energy, is directly related to the level of emotional connection with the group.

Recommendations to enhance emotional connections include students sharing personal stories, such as describing their hometown. It is important for students to “unplug” from technology during their outdoor orientation experience to maximize human, rather than virtual, interactions. An “unplugged” environment may be novel and challenging for many students; however, this practice has the potential of creating an environment in which authentic interdependent relationships with diverse others can flourish.

**Limitations and Recommendations for Future Research**

This study provides findings that expand the growing body of research investigating thriving and outdoor orientation, but not without limitations. First, although SEM is a powerful methodology for understanding and graphically representing pathways between variables, it is based on simultaneous regression analysis and not on experimental design. The second limitation of this study is that only three institutions were represented. Including more institutions in the study would have strengthened the generalizability of the findings. Third, the outdoor orientation programs varied considerably in their length and approach. Finally, time was a limitation. The study utilized a cross-sectional design and surveyed only first-year students at one point in time in their first semester. Additional surveys at the end of the first year or at graduation would have been helpful to provide a longitudinal perspective, much like Devlin’s (1996) study. Other studies, such as Gass, Garvey, and Sugerman’s (2003) 17-year follow-up study on the impacts of an outdoor orientation, demonstrate a durability of the effects.

Future research should include an experimental research design in which students who volunteer to participate in an orientation program are randomly assigned to participate in either the outdoor orientation experience (treatment group) or the standard on-campus orientation (control group). Future research should also replicate and expand the use of thriving as a theoretical model to better understand how outdoor orientation programs are linked to holistic well-being of students.

**Conclusion**

This study used SEM to investigate the linkages between outdoor orientation experiences and student thriving with 295 students at three institutions in Canada and the United States. The findings illuminated an indirect pathway from outdoor orientation to thriving, suggesting outdoor orientation experiences provide an entry point into campus life that fosters a propensity for further involvement, which then leads to PSC and ultimately to thriving. Student affairs professionals and faculty have a unique opportunity to enhance the durability of outdoor orientation experiences back on campus and foster a sense of community so that students can thrive in their first year at college.

**References**


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Journal of Outdoor Recreation, Education, and Leadership
Evidence-Based Review of Wilderness First Aid Practices

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Abstract

Wilderness First Aid is a common certification for outdoor recreationists, educators, and trip leaders. A panel of educators, researchers, and clinicians evaluated 15 core and eight elective WFA practices for strength of recommendations based on the quality of supporting evidence and balance between the benefits and risks/burdens according to the methodology stipulated by the American College of Chest Physicians. The strength of the evidence for these 23 WFA practices varies widely because of scant published research to date. When no evidence existed, the panel based recommendations on a consensus of the panelists for risk/benefit and best practices. This review clearly points out the need for conducting greater research to strengthen the level of evidence in numerous WFA topics and for educational strategies that improve retention of core knowledge, as well as skill application for the lay first aid provider.

KEYWORDS: wilderness first aid; lay person; assessment; treatment; evacuation
People who live, work, travel, and recreate in remote locations should be prepared to provide first aid in challenging weather, with ineffective communication, delayed medical support, and limited equipment. Over the past 50 years, as outdoor recreation and education has grown in popularity, medical and outdoor specialists developed wilderness medicine courses to meet the needs of trip leaders and outdoor recreationists who were dissatisfied with urban-oriented first aid curriculums that were not practical or relevant for the wilderness (J. Gookin, personal communication, December 29, 2015). Annually thousands of laypeople take wilderness medicine courses offered by dozens of organizations in the United States. This paper focuses on the 16-hour Wilderness First Aid (WFA) course because of its popularity and because it shares a common curriculum with the majority of other layperson wilderness medicine courses.

In a 2013 consensus paper, a group of WFA course experts (Johnson et al., 2013) described the audience for a WFA course as nonmedical professionals for whom first aid delivery is a secondary responsibility. The intended context of practice is remote locations typically in but not limited to North America. Local emergency medical services (EMS)/search and rescue access is expected in less than 8 hr. These may be short trips relatively close to help, day trips/camps, stationary wilderness camps, weekend family activities, or front-country outdoor recreation.

First aid has been defined as “assessments or interventions that can be performed by the bystander (or by the victim) with minimal or no equipment” and as “immediate help provided to a sick and injured person” (Van de Velde et al., 2007, p. 241) consisting of “techniques requiring minimal or no equipment that can be taught to the general public in basic courses” (Markenson et al., 2010 p. 5935). The focus of WFA is a basic patient assessment to identify obvious injuries or abnormalities; stabilize emergencies; initiate specific and appropriate medical treatments (e.g., basic splints, wound care, spine immobilization, managing heat and cold); and make conservative decisions on the need for, the urgency of, and the appropriate type of evacuation. Cardiopulmonary resuscitation (CPR) that includes instruction in positive pressure ventilation (mouth-to-mouth or mouth-to-mask) is a recommended additional skill for the WFA provider.

A WFA scope of practice has been published (Johnson et al., 2013) and is the source of the first aid procedures discussed in this review. The objective of this review is to evaluate the quality of evidence for the standardized WFA practices within the 23 curriculum (core and elective) topics described in that article and to provide key recommendations based on risks and benefits for patient management. Further, the intent of this review is to make recommendations and to provide supporting evidence that allows the WFA practitioner and course instructor to better understand the strength of evidence upon which the curriculum and practice is built rather than relying on anecdotes. Although supporting evidence for first aid procedures have been published for urban first aid (Markenson et al., 2010; Singletary et al., 2015), these recommendations and an evidence review process is currently absent in the WFA literature.

Method

In this era of evidence-based medicine, the grading of treatment recommendations is an increasingly common practice. A systematic approach to grading the strength of management recommendations can minimize bias, aid interpretation, and allow the clinician a deeper understanding of the rationale for treatment recommendations. The grading of the recommendations is based on quality of supporting evidence and consideration of benefits and risks/burdens for each modality. The panel used a grading system outlined by the American College of Chest Physicians (ACCP; Guyatt et al., 2006; Table 1).
Table 1

American College of Chest Physicians Classification Scheme for Grading Evidence and Recommendations in Clinical Guidelines

<table>
<thead>
<tr>
<th>Grade</th>
<th>Grade description</th>
<th>Benefits vs. risks and burdens</th>
<th>Methodological quality of supporting evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>Strong recomme...</td>
<td>Benefits clearly outweigh risks and burdens, or vice versa</td>
<td>Random controlled trials (RCT) without important limitations, or overwhelming evidence from observational studies</td>
</tr>
<tr>
<td>1B</td>
<td>Strong recomm...</td>
<td>Benefits clearly outweigh risks and burdens, or vice versa</td>
<td>RCT with important limitations, or exceptionally strong evidence from observational studies</td>
</tr>
<tr>
<td>1C</td>
<td>Strong recommen...</td>
<td>Benefits clearly outweigh risks and burdens, or vice versa</td>
<td>Observational studies or case series</td>
</tr>
<tr>
<td>2A</td>
<td>Weak recommendation, high quality evidence</td>
<td>Benefits closely balanced with risks and burdens</td>
<td>RCT without important limitations, or overwhelming evidence from observational studies</td>
</tr>
<tr>
<td>2B</td>
<td>Weak recomm...</td>
<td>Benefits closely balanced with risks and burdens</td>
<td>RCT with important limitations, or exceptionally strong evidence from observational studies</td>
</tr>
<tr>
<td>2C</td>
<td>Weak recommendation, low quality or very low quality evidence</td>
<td>Uncertainty in the estimates of benefits, risks, and burdens; benefits, risks, and burdens may be closely balanced</td>
<td>Observational studies or case series</td>
</tr>
</tbody>
</table>


The panel members were as follows:

- Tod Schimelpfenig, Wilderness Emergency Medical Technician (WEMT), Fellow of the Academy of Wilderness Medicine (FAWM), National Outdoor Leadership School (NOLS) Wilderness Medicine Institute
- David E. Johnson, MD, Fellow of the American College of Emergency Physicians (FACEP), Department of Emergency Medicine, Central Maine Medical Center
- Grant S. Lipman, MD, FACEP, FAWM, Department of Emergency Medicine, Stanford University School of Medicine
- David H. McEvoy, MS, Critical Care Emergency Medical Technician-Paramedic (CCEMT-P), Aerie Backcountry Medicine
- Brad L. Bennett, PhD, National Registry of Emergency Medical Technicians-Paramedic (NREMT-P), FAWM, Military & Emergency Medicine Department, F. Edward Hébert School of Medicine, Uniformed Services University of the Health Sciences

The panel included educators, instructors, and curriculum developers in the field of wilderness medicine from academic and private institutions. Three of the coauthors (DJ, DM, TS)
are either medical directors or curriculum directors for wilderness medicine programs and two others (BB, GL) are academic faculty in schools of medicine. Although all coauthors have no commercial conflicts of interest in the outcome of this study, the potential for bias cannot be ruled out and is a limitation of the review. To minimize bias, the panel members formed a joint writing group with initial two-person teams for the literature search, evaluation of the available manuscripts, and initial grading of the evidence. Each team selected between five and six WFA topics based on the 15 core and eight elective topics from Johnson et al. (2013; Table 2). Relevant articles were identified by a search of MEDLINE as the primary database, U.S. National Library of Medicine, and National Institutes of Health. Key search terms used were wilderness, first aid, bandages, fractures, layperson, assessment, treatment, and evacuation (see Table 2 for a complete list of search terms). Peer-reviewed studies related to WFA practices, observational studies, and case series were reviewed, and the level of evidence supporting the conclusions was assessed. Abstract-only studies were not included. Conclusions from review articles were not considered in the formulation of recommendations. Like urban first aid, many areas of WFA are lacking substantial research and thus recommendations were often based upon hospital or emergency medical services (EMS) studies.

The review process extended from June 2014 until June 2015. The group followed a modified Delphi process used in the medical literature to develop position papers. The group communicated by phone and e-mail. Each topic team independently developed an initial grading table (listing the topic, the reference, a brief description of the paper, comments on the methodological quality of the supporting evidence, and the panelist’s grading) and then submitted the grading table to the larger group. A consensus approach—back and forth circulation of the grading tables—was used until group consensus was reached for each topic and a final grade was agreed upon. When no relevant studies were identified for any WFA practice, the recommendation was based on risk versus benefit perceptions derived from patient-care experience and an entry of No Grade (NG) was made. For example, the panel found no substantive evidence for the common advice to stabilize injuries to prevent further damage and blood loss in shock. The panel then came to a consensus opinion that the benefit from stabilizing injuries with simple first aid splinting outweighs the risk of exacerbating pain and possibly shock from patient movement during splinting.

Table 2

<table>
<thead>
<tr>
<th>Core topics and skills</th>
<th>Key search terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Assessment System</td>
<td>basic life support, primary survey, secondary survey, disability, trauma, hemorrhage, patient assessment</td>
</tr>
<tr>
<td>Circulatory System: Shock</td>
<td>shock, first aid, Trendelenburg</td>
</tr>
<tr>
<td>Circulatory System: Acute Coronary Syndrome</td>
<td>acute coronary syndrome, chest pain, prehospital management, nitroglycerin, aspirin</td>
</tr>
<tr>
<td>Respiratory System</td>
<td>respiratory failure, upper airway, acute asthma, MDI, caregiver/education</td>
</tr>
<tr>
<td>Nervous System</td>
<td>oral glucose, recovery position, oral mucosa, hypoglycemia</td>
</tr>
<tr>
<td>Spine Injury</td>
<td>spinal injury, spinal trauma, spinal immobilization, cervical spine injury, cervical spine immobilization, cervical spine clearance</td>
</tr>
</tbody>
</table>
### Table 2 (cont.)

<table>
<thead>
<tr>
<th>Topics</th>
<th>Key search terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wounds</td>
<td>wound care, wound management, wound closure, wound infection, burn care, blister care, hemorrhage control, bleeding</td>
</tr>
<tr>
<td>Burns</td>
<td>burn first aid, cryotherapy</td>
</tr>
<tr>
<td>Musculoskeletal Injuries</td>
<td>splints, injury, cryotherapy, and ankle</td>
</tr>
<tr>
<td>Allergic Reaction and Anaphylaxis</td>
<td>anaphylaxis, treatment and epinephrine</td>
</tr>
<tr>
<td>Heat-Related Illness</td>
<td>heat stroke, heat exhaustion, heat illness, prevention, recognition, treatment</td>
</tr>
<tr>
<td>Hypothermia</td>
<td>accidental hypothermia, secondary hypothermia, trauma induced hypothermia, hypothermia, rewarming, resuscitation, wilderness medicine, avalanche, cold</td>
</tr>
<tr>
<td>Lightning Injury</td>
<td>lightning injury, lightning strike, prevention</td>
</tr>
<tr>
<td>Submersion</td>
<td>drowning, near drowning, immersion, submersion incident, respiratory distress, pulmonary edema</td>
</tr>
<tr>
<td>Common Medical Problems</td>
<td>abdominal pain; vomiting and diarrhea; cough and upper respiratory infection; urinary tract infection; ear, nose, throat; fever; poisoning; toxicity; ipecac; activated charcoal</td>
</tr>
<tr>
<td>Elective Topics and Skills</td>
<td></td>
</tr>
<tr>
<td>Dislocation</td>
<td>dislocation, shoulder, treatment, reduction and radiography</td>
</tr>
<tr>
<td>Spine Injury Evaluation</td>
<td>NEXUS, Canadian C-spine rule, cervical fracture, spinal clearance, immobilization, prehospital</td>
</tr>
<tr>
<td>Frostbite and Non-Freezing Cold Injury</td>
<td>frostbite, frostbite prevention, hypothermia, rewarming, aloe vera, thrombolysis, trench foot, immersion foot</td>
</tr>
<tr>
<td>Altitude</td>
<td>high altitude, acute mountain sickness, high altitude pulmonary edema, high altitude cerebral edema, acetazolamide, dexamethasone</td>
</tr>
<tr>
<td>Poisoning</td>
<td>poisons, inducing vomiting, ipecac</td>
</tr>
<tr>
<td>Toxic: Snakebite</td>
<td>snakebites, arthropods, marine, envenomation, prehospital management</td>
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<tr>
<td>Toxic: Arthropods</td>
<td></td>
</tr>
<tr>
<td>Toxic: Marine</td>
<td></td>
</tr>
</tbody>
</table>


## Results

The core and elective WFA practices (Table 1) were examined within an evidence-based framework. To help the reader better understand and appreciate the strength of the evidence upon which the curriculum and practice is built, we first present the grading recommendation,

followed by comments to give context to the topic area as commonly taught on a WFA course. To avoid opinion and potential bias, the writing group avoided interpretation of the results in the framework of an educational strategy.

**Patient Assessment System**

*Recommendation:* Use a basic patient assessment system to identify obvious medical problems: NG

The WFA provider is taught a basic patient assessment system (e.g., airway-breathing-circulation, simple head-to-toe physical exam, elementary vital sign measurement, and medical history interview) that is patterned after but pared down from the assessment systems taught to professional providers. The WFA provider does not learn to measure blood pressure with a sphygmomanometer, to assess lung sounds or pupillary reaction, or to identify subtle physical signs or elicit nuanced symptoms. The patient assessment system, taught in both EMS and first aid courses, is based on tradition and expert opinion and consensus, although it is poorly supported by evidence of its efficacy. One study shows poor retention of patient assessment skills in WFA course participants (Schumann, Schimelpfenig, Sibthorp, & Collins, 2012).

**Circulatory System: Shock**

*Recommendation:

Stabilize injuries to prevent further damage and blood loss: NG

Provide oral fluids if a patient can protect his or her airway: 1C

The WFA provider is taught to recognize signs and symptoms of shock and to differentiate these from an acute stress reaction. Treatment recommendations for volume shock (e.g., vomiting, diarrhea, bleeding) are bleeding control, stabilization of injury, oral fluids if tolerated, and protection from adverse environmental conditions during evacuation. Although oral fluids are not recommended in the urban first aid context where prompt transport to definitive care is anticipated, if the WFA provider has no other option, then oral fluids in patients who can protect their airway are logical and consistent with extensive experience in the context of diarrhea (Sack et al., 1970; Spandorfer, Alessandrini, Joffe, Localio, & Shaw, 2005).

**Circulatory System: Acute Coronary Syndrome**

*Recommendation:

Evacuate the patient with cardiac chest pain and assist patients with their prescribed cardiac medications: 1B

In the case of chest pain (possible acute coronary syndrome), recommended prehospital practices include early symptom recognition, activity cessation, support of a patient with personal medications (e.g., aspirin, nitroglycerin), and evacuation to the health care system, and these are taught to lay WFA providers (Barbash et al., 2002).

**Respiratory System**

*Recommendation:

Assist patients with their prescribed pulmonary medications: 1C

Use BLS techniques for airway management and positive pressure ventilation (mouth-to-mask or mouth-to-mouth): 1C

Recognition and management of respiratory distress is addressed through the basic life support (BLS) skills of opening and maintaining an airway with manual techniques and body position. Invasive or adjunct assisted (i.e., oropharyngeal airway) techniques are not appropriate for
lay WFA providers. The WFA provider is expected to support patients using their personal medications (i.e., prescribed inhaler) according to the patient's physician-prescribed treatment plan. It is unclear whether lay providers can effectively assist patients with their inhalers. Effective assistance would depend on adequate training (Simon, 1999; Clayton, Monroe, Magruder, & King, 2012).

Evacuation is recommended for high risk problems associated with respiratory compromise, worsening symptoms, and altered mental status. Protecting and clearing the airway are accepted BLS procedures.

The American Heart Association (AHA) teaches that unresponsiveness and ineffective breathing are the criteria for beginning chest compressions. Positive pressure ventilations are optional training (compression-only CPR) in the urban context (Kleinman et al., 2015). The AHA also acknowledges that compression-only CPR may not be as effective for children and recovered submersion patients because primary respiratory arrest is often the underlying etiology. (de Caen et al., 2015; Kyriacou, Arcinue, Peek, & Kraus, 1994). Because of this, CPR taught in conjunction with a WFA course should include positive pressure ventilation (mouth-to-mouth or mouth-to-mask) training.

**Nervous System**

*Recommendation:*

Use BLS techniques for airway management and positive pressure ventilation in a patient with altered mental status: 1C

Use sublingual glucose in patients with altered mental status: 1C

The WFA provider is trained to identify the most common causes of abnormal mental status (trauma, extremes of temperature, inadequate oxygen, low blood sugar, seizure) and to apply first aid treatment, which includes protecting the airway and spine, protecting the patient from environmental extremes (cooling heat-stroke patients and warming hypothermia patients), ventilating a hypoxic patient, and administering oral sugar. Evacuation is recommended for persistent altered mental status, decreased level of responsiveness, and lack of improvement despite appropriate treatment.

Protecting the airway for a patient with abnormal mental status and protecting the airway and spine for a patient with a head injury are logical layperson first aid measures (Blake, Stillman, Eizenberg, Briggs, & McMeeken, 2002). Provision of oral glucose, which is most likely absorbed in the stomach, not in the buccal mucosa, is controversial (Gunning & Garber, 1978; Squier, 1991). Concerns over airway obstruction exist, albeit in the absence of any evidence that this is a problem, and lead to the recommendation that oral glucose not be rubbed into the gums and only be given to patients who can swallow. In the absence of advanced life support, sublingual glucose in patients with altered mental status is safe and practical (Barennes, 2005).

**Spine Injury**

*Recommendation:*

Perform simple lifts, lift and slide, and rolls to facilitate patient examination and protection: 1C

Stabilize patients with suspected spine injury and initiate evacuation: 1C

Use of a selective spine immobilization protocol is inappropriate at the WFA level: 1C

WFA standard of practice is to protect the spine while contacting assistance for evacuation for all patients with a high risk mechanism of injury or signs and symptoms of spinal injury. The WFA provider is taught to identify high risk mechanisms for spinal injury (e.g., trauma with loss of responsiveness or from high velocity, falls greater than 1 meter, falls with axial loading; Stiell
et al., 2003) and to recognize signs and symptoms of possible spine injury (spine tenderness, impaired motor or sensory function, unresponsiveness, or abnormal mental state).

Initiation of spinal protection and simple lifts, lifts and slides, and rolls to facilitate patient examination, protection, and evacuation are part of the WFA skill set. Expert opinion supports the common and practical practice of carefully moving patients if necessary to protect the patient or the rescuer. A lifting technique may provide more stability to the spine than the log roll, but realistically the log roll is often used because the six to eight people needed to do an effective lift are not always available or the lift and slide technique may be impractical because of terrain or limited manpower (Boissy et al., 2011; Conrad, Horodyski, Wright, Ruetz, & Rechtine, 2007; Del Rossi et al., 2004; McGuire, Neville, Green, & Watts, 1987).

The WFA skill set does not include immobilization on a litter or backboard or use of improvised litters or stretchers, because of the limited instructional time in this course and the fact that most outdoor recreationists do not travel with spine immobilization equipment. Expert opinion argues that selective spine immobilization protocols (e.g., NEXUS, Canadian C-Spine Rule; Bandiera et al., 2003; Hoffman, Mower, Wolfson, Todd, & Zucker, 2003) are inappropriate for the lay first aid provider without repeated practice until competency, memory aids/checklists, and/or supervision from higher trained personnel. The limited evidence supports this belief (Schumann et al., 2012).

**Wounds**

**Recommendation:**

If a wound is bleeding, apply direct manual pressure to the wound: 1B

Consider using clot enhancing dressing for severe bleeding control: 1B

Apply a tourniquet to an injured limb when no other bleeding control method is effective: 1A

WFA providers should not release a tourniquet in the field: NG

Irrigate wounds without significant active bleeding with potable water under pressure and/or with diluted povidone-iodine: 1B

Apply simple dressings and bandages to cover and protect wounds: 1B

Consider a commercial grade vented chest seal for all open chest wounds: 1B

Stabilize impaled objects: NG

Wound care for the WFA provider includes recognizing and controlling life-threatening bleeding with well-aimed direct pressure (Lehmann, Heath-Lange, & Ferris, 1999), pressure bandage, clot enhancing bandage (Kheirabadi, Scherer, Estep, Dubick, & Holcomb, 2009; Rall et al., 2013), or tourniquet (Kragh et al., 2009). There is strong evidence supporting a wide variety of hemorrhage control techniques that have been researched and implemented in the past decade in support of military requirements (Drew, Bennett, & Littlejohn, 2015; Littlejohn, Bennett, & Drew, 2015). Blood clot enhancing dressings and tourniquet use in field settings is beginning to transition into civilian emergency medical services. Furthermore, the AHA and American Red Cross support layperson education for the tourniquet as a bleeding control technique after a trial of direct pressure (Singletary et al., 2015).

The decision to release a tourniquet in the field is controversial and risks renewed bleeding and shock. Expert opinion is that releasing a tourniquet applied to control life-threatening hemorrhage is beyond the ability of a lay first aid provider and should be done only by an advanced life support provider or in the emergency department (Johnson et al., 2013).

WFA providers should recognize signs and symptoms of soft tissue infection and use hygiene and wound care to prevent infection. A focus on wound care and cleaning has been associated with reduced wound infection rates when used in the field by lay wilderness medicine
providers (Gentile, Morris, Schimelpfenig, & Auerbach, 1992). Wounds without significant active bleeding should be cleaned by removing debris and irrigating (e.g., potable water under pressure, diluted povidone-iodine solution; Dire & Welsh, 1990; Quinn et al., 2014; Valente, Forti, Freundlich, Zandieh, & Crain, 2003).

Simple dressings and bandages to cover and protect wounds are part of the WFA skill set. Evidence is lacking for the efficacy of an improvised three-sided occlusive dressing; therefore, open chest wounds should be covered with an occlusive dressing. The military recommends a commercial vented chest seal as superior to a nonvented or occlusive dressing to minimize the chance of developing a tension pneumothorax, although lay providers do not often carry these dressings (Butler et al., 2013; Kheirabadi et al., 2013; Kotora, Henao, Littlejohn, & Kircher, 2013). In the absence of evidence, expert opinion advises that impaled objects are immobilized in place except if they compromise the airway, cannot be stabilized, will easily fall out, prevent transport, or interfere with control of bleeding.

Blisters are caused by the friction that results from movement over inadequately protected skin. Strategies for prevention should be focused on moving the interface of friction off the skin and/or utilizing some form of protective bandage (Akers & Sulzberger, 1972). Once a blister has formed, it should be cleaned, drained, and covered with one of several types of bandages. If a blood blister breaks, it should be treated as a wound because there is increased risk of infection (Knapik, Reynolds, Duplantis, & Jones, 1995).

**Burns**

*Recommendation:*

- Use water to cool burns: 1B
- Avoid ice or snow application to burns: 1C
- Protect the burned area with clean, nonadherent dressing: 1B
- Evacuate all but simple, uncomplicated, localized burns and any high risk burns: NG

Burn first aid includes recognition of superficial versus deep burns and areas at high risk for complications: the palms and soles, face, airway, and genitals. Cooling may reduce pain, swelling, and depth of injury. Burns should initially be treated with cool water (not ice or snow), followed by an antibiotic cream or burn gel (hydrocolloid) to keep the surface moist (Cuttle, Kempf, Liu, Kravchuk, & Kimble, 2008; Ofegisson, Mitchell, & Patrick, 1972).

Protect the burned area with clean, nonadherent dressing (Singer, Berrutti, Thode, & McClain, 1999). Evacuate all but simple, uncomplicated, localized burns. The decision to evacuate is often driven by lack of availability of appropriate dressing materials and/or inability to travel. Evacuation is recommended for high risk burns.

**Musculoskeletal Injuries**

*Recommendation:*

- Apply RICE (rest, ice, compression, and elevation) principles to musculoskeletal injuries: 2B
- Use bracing as needed for stable injuries: 1C
- Use in-line repositioning of unstable injuries if there is impairment of neurovascular function: NG
- Apply comfortable padded splints to unstable injuries: 1C
- If trained in the procedure, the WFA provider can diagnose and reduce anterior shoulder dislocations with passive traction: 1C
The WFA provider is taught to differentiate musculoskeletal injuries on the basis of stable versus unstable. Stable injuries are treated using rest, ice, compression, elevation (RICE), and a brace or tape as needed (Tsang, Hertel, & Denegar, 2003). Unstable injuries are treated with gentle traction into position for angulated long bones when necessary to restore neurovascular function or facilitate splinting and are stabilized with simple padded splints (Ellerton, Tomazin, Brugger, & Paal, 2009). The WFA provider should identify high risk problems associated with musculoskeletal injuries (e.g., pelvic or femur fracture, open fracture, impaired circulation, sensation, and movement).

Dislocation reduction (i.e., anterior shoulder, patella, digits) is considered an elective topic because of concerns about achieving competency with limited practice time. The skill set should include an accurate assessment for mechanism of injury and physical exam and the reduction procedures themselves (Hendey, Chally, & Stewart, 2006; Reid, Liu, & Ortega, 2013). The anterior shoulder reduction described in Johnson et al. (2013), hanging arm or Stimson technique, is passive and theoretically with less risk and within the competence of a WFA provider (Ditty, Chisholm, Davis, & Estelle-Schmidt, 2010). The patella requires straightening the knee and often repositioning the patella. Digits require traction and repositioning.

**Allergic Reactions and Anaphylaxis**

**Recommendation:**
Provide assistance to victim to self-administer epinephrine administration by auto-injector for anaphylaxis: 1B

Signs and symptoms of allergic reactions span the spectrum from local and mild reactions to anaphylaxis. Initiation of treatment includes cool compresses and over-the-counter topical corticosteroid creams for local reactions and over-the-counter oral antihistamines for mild systemic reactions. The administration of epinephrine for anaphylaxis via auto-injector is a life-saving procedure (Gaudio, Lemery, & Johnson, 2010). Reliable recognition of anaphylaxis may be challenging (Pumphrey, 2004). WFA providers are trained to help a victim self-administer epinephrine administration via a prescribed auto-injector (Guerlain, Hugine, & Wang, 2010). Serious systemic adverse effects are rare, and improper auto-injection resulting in digital injection is low risk.

**Heat-Related Illness**

**Recommendation:**
Treat heat exhaustion patients with oral fluids, shade, and rest: 1C
Maintain body fluid balance (euhydration) with oral fluid ingestion: 1B
Treat heat stroke patients emergently with rapid cold water immersion: 1A
If cold water immersion for heat stroke is unavailable, remove excess clothing, wet down patient, and use continuous whole-body fanning: 1C

The WFA provider should recognize predisposing environmental conditions, as well as the signs and symptoms of moderate to severe dehydration, heat exhaustion, and heat stroke. Heat exhaustion and dehydration should be treated with oral fluids to maintain euhydration and with removal from all sources of heat stress (Anley, Noakes, Collins, & Schwellnus, 2010). Heat stroke should be treated with the removal of excessive clothing layers and with aggressive and immediate whole-body cooling. Cold water immersion has been shown to be the most efficacious cooling strategy (Armstrong, Crago, Adams, Roberts, & Maresh, 1996; Hadad, Moran, & Epstein, 2004; Vicario, Okabajue, & Haltom, 1986). Practical considerations and available resources dictate that the WFA provider is familiar with cooling techniques such as wet
clothing and fanning. Any heat stroke victim and any heat exhaustion or dehydrated patients who cannot recover should be evacuated.

**Hypothermia**

*Recommendation:*

Treat mild hypothermia with protection from the elements and provide carbohydrate caloric intake to support shivering: 1B

Treat moderate and severe hypothermia with protection from the elements and with supplemental heat sources next to the torso: 1B

Generations of outdoor leaders have effectively treated mild hypothermia or cold stressed patients by moving the patient into a protected environment and then removing wet clothes and protecting the patient from cold, wind, and water with insulation and a windproof barrier along with food to help support heat production (i.e., shivering). When practical and available, active rewarming by the addition of supplemental heat sources to the patient is safe and beneficial, particularly when shivering ceases in the moderate to severe hypothermic patient (Allen, Salyer, Dubick, Holcomb, & Blackbourne, 2010; Henriksson, Lundgren, Kuklane, Holmér, & Bjornstig, 2009; Henriksson et al., 2015; Thomassen et al., 2011; Zafren et al., 2014).

The moderate to severe hypothermic patient should be managed with the same treatment principles as the mild hypothermic patient (dry windproof insulation) and the addition of gentle handling to prevent cardiovascular instability during evacuation. For these patients, prevention of further heat loss may be the only reasonably achievable goal in the field (Henriksson et al., 2012; Lundgren et al., 2009).

**Lightning**

*Recommendation:*

Use lightning prevention strategies to reduce risk: 1C

Treat injuries found and use prolonged BLS resuscitation procedures: 1C

The WFA provider focuses on prevention by recognizing high risk conditions and initiating effective risk management practices (Holle, Lopez, & Zimmermann, 1999). Preventive strategies include being vigilant about weather patterns and avoiding and escaping high risk areas as storms approach (e.g., tall objects, long conductive objects, open areas, mountain ridges, and openings such as cave openings). Although logical, the lightning position and mat protection is unproven. Lightning safety procedures are derived from physics and opinions (Duclos & Sanderson, 1990; Zimmermann, Cooper, & Holle, 2002).

Case reports suggest that treatment with standard first aid procedures makes the most sense. Of particular note is the potential for salvage from breathing cessation or cardiac arrest caused by a lightning strike by rescue breathing and CPR and the association of posttraumatic stress disorder with any lightning-related injury (Cooper, 1980; Pincus, Lathrop, Briones, Andrews, & Aurelius, 2015).

**Submersion**

*Recommendation:*

Use BLS techniques for airway management and positive pressure ventilation: 1B

As with lightning, the WFA provider identifies high risk conditions and preventive strategies with an emphasis on personal safety when planning rescue. First aid in the field consists of managing the conditions found with an emphasis on respiratory assistance, potential spine injury, and hypothermia (Venema, Groothoff, & Bierens, 2010). There is no need to clear as-
pirated water from the airway. Only a modest amount of water is aspirated by the majority of drowning victims, and this is rapidly absorbed and does not act as an airway obstruction (Oehmichen, Hennig, & Meissner, 2008). As noted in the section on respiratory problems, the AHA teaches that positive pressure ventilations are important in drowning victims. WFA BLS providers should be trained to provide ventilations as well as compressions for drowning victims (Szpilman, Joost, Bierens, Handley, & Orlowski, 2012; Vanden Hoek et al., 2010).

**Common Medical Problems**

**Recommendation:**

Use a red-flag-signs-and-symptoms approach to assessment and evacuation: NG

Medical topics are relevant to WFA providers. These could including exacerbations of pre-existing problems as well as new predictable and unpredictable problems arising as a result of the outdoor activity (e.g., abdominal pain, vomiting and diarrhea, cough and upper respiratory infection, urinary tract infection, ear, nose, throat, and fever). The challenge is how to approach this vast topic area in a manner that is practical for a layperson with limited training and experience. The WFA provider is taught to use conservative “red flags” (e.g., persistent abdominal pain, blood in urine, spiking fever) to trigger evacuation. Teaching preventive strategies (e.g., hand washing, kitchen sanitation, water disinfection) is an important primary goal (Boulware, 2004; McLaughlin, Gessner, & Bailey, 2005). Rather than focusing specifically on diagnoses, the WFA provider benefits more from learning to identify the red flag signs and symptoms of serious and life-threatening problems. Treatment options should be limited to those that represent reasonable and prudent measures for a WFA graduate, including appropriate and timely evacuations or calls for help.

**Frostbite and Non-Freezing Cold Injury**

**Recommendation:**

- Warm unfrozen tissue with skin-to-skin contact: 1C
- Thaw frozen tissue by immersion in a warm water bath: 1B
- Protect thawed tissue from refreezing: 1B

The WFA provider learns to recognize predisposing conditions, signs, and symptoms of local cold injury, both freezing and nonfreezing, to evacuate promptly and, if warranted, to initiate field treatment with warm water baths or skin-to-skin warming while preventing refreeze. The WFA provider should take measures to prevent cold injury by avoiding exposure of the skin to the potential injurious combination of wind, moisture, and severe cold. Appropriate treatment of cold unfrozen skin includes rapid warming with passive warmth, which may be achieved by moving into a warm location or applying warm skin to the cold tissue. Frozen tissue is ideally thawed as soon as possible by immersion in a warm water bath 37–39 °C (99–102°F). In the field, skin-to-skin warming may be most practical. The use of radiant heat or massage should be avoided because any resulting thermal or mechanical damage may worsen the injury. Once thawed, the injury needs protected from refreeze. WFA providers should evacuate the patient if severe frostbite occurs, if blisters form, if patient is unable to use the injury, or if they cannot protect from refreeze (McIntosh et al., 2014; Mills, 1993).

**Altitude Illness**

**Recommendation:**

- Use slow ascent to reduce risk of altitude illness: 1B
- Stop ascent if symptomatic, descend if no improvement, descend immediately if concern for serious altitude illness: 1A
Prevention of altitude illness begins with cautious ascent when traveling above 3,000 m (10,000 ft) with an increase of no more than 500 m (1,650 ft) per night in sleeping altitude (Beidleman et al., 2009; Bloch et al., 2009). Recommendations on prophylactic and prescription medications are not part of the WFA course. First aid treatment of altitude illness begins with recognizing the signs and symptoms of acute mountain sickness (AMS) and serious altitude illness—high-altitude cerebral edema (HACE) and high-altitude pulmonary edema (HAPE). WFA treatment recommendations are to stop ascent if symptomatic, descend if no improvement in mild symptoms, and descend immediately in the presence of more severe symptoms of AMS, shortness of breath at rest (HAPE), and ataxia and/or mental status changes (HACE; Bärtsch & Swenson, 2013).

**Poisoning**

Recommendation:

Use supportive care and evacuation for ingested poisons: 1C

Do not induce vomiting for ingested poisons: 1C

See to scene safety and removal from exposure for inhaled poisons: 1C

The principles for the treatment of poisons at the WFA level are to identify the substance, to treat symptoms, and to maintain critical body functions. Administering an antidote is an inappropriate skill for a WFA provider. Removing a person from a toxic exposure is logical. Although “remove and dilute” is a logical approach, the induction of vomiting (i.e., use of syrup of ipecac) is likely both useless and potentially harmful (Pond, Lewis-Driver, Williams, Green, & Stevenson, 1995).

**Snakebite**

Recommendation:

Immobilize the snake-bitten limb while avoiding compression, constriction, and any unproven or discredited treatments (e.g., suction, tourniquets, electricity, ice): 1C

Snakebites caused by indigenous species are best treated in the field by immobilizing the affected part. Although walking is discouraged in an effort to slow systemic venom distribution, it may be necessary to evacuate the patient expeditiously to appropriate medical care. At the WFA level, any snakebite is evacuated, but threshold signs or symptoms are not used for an evacuation decision. Unproven and/or discredited techniques (e.g., suction, constriction bands, electricity, ice) are discouraged.

The use of a compression wrap is recommended in international consensus first aid guidelines for slowing lymph flow of neurotoxin venom. However, the evidence is primarily from animal model studies (German, Hack, Brewer, & Meggs, 2005; Howarth, Southee, & Whyte, 1994), and no clinical studies confirm these findings. It is controversial to use compression wraps to slow lymph venom flow from North American species, including for North American elapids (i.e., *M. fulvius*) and pit vipers, because they can potentially concentrate the venom in tissues, enhancing the localized cytotoxic effects. Furthermore, numerous studies report first aid providers have difficulty correctly applying the compression wrap technique to restrict lymph flow (Canale, Isbister, & Currie, 2009; Norris, Ngo, Nolan, & Hooker, 2005; Simpson, Tanwar, Andrade, Kochar, & Norris, 2008). Therefore, this technique should not be taught to WFA students in the United States.

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**Arthropods (i.e., Insects, Arachnids [e.g., Scorpions, Spiders])**

**Recommendation:**

Use effective prevention strategies to minimize arthropod envenomation: NG

Evacuate early if local or systemic signs or symptoms present: 1C

The focus for WFA providers is prevention (e.g., clothing, netting, repellents, insecticides), symptomatic treatment, and early evacuation if rash, fever, or headache appear secondary to a bite or signs and symptoms of envenomation (Fradin & Day, 2002; Gupta et al., 1987).

**Marine Injury**

**Recommendation:**

Immerse nematocyst stings by unknown species in hot water: 1B

Rinse known box jellyfish (Cubozoa) stings in vinegar; otherwise, use vinegar cautiously: 1B

Immerse marine spine envenomations in hot water: 1B

Avoid using baking soda, alcohol, and papain for marine envenomations: 2C

In the context of nematocyst injury (e.g., jellyfish, corals, anemones) in North America and Hawaii, the WFA provider is taught to use a saltwater rinse to remove loose nematocysts and then scrape off remaining nematocysts. Treating nematocyst (e.g., jellyfish, corals, anemones) injuries by immersion in hot water is supported by the literature (Bowra, Gillet, & Morgan, 2002; Loten et al., 2006). Vinegar is useful for box jellyfish (class Cubozoa), but may worsen other envenomations (Nomura et al., 2002). Additionally, no other substances studied (e.g., baking soda, papain, urine) have had consistently proven efficacy (Thomas, Scott, Gaanis, & Goto, 2001).

In the context of a marine spine injury, the WFA provider is taught to soak the injury in hot water (45 °C) for 30–90 min or until pain relief, followed by standard wound care. The literature supports the use of immersing an extremity impaled by a marine spine in hot water (Trestrail & Al-Mahasneh, 1989).

**Conclusion**

WFA courses are popular with outdoor recreationists and have become an expected minimum training for many trip leaders. This paper reviewed the medical evidence supporting 54 practices commonly taught in the WFA course with the intent of highlighting, for the practitioner and the educator, the strength of evidence upon which these practices are based and future directions for potential research.

The paucity of high quality studies in first aid in general, let alone in the wilderness environment, is evident in the grading of the evidence (see Table 3). Of the 54 practices graded for level of evidence only, three (5%) were graded at 1A, the strongest supporting recommendation that requires high quality supporting evidence, random controlled trials without significant limitations, or strong observational studies. The bulk of the recommendations derive from random controlled trials or observational and case studies, all with significant limitations and moderate to poor supporting evidence, resulting in 1B or 1C grades, for which the panelists’ recommendations reflect that benefits from these techniques outweigh the risks of harm to the patient.

Seven (13%) of the recommendations did not receive a grade, because there were no relevant studies upon which to base a recommendation and the practice is therefore opinion based. One example is the guideline of using red flag signs and symptoms to make an evacuation decision in the context of abdominal pain. The red flag concept makes intuitive sense, but there is only unpublished provider experience to suggest that a lay first aid provider can use these guidelines effectively.
This lack of high quality evidence is often the case with first aid procedures. Direct study of a layperson applying a first aid procedure is lacking in the medical literature outside of BLS (Cummins, Schubach, Litwin, & Hearne, 1989). Despite the limitations of the available evidence, practice recommendations must be made because first responders want to help and they expect guidance from the medical profession. This guidance in the form of best available evidence often uses first aid practices based on urban or advanced provider studies that are then generalized to the WFA arena or in some cases relegated to expert opinion based on group experience.

Table 3
Recommendations Grouped by Rating

<table>
<thead>
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<tbody>
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Table 3 (cont.)

1C: Strong recommendation, low quality or very low quality evidence. Benefits clearly outweigh risks and burdens, or vice versa. Observational studies or case series.

- Treat heat exhaustion patients with oral fluids, shade, and rest
- Provide oral fluids if a patient can protect his or her airway
- Assist patients with their prescribed pulmonary medications
- Use BLS techniques for airway management and positive pressure ventilation (mouth-to-mask or mouth-to-mouth)
- Use BLS techniques for airway management and positive pressure ventilation in a patient with altered mental status
- Use sublingual glucose in patients with altered mental status
- Perform simple lifts, lift and slide, and rolls to facilitate patient examination and protection
- Stabilize patients with suspected spine injury and initiate evacuation
- Use of a selective spine immobilization protocol is inappropriate at the WFA level
- Avoid ice or snow application to burns
- Apply comfortable padded splints to unstable injuries
- Use bracing as needed for stable injuries
- Use in-line repositioning of unstable injuries if there is impairment of neurovascular function
- If trained in the procedure, the WFA provider can diagnose and reduce anterior shoulder dislocations with passive traction
- Warm unfrozen tissue with skin-to-skin contact
- Use supportive care and evacuation for ingested poisons
- Do not induce vomiting for ingested poisons
- See to scene safety and removal from exposure for inhaled poisons
- Immobilize the snake-bitten limb while avoiding compression, constriction, and any unproven or discredited treatments (e.g., suction, tourniquets, electricity, ice)
- Evacuate early if local or systemic signs or symptoms present
- If cold water immersion for heat stroke is unavailable, remove excess clothing, wet down patient, and use continuous whole-body fanning
- Use lightning prevention strategies to reduce risk
- Treat injuries found and use prolonged BLS resuscitation procedures

2B: Weak recommendation, moderate quality evidence. Benefits closely balanced with risks and burdens. RCTs with important limitations, or exceptionally strong evidence from observational studies.

- Apply RICE principles to musculoskeletal injuries

2C: Weak recommendation, low quality or very low quality evidence. Uncertainty in the estimates of benefits, risks, and burdens; benefits, risks, and burdens may be closely balanced. Observational studies or case series.

- Avoid using baking soda, alcohol, and papain for marine envenomations
- NG: No relevant studies. Recommendation based on risk versus benefit perceptions derived from patient-care experience.
- Use the basic patient assessment to identify obvious medical problems
- Stabilize injuries to prevent further damage and blood loss
- WFA providers should not release a tourniquet in the field
- Stabilize impaled objects
- Use a red-flag-signs-and-symptoms approach to assessment and evacuation
- Use effective prevention strategies to minimize arthropod envenomation
- Evacuate all but simple, uncomplicated, localized burns and any high risk burn
Recommendations

The WFA curriculum, originally based on opinion on what was relevant and practical for the lay provider, has evolved over time based on evidence as well as teaching and field experience. Practices such as “cut and suck” for snakebites have been abandoned based on the evidence that this technique has no benefit and much risk of harm. Practices such as descent for altitude illness and tourniquets for life-threatening bleeding are recommended based on experience and evidence of their efficacy.

The future evolution of the WFA course would be aided by a better understanding of what first aid practices are safe and effective in the hands of a lay provider and how best to teach these skills. Many areas need support in evidence of efficacy of a skill as well as in the teaching of that skill. The authors suggest direction for future study in areas that are currently the focus of a changing paradigm in the EMS and first aid community, where the risk of harm of a traditional intervention may outweigh the benefits, such as spine injury management, or where a simple procedure may provide substantial benefits, such as layperson use of medications for anaphylaxis and asthma.

While not a focus of this review, only Schumann et al. (2012) examined skill and knowledge retention from a WFA course. There is a growing body of literature on how well the lay public learns and retains first aid skills and on the ability of laypeople to perform first aid techniques (Berden et al., 1994). Both Schumann et al. and Berden et al. (1994) found poor skill retention and suggest the need for reduced complexity in training programs while increasing the frequency of recertification. This is an important area for research attention with implications on the educational structure of the WFA course and retraining schedules for outdoor program leaders and the public.

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http://www.ejorel.com/


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http://www.ejorel.com/
Connectedness to Nature and Life Satisfaction Among College Outdoor Program Staff

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Francesca Shaffer
Appalachian State University

Ecologists have long theorized about humans’ psychological relationship to the natural world. The importance of feeling connected to nature is a theme in the writing of ecologists (Leopold, 1949; Orr, 1994; Roszak, 1995). They have argued that this connection to nature is a key component of fostering ecological behavior. In a meta-analysis of the relationship between nature connectedness and happiness, Capaldi, Dopko, and Zelenski (2014) found that people who are more connected to nature tend to experience greater life satisfaction compared to those who are less connected to nature.

Nonacademic college outdoor programs (OPs) have flourished in recent decades, with hundreds of OPs throughout the United States. OPs provide structured training and leadership opportunities for students interested in facilitating outdoor recreation experiences for others. Historically the emphasis of college OPs has been on facilitating adventure-based opportunities, although recent calls from organizational bodies such as the Association of Outdoor Recreation and Education (AORE) and Wilderness Education Association have emphasized “promoting ecologically sound stewardship of the natural environment” (http://www.aore.org/) and “education in the preservation of this country’s wild land areas” (http://www.weainfo.org/about).

Given the increasing attention toward stewardship education in OPs, and the ever present and often “doom and gloom” reality of deteriorating environmental conditions across the globe, it seems important to examine how connectedness to nature (CN; Mayer & Frantz, 2004) is related to life satisfaction, particularly since OPs have the ability to influence not only their staff CN via training and field initiatives but ultimately the CN of people who participate in OP adventures. Unlike other environmental scales that measure more cognitive beliefs (e.g., New Environmental Paradigm [see Dunlap, Van Liere, Mertig, & Jones, 2000]), the CN measure is “designed to tap an individual’s affective, experiential connection to nature” (Mayer & Frantz, 2004, p. 504). As such, the primary purpose of this paper was to examine OP staff CN and how it relates to life satisfaction, with the working theory that OP staff high in CN will express greater life satisfaction than OP staff lower in CN.

Method

A 17-question electronic survey was developed and administered to members of the AORE via an electronic mailing list invitation in Fall 2013 and Winter 2014. The survey included questions linked to CN and life satisfaction. Additionally, the survey asked whether OPs employ environmental education (EE) in their staff training efforts. Note: Capaldi et al. (2014) found that
individuals higher in CN are more likely to engage in a variety of pro-environmental behaviors. The CN measure consisted of 13 items using a 7-point level of agreement Likert scale (Mayer & Frantz, 2004), a five-item satisfaction with life (SWL) scale also using a 7-point level of agreement Likert scale (Pavot & Diener, 2008), and the EE question using a yes/no format.

Results

Nearly 300 \((n = 285)\) respondents completed the survey. All 13 CN measure items were reliable with an overall scale Cronbach value of .892. Note: Additional analysis found that none of the items positively affected the overall Cronbach value if deleted. As such, all 13 items were kept. Overall mean scores for CN items ranged from 4.32 to 6.23, for which 1 = strongly disagree and 7 = strongly agree, with an overall mean of 72.2 \((SD = 11.4)\) out of a possible 91 (Table 1). Eight of the 13 items had mean scores between 5.0 (slightly agree) and 6.0 (agree) with three ≥ 6.0. All SWL measure items were reliable with an overall scale Cronbach value of .852. Mean scores for SWL items ranged from 4.89 to 5.61, for which 1 = strongly disagree and 7 = strongly agree, with an overall mean of 26.6 \((SD = 5.1)\) out of possible score of 35.

Table 1
Respondent Perceptions of Connectedness to Nature

<table>
<thead>
<tr>
<th>Connectedness to nature items</th>
<th>Disagree</th>
<th>Neither disagree or agree</th>
<th>Agree</th>
<th>Item M</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel a sense of oneness with the natural world around me.</td>
<td>3.5%</td>
<td>5.9%</td>
<td>90.5%</td>
<td>5.84</td>
</tr>
<tr>
<td>I feel that the natural world is a community to which I belong.</td>
<td>1.4%</td>
<td>4.2%</td>
<td>94.0%</td>
<td>6.17</td>
</tr>
<tr>
<td>I presently recognize and appreciate the intelligence of other living organisms.</td>
<td>3.2%</td>
<td>2.8%</td>
<td>93.3%</td>
<td>6.15</td>
</tr>
<tr>
<td>I don't feel connected to nature.</td>
<td>91.2%</td>
<td>2.8%</td>
<td>4.9%</td>
<td>1.79</td>
</tr>
<tr>
<td>I imagine myself as a part of the larger cyclical process of living.</td>
<td>4.6%</td>
<td>10.9%</td>
<td>84.2%</td>
<td>5.81</td>
</tr>
<tr>
<td>I feel a kinship with animals and plants.</td>
<td>9.1%</td>
<td>13.7%</td>
<td>76.8%</td>
<td>5.41</td>
</tr>
<tr>
<td>I feel as though I belong to the earth just as much as it belongs to me.</td>
<td>9.1%</td>
<td>12.3%</td>
<td>78.6%</td>
<td>5.54</td>
</tr>
<tr>
<td>I feel deeply aware of how my actions affect the natural world.</td>
<td>2.8%</td>
<td>3.2%</td>
<td>93.3%</td>
<td>5.91</td>
</tr>
<tr>
<td>I feel like I am part of the web of life.</td>
<td>4.6%</td>
<td>28.8%</td>
<td>85.9%</td>
<td>5.75</td>
</tr>
<tr>
<td>I feel that all inhabitants of earth, human and nonhuman, share a common life force.</td>
<td>12.9%</td>
<td>17.5%</td>
<td>68.4%</td>
<td>5.25</td>
</tr>
<tr>
<td>I feel embedded within the broader natural world, like a tree in a forest.</td>
<td>14.9%</td>
<td>18.9%</td>
<td>64.9%</td>
<td>5.03</td>
</tr>
<tr>
<td>When I think of humans' place on earth, I consider them to be the most valuable species in nature.</td>
<td>57.9%</td>
<td>18.6%</td>
<td>22.8%</td>
<td>3.27</td>
</tr>
<tr>
<td>I feel like I am only a part of the natural world around me, and that I am no more important than the grass on the ground or the birds in the trees.</td>
<td>35.1%</td>
<td>18.6%</td>
<td>46.3%</td>
<td>4.32</td>
</tr>
</tbody>
</table>

Note. The 7-point Likert scale used to evaluate the items was compressed to three for visual purposes. Strongly disagree, disagree, and somewhat disagree were collapsed into one category, with strongly agree, agree, and somewhat agree also collapsed into one category.

http://www.ejorel.com/
To closer examine the relationship between CN and life satisfaction, the researchers determined a CN composite score and SWL composite score for each respondent. A bivariate correlation test found a modest positive relationship between CN and SWL of .242 (p < .001). Three similar groups based on CN composite scores were then created to assess whether low CN revealed lower SWL composite scores on average versus those in groups with higher CN scores. An ANOVA test revealed a main effect difference (F = 3.895, p = .022) with post hoc analysis showing that those in the lowest CN group had a significantly lower mean SWL score (M = 25.82) than those in the highest CN group (M = 27.95), but similar to that of the middle CN group (M = 26.33).

Concerning EE training just over one in five respondents (22.0%) said their OPs provided EE as part of staff training. Thinking that respondents who receive EE training in the workplace may express greater CN and by default SWL scores, the researchers performed independent samples t tests. Nonsignificant results were found, but those receiving EE training had a higher CN score (74.4) versus those without (71.6). EE training revealed a difference concerning SWL with those receiving it having a statistically significant (p = .021) greater mean score (M = 28.0) versus those without (M = 26.3).

Conclusions and Implications

Respondents collectively seem connected to nature (CN) with composite mean scores reflecting an agreement level between slightly agree and agree. SWL composite mean scores are more closely associated with slightly agree. As hypothesized, those with higher CN composite scores expressed greater SWL scores than those with lower CN scores, although the mean difference was modest. The provision of EE training, while not statistically distinguishing those getting it versus those not, as it related to CN, revealed higher mean CN scores for those receiving it. On the other hand, those receiving EE expressed greater SWL scores than those not receiving it.

It is plausible the limited findings could be explained by the range of CN individual item overall mean scores, thereby obscuring a potentially stronger positive relationship to SWL. Further research should examine the factor structure of the CN scale, as previous studies have found its single factor explaining variance ranging from 28% to only 38% (Mayer & Frantz, 2004).

While other factors (e.g., student vs. professional staff) may offer additional insight into the findings, OP administrators should consider looking at how CN may have implications for other OP outcomes (e.g., life satisfaction), particularly if they can be facilitated via the delivery of EE to staff and ultimately to participants in the field. Developing EE training may have significant implications for CN, as a more-connected-to-nature staff may have a greater positive influence on the CN and resulting SWL of their respective participants.

References


Outdoor Recreation and Adventure Tourism: Unique but Allied Industries

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Seoul National University

T. Grant Lewis
Weber State University

Outdoor recreation and adventure tourism are overlapping industries serving similar clientele. While descriptive marketing research exists for both industries (George Washington University School of Business [GW], Adventure Travel Trade Association [ATTA], & Xola Consulting [XC], 2010; Outdoor Foundation [OF], 2014), there is no clear distinction between those who recreate routinely in their home region and those who travel a significant distance for adventure activities. As such, national reports on outdoor recreation participation (cf. OF, 2014) are useful as economic indicators, but not very instructive for industry policy and practice. The purpose of this study was to contrast descriptive statistics and participation patterns of adventure tourists with active local residents attending an annual outdoor event.

Adventure tourism has been defined as “any domestic or international trip that includes at least two of the following three aspects: physical activity, interaction with nature and cultural learning or exchange” (GW, ATTA, & XC, 2010, p. 2). Though a common definition of “tourist” includes having traveled at least 50 miles from home (cf. World Tourism Organization), for the purpose of this study tourists were defined as those who live outside of the host county (those adding atypical sales and tax impacts to the local economy). Adventure tourists have been described as younger, wealthier, and higher educated than those in other market niches (GW, ATTA, & XC, 2010). National studies on outdoor recreation indicate that adventure activities generally attract a similar clientele (OF, 2014). Without distinguishing between local outings and those requiring significant travel, OF (2014) estimates that over 49% of Americans participate in outdoor activities, generating an economic impact of $646 billion and directly supporting 61 million jobs in the United States. Outdoor recreation participants are often middle-aged, are predominantly Caucasian (70%), and have higher education and income levels. Given the similarity of activities in the two industries, a significant overlap of clientele in outdoor recreation and adventure tourism could be expected. Reliable data comparing the two populations, however, can be difficult to attain because of a lack of empirical distinction.
Chattanooga, Tennessee, is a popular destination among the emergent adventure tourism industry. One of the region’s signature events is the weeks-long RiverRocks outdoor festival held annually in Chattanooga. During the month of October, residents and tourists alike join in both casual and competitive activities including kayak/paddleboarding races, 10–50K trail runs, bouldering competitions, the Reel Rocks film tour, and other family activities. This venue provided the opportunity to gather information from active outdoor residents and tourists.

**Method**

This study was conducted at the RiverRocks festival held in Chattanooga during the month of October 2013. Two surveys were utilized, one for visitors and one for Hamilton County residents. The surveys included questions related to demographics, outdoor participation, and spending habits. Volunteers utilized a randomized sampling method to collect responses from people either participating in or spectating at five high profile RiverRocks events. These events were chosen because they are well known and accessible to survey research. A total of 401 surveys were collected, 202 from visitors to the area and 199 from Hamilton County residents (67% response rate). Data were analyzed in SPSS using ANOVA with post hoc comparisons.

**Results**

Findings indicate substantial differences between residents and adventure tourists (Table 1). Tourists were older, wealthier, and more educated and had more children than resident participants. Tourists also tended to prefer local shops and restaurants (cf. “Shopping Habits”) more than residents did, indicating that their dollars spent are likely to stay in the local economy. Residents had a broader repertoire of outdoor activities than tourists did, likely because of the local geography.

| Table 1 | Descriptive Differences Between Residents and Tourists |
|-----------------|-----------------|-----------------|-----------------|
|                | Residents |     | Tourists |     |     |     |
|                 | M        | n   | M        | n   |     | F   |
| % Female        | 0.52     | 194 | 0.48     | 186 |     | 0.377 |
| Age             | 38.85    | 190 | 41.92    | 185 |     | 4.705* |
| Children        | 0.60     | 190 | 1.22     | 180 |     | 25.389** |
| Education       | 3.74     | 185 | 4.03     | 188 |     | 7.897** |
| Income Class    | 2.29     | 156 | 2.74     | 144 |     | 21.254** |
| % Non-White     | 6.40     | 199 | 11.49    | 202 |     | 2.587 |
| Total Activities| 6.15     | 199 | 4.38     | 202 |     | 22.317** |
| Shopping Habits | 5.04     | 194 | 3.98     | 181 |     | 23.488** |

A deeper look into economic comparisons showed no difference in median income of residents and visitors, but participation rates differed by income level between groups (Figure 1). In the case of visitors, the lower-middle income class reported participating in the most total activities, followed by the upper-middle class, with the working poor participating in the least number of activities. Residents reported almost a mirror image of visitors, with the poor working class participating in more activities than any other class. Tourists who traveled the farthest spent more money during their visit and were more likely to shop locally as opposed to at a large chain.
To better distinguish between regional tourists and those who traveled a longer distance for the festival, the researchers divided the visitors into three groups: in-state visitors, regional visitors (from adjacent states), and distant visitors (from nonadjacent states). Distant visitors were, on average, 7.5 years younger ($p < .01$), stayed in the area 1.3 nights longer ($p < .001$), and spent an average of $223 more than regional visitors ($p < .05$). Distant tourists also tended to shop locally, though that variable only approached moderate significance ($F = 0.2982, p = .07$).

**Conclusion**

The purpose of this study was to distinguish between local outdoor recreation participants and adventure tourists. The findings demonstrate that there are differences of which both industries should be aware. For example, while outdoor recreation is often portrayed as an upper-class activity, that only held true for tourists in this study. Poorer local residents were involved in more outdoor activities than were residents in higher income classes. This and other atypical findings draw attention to the need for regional data to supplement national reports. Local demographics, geographical resources, and cultural norms may play a large role in outdoor recreation participation. As local practitioners strive to make policy decisions to encourage outdoor active recreation, they should account for the unique physical and social facilitators and constraints to participation. As tourism managers promote their home region to adventure tourists, they should also consider unique characteristics of visitors to their region to enhance positive impacts (e.g., spending in local shops) and minimize unnecessary negative impacts (Andereck, Valentine, Knopf, & Vogt, 2005).

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References


Trust in College Transitions

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Trust is an important variable for transitioning college students, who report a great amount of fear and uncertainty when beginning college (Bell & Williams, 2006). College students transitioning effectively need to trust both their peers and institutional representatives. Outdoor orientation programs are reported to build upon trusting variables such as social support among peers (Bell & Holmes, 2011) and trust of outdoor program leaders (Starbuck, 2012), yet few studies have measured trust among college students participating in an outdoor orientation program. This study examined students’ reported levels of trust at 16 college outdoor orientation programs to provide a better understanding of the importance of trust in college transition.

Literature Review

Mayer, Davis, and Schoorman (1995) define trust as the willingness of an actor to be vulnerable based on positive expectations about the intentions or actions of another under conditions of uncertainty. This definition is one of many similar definitions in the psychological literature. In this study, a data-supported definition of trust was used, separating trust into two distinct factors:

- **reliable trust**—having faith people will do what they say they will do (actions) and
- **disclosure trust**—sharing personal information, expecting it will be handled carefully (keeping secrets).

Gillespie (2003) defined these types of trust as independent factors. In this study, the researcher differentiated trust of peer group from trust of leaders by adapting the Behavioral Trust Inventory (Gillespie, 2003).

The questions in this study were as follows: Do first year students report high levels of trust in outdoor orientation programs? Do any students report low levels of trust? Do students differ in how much they trust their leaders compared how much they trust their peers?

Method

Program directors from 25 colleges were sent information to participate in The Outdoor Orientation Benchmarking Survey (TOOBS). The survey link was sent on October 11, 2014, after most college students had been at college for more than 6 weeks. Six weeks was chosen as a time near the middle of the semester when students are most likely to have experienced the realities of college papers and tests, and mitigating any issues potentially hidden by the “forming” stage of group development (Tuckman & Jensen, 1977). The Behavioral Trust Inventory was used as the measurement tool. It was developed “... for the measurement of trust between leaders,
team members, and peers in a range of groups of and organizations, and items were specifically chosen for their generalizability across a range of contexts” (Gillespie, 2003). With permission, the BTI was adapted by replacing the word work with college to represent the population more accurately.

**Results**

Students from 16 colleges participated in the survey ($N = 809$). Students reported high levels of reliable leader trust ($M = 5.97, SD = 1$), see Table 1, compared to Gillespie’s (2003) previous work in which she cited high levels of reliable trust ($M = 5.93, SD = .96$). Students also reported high levels of disclosure trust ($M = 5.64, SD = 1.29$) compared to Gillespie’s reported high trust results ($M = 5.40, SD = 1.27$).

To investigate low trust scores, defined as a score of 1 on the 7-point scale, the researcher examined the numbers of students reporting the lowest trust score (1). The results ranged from $n = 2$ to $n = 20$ depending on the question. Students reported being most unwilling to discuss with leaders or peers problems or issues that could potentially embarrass them ($n = 20$, 3% of sample). Students reported that they were most willing to trust leaders’ technical skills and trusted their peers to back them up in difficult situations.

The differences in trust between peers and leaders demonstrated higher levels of reported trust for leaders across all variables.

![Table 1](http://www.ejorel.com/)

<table>
<thead>
<tr>
<th>Variable</th>
<th>$n$</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Trust</td>
<td>671</td>
<td>5.66</td>
<td>1.05</td>
</tr>
<tr>
<td>Overall Trust of Peers</td>
<td>678</td>
<td>5.50</td>
<td>1.21</td>
</tr>
<tr>
<td>Overall Trust of Leaders</td>
<td>702</td>
<td>5.80</td>
<td>1.05</td>
</tr>
<tr>
<td>Reliable Trust Between Peers</td>
<td>678</td>
<td>5.47</td>
<td>1.21</td>
</tr>
<tr>
<td>Reliable Trust of Leaders</td>
<td>705</td>
<td>5.97</td>
<td>1.00</td>
</tr>
<tr>
<td>Disclosure Trust Between Peers</td>
<td>687</td>
<td>5.55</td>
<td>1.36</td>
</tr>
<tr>
<td>Disclosure Trust of Leaders</td>
<td>706</td>
<td>5.64</td>
<td>1.29</td>
</tr>
</tbody>
</table>

**Discussion**

The data show that first year students report high levels of trust after participation in outdoor orientation programs. The results among outdoor orientation students are higher than any other published results in Behavioral Trust Inventory studies. The participants reported higher levels of trust among their leaders. This may partly be due to a regression to the mean, because trust of the group is averaged over more people. A small percentage (3% or less) of students reported an unwillingness to trust compared to an average of 40% of students reporting they were completely willing to trust their peers/leaders.

Given the number of “trust” activities and programming specific to building trust in outdoor orientation programs, these results verify high levels of both reliable and disclosure trust in participants after an outdoor orientation program.
References


Outdoor Education Academic Programs in the United States

Brent J. Bell
Jayson Seaman
Nate Trauntvein
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The growth of outdoor adventure programs developed, in part, from the Outward Bound movement in the 1970s (MacArthur, 1979; Outward Bound, 1968), which created a demand for specialized collegiate training. Since the inaugural conference on outdoor pursuits in higher education at Appalachian State University in 1974 (Smathers, 1974), approximately 100 academic programs granting baccalaureate degrees in outdoor recreation, outdoor experiential education, and related areas have emerged in the United States. This study reports on academic degree-granting outdoor programs in the United States more than 40 years after their development, addressing the questions, what types of institutions offer degrees in outdoor education? What labels are used for programs? What is their concentration in different geographic regions of the United States? What is the cost of programs? Are enrollments increasing or decreasing? At what rate do first-year students enter into these programs, and at what rate do they transfer from other programs or majors within the institution?

Method

An initial list of 81 academic outdoor programs was created using www.outdoored.com, Internet search engines, and personal knowledge. An online survey was sent via Qualtrics to these programs and to contacts provided by the Association for Experiential Education and the Association for Outdoor Recreation and Education. In total, 96 institutions with academic outdoor programs were invited to complete the survey. Publicly available data, such as geographic location and Carnegie type (public/private), were collected from website searches. Data were cleaned and analyzed using the Statistical Package for the Social Sciences (SPSS).

Results

A total of 100 outdoor programs participated in the survey. Programs without an undergraduate degree ($n = 16$) were excluded, and programs with multiple responses per institution were combined by averaging responses. The result was a dataset of 62 programs in the United States, representing 65% of the originally identified program population.
Types of Institutions Offering Outdoor Academic Programs (and Costs)

To compare costs, “sticker price” was the basis of comparison, which is the overall total cost including tuition, room and board, and fees. Importantly, “net” price typically varies by family income level as a percentage of this figure due to financial aid, with private colleges providing more aid than public institutions. Typically private school attendees pay 58% of the sticker price, whereas public school attendees pay 75%. Sticker price is known to impact college selection (Bui, 2015; Piccoli, 2014). Table 1 shows results of institutional categories in the sample and mean (and standard deviation) of the sticker price, overall $M(SD) = 26,839 ($10,751; Seaman, Bell, & Trauntvein, 2017).

Table 1
Characteristics of Participating Institutions and Sticker Price by Category

<table>
<thead>
<tr>
<th>Carnegie type</th>
<th>Sticker price</th>
<th>Carnegie size classification</th>
<th>Sticker price</th>
<th>Geographic regions</th>
<th>Sticker price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>42 (68%) $20,297 (4,313)</td>
<td>Very Small (&lt; 1,000) 10 (16%) $38,300 (4,620)</td>
<td>West 17 (27%) $23,642 (9,459)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>19 (31%) $39,578 ($7,530)</td>
<td>Small (1,000–2,999) 13 (21%) $33,200 (12,848)</td>
<td>Midwest 12 (19%) $21,666 (6,315)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medium (3,000–9,999) 18 (29%) $20,437 (6,880)</td>
<td>Northeast 17 (27%) $33,375 (11,272)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Large (&gt; 10,000) 20 (32%) $23,050 (8,300)</td>
<td>South 14 (23%) $28,076 (11,146)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Program Enrollment

Respondents were asked to indicate whether enrollments over the past 5 years were increasing, decreasing, or staying the same, and whether they felt their programs were currently overenrolled, underenrolled, or at the right level. Overall, 40% of programs reported enrollments increasing, 28% reported a decrease, and 27% reported staying the same (5% don’t know/NA). In addition, 3% reported being overenrolled, 54% report feeling underenrolled, and 42% at the right level. Table 2 breaks enrollments down by institutional category.

Table 2
Enrollment Trends by Institutional Category/Attribute (remainders = don’t know/NA)

<table>
<thead>
<tr>
<th>Carnegie type</th>
<th>Enrollment</th>
<th>Carnegie size</th>
<th>Enrollment</th>
<th>Geographic region</th>
<th>Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>45% 20% 30%</td>
<td>Very Small 30%</td>
<td>30% 40%</td>
<td>West 27% 27% 40%</td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>32% 42% 21%</td>
<td>Small 31%</td>
<td>54% 15%</td>
<td>Midwest 42% 25% 33%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medium 61%</td>
<td>11% 22%</td>
<td>Northeast 47% 29% 12%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Large 33%</td>
<td>22% 33%</td>
<td>South 50% 29% 21%</td>
<td></td>
</tr>
</tbody>
</table>

Within the above categories, respondents from private institutions were more likely to report that their programs were underenrolled (74% vs. 44%), and respondents from medium (53%) and large (50%) institutions were more likely to report being happy with current enrollments over those from very small (20%) and small (39%) institutions.
Student Entry Points

Respondents indicated that only 32% of programs had a first-year class that equaled one quarter of the program participants, meaning that 68% of the programs are likely to attract majors by transfer. Three colleges reported the reverse issue, with more than 50% of the program comprising first-year students, indicating a lack of retention to the major. Thirty-two percent of programs reported an increase in internal transfer students (2% reported a decrease) and 42% reported an increase in external transfers (10% reported a decrease).

In open-ended responses, programs reporting increases in enrollments offered the following reasons: the strength of the programs \( (n = 5) \), increase in recreational interests \( (n = 4) \), and institutional support \( (n = 3) \), whereas programs listing reasons for decreasing enrollments reported lack of institutional support \( (n = 6) \), the economic challenges of a career in outdoor education \( (n = 5) \), and a weak outdoor program \( (n = 3) \).

Discussion

Outdoor education training for undergraduate students is available at more than 81 colleges and universities in the United States. The 62 programs surveyed had similar structures in requirements for wilderness first-aid training, requirements of field courses, use of internships, and a focus on leadership. The programs are not centralized by size of institution or geographic area. The most common feature between programs is requiring internships, followed by wilderness medical training in their curriculum. Program representatives generally report increasing or stabilized numbers of students enrolled in outdoor education programs (at 72% of programs). Institutional support is listed as a top reason for both increases and decreases in program enrollment. Because outdoor education may be viewed by potential enrollees as an alternative career path, the support of the institution in legitimizing the value of the academic program may be important to enrollments. Beyond the importance of institutional support is the question of how outdoor education programs are organized internally and externally. As in the past, programs currently possess a number of different titles and are housed in a variety of departments. Not only is this a possible impediment to program visibility at the point of entry for some students, but it could also inhibit public recognition of the scope of outdoor professions on the collegiate landscape. This condition might be imposing limitations; however, opportunities could also exist for mutual support among programs to enhance visibility.

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A Qualitative Analysis of Participant Learning and Growth Using a New Outward Bound Outcomes Instrument

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Evidence-based programming and the importance of research has gained attention among outdoor and adventure-based programs in recent years (Sibthorp, 2009) regardless of the challenges that often accompany this type of investigation (Bialeschki, Henderson, Hickerson, & Browne, 2012). Programs must often develop their own evaluation instruments, utilize existing tools, or partner with researchers to demonstrate the efficacy of their programs (Bobilya, Holman, Lindley, & McAvoy, 2010). Within Outward Bound, Luo (2011) established construct validity and outcome model validation for a new Outward Bound Outcomes Instrument (OBOI). The North Carolina Outward Bound School (NCOBS) adapted the previous OBOI to assess its educational outcomes and created the NCOBS Course Impression Survey (NCOBSCIS) to measure differences in participants’ Character Development, Leadership, and Environmental Service. Similar to Luo, Faircloth and Bobilya (2013) demonstrated that the NCOBSCIS is a valid and reliable measure through a psychometric analysis. Based on the previous study (Bobilya, Faircloth, & Montgomery, 2013), NCOBS revised its data collection schedule in 2013 to require that pretests be completed prior to program participation. The quantitative portion of the current study assessed change in participants’ scores following completion of an NCOBS course (Faircloth, Bobilya, & Montgomery, 2014). However, questions emerged in the quantitative data that could be better explained by following a concurrent embedded mixed-methods approach whereby the qualitative data could be used to further explain the quantitative inquiry (Creswell, 2014). Therefore, this qualitative study focused first on participants’ perceptions of their learning and growth following participation in a NCOBS course. In addition, the following secondary questions guided additional qualitative analysis: (a) Are there differences in the data based on gender? (b) Are there differences based on course length? (c) What similarities in this 2013 data
are there with the original OBOI factor definitions? In other words, do participants use similar terminology to describe their NCOBS experience as was originally defined in the OBOI?

Method

This study followed a mixed-methods design with the quantitative questions as the dominant method (Creswell & Plano Clark, 2007). The sample for the study was taken from NCOBS participants who completed an open-enrollment wilderness course of 4 days or longer during June–August 2013, provided consent, and completed both the pre- and postsurveys (n = 189). NCOBS enrolled 572 participants and ran 52 courses in that time frame. The sample for this study included participants from 4-day (4 courses, n = 12), 7-day (1 course, n = 4), 8-day (5 courses, n = 20), 9-day (16 courses, n = 86), 14-day (9 courses, n = 36), 22-day (5 courses, n = 26), and 28-day (1 course, n = 5) courses. Participants were asked to provide consent and complete the presurvey along with other paperwork prior to arrival at NCOBS. The postsurvey was completed on the last day of their courses. The open-ended survey questions included the following: (a) Describe your proudest accomplishment on course. (b) What did you learn about yourself as a result of your course? (c) How will your course impact you at school or in your career? (d) What will you tell other people about your course when you go home? The qualitative responses were typed, coded by two independent researchers, and categorized using a combination of open and axial coding processes (Strauss & Corbin, 1998). Emergent themes were then constructed and refined using the constant comparative method (Glasser & Strauss, 1967). An additional researcher coded 20% of the responses, establishing intercoder reliability. Finally, representative participant comments were selected to illustrate each theme.

Results

Participants’ responses to their proudest accomplishment while on the course included the following themes: outdoor skill development (30%), finishing (30%), personal growth (23%), and expedition behavior and interpersonal skills (11%). When asked what they learned about themselves, the following themes emerged: increased self-confidence (36%), expedition behavior and interpersonal skills (16%), resilience (16%), ability to set goals (16%) and a change in perspective (9%). Students’ comments about how their experience might affect their school or work indicated increased self-confidence and self-reliance (22%), development of expedition behavior and interpersonal skills (16%), resilience (14%), and a change in perspective (7%). Finally, when asked what they would tell others about their experience, students shared the course was awesome (27%), hard but good (19%), an opportunity for personal growth (13%), and challenging (11%). The secondary analysis focused on whether there were differences in the qualitative data based on gender or course length. In addition, the researchers investigated whether similarities in this 2013 data are present when compared with the original OBOI factor definitions. Considering differences in response by gender, females reported 11% higher in the theme of Self-Confidence when asked how their experience will affect them at their school or in their career. Additionally, the males’ comments indicated 8% higher in the theme of Work Ethic when asked the same question. There were no additional observable differences worth noting when comparing the other qualitative results by gender or course length. The following similarities were found in the way these participants described their learning, compared to the original language used in the OBOI factor descriptions: self-confidence, resilience, problem solving, and group collaboration.

Discussion

These results confirm earlier quantitative findings from the same data indicating that participants showed significant change in Character Development following participation in an NCOBS course (Bobilya et al., 2013). In addition, the themes that emerged in this qualitative
study were most similar to the descriptions of the Character Development factor in the original OBOI instrument. These results also highlight one particular difference when comparing males and females: the focus of increased Self-Confidence in females and increased Work Ethic in males. This difference in the way in which male and female participants describe their growth may be instructive for programs as they customize course design for particular participant demographics. These findings also confirm earlier quantitative results (Bobilya et al., 2013) indicating that males and females seem to benefit equally in the ways they report their own Character Development following an NCOBS course. In addition, no major differences were noted in this qualitative data when comparing results by course length—a subject that continues to be of interest within outdoor and adventure programming. This study enhances our understanding of the potential influence of program participation on a person's leadership, character development, and environmental service by asking participants to provide qualitative responses further describing their own learning and growth. Finally, the results of this pre/post study support findings from a study conducted at the National Outdoor Leadership School (NOLS; Sibthorp, Furman, Paisley, Gookin, & Shumann, 2011) and a previous NCOBS study (Bobilya, Kalisch, Daniel, & Coulson, 2015) in which the following participant outcomes emerged: (a) changes in life perspective, (b) self-confidence, and (c) ability to work as a team member. These results may be beneficial to other outdoor adventure programs while they develop their own mixed-methods, outcomes-based assessment tools and seek to understand the influences of their programming on their participants.

References


A National Inquiry of Mountain Bikers: Applying the Benefits of Hiking Scale

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Mountain biking is currently one of the fastest growing recreational activities in the world (Outdoor Foundation, 2013), but documenting the benefits has been challenging. The Benefits of Hiking Scale (BHS), a 38-item instrument assessing the values and benefits of using trails, has been used in national and state park trail research (Freidt, Hill, Gómez, Goldenberg, & Hill, 2010; Hill et al., 2014). The BHS is theoretically grounded, reflecting Gutman’s (1982) means-end theory and reflecting Driver’s (1998) leisure benefits. Gutman identified three key concepts within means-end: attributes, consequences, and values. Means-end theory links the physical objects (e.g., trail) and the means with the outcomes/personal values (e.g., health) of the individual, the ends (Klenosky, Frauman, Norman, & Gengler, 1998). A benefit of leisure, as defined by Driver (2008), is an outcome that causes (a) a change resulting in a more desirable condition (improvement) over a previous existing state, (b) the continuance of a desired condition in order to prevent an undesired condition from occurring, or (c) the realization of a satisfying (psychological) experience with regard to recreation. Research demonstrating objective, measurable benefits is needed to justify funding, advocate for and guide the development of new facilities, improve best practices for management and programming, and increase participation (Driver, 2008). Empirical evidence of health benefits is also instrumental in positioning and promoting recreation and parks as a means to address current public issues, especially those related to health and quality of life. Recreation professionals should not assume that recreation is inherently rewarding, but instead should identify and measure outcomes (Allen & Cooper, 2003). The purpose of this study was to examine findings associated with mountain biking in the United States by using a modified BHS.

Method

Using a convenience sample, the researchers collected data with a self-administered online survey through the International Mountain Biking Association’s (IMBA) electronic mailing list and posted on its website in the summer of 2015. For the purposes of this study, the word hiking in the BHS was substituted with the word biking to reflect the specific recreation activity context related to trail use; thus, the modified BHS is the Benefits of Biking Scale (BBS) in this study.
The survey included the BBS items, which comprise 14 means-end questions and 14 Perceived Health of Recreation Scale (PHORS) benefits questions (Gómez, Hill, Zhu, & Freidt, 2016). The survey also included demographic questions, as well as open-ended questions such as this: What would you like to see added to or taken away from mountain bike trails and/or trail systems?

Results

The national sample ($N = 1,319$) represented all states except North Dakota and Delaware. The sample represented the following demographic aspects: gender (80.7% male), race (92.2% White), marital status (66.0% married), and IMBA membership (49.9% members). The PHORS was found to have evidence of acceptable psychometric properties in a number of studies (Gómez et al., 2016).

At a Virginia state park, Hill, Smith, Usher, and Gómez (2015) found no significant differences between IMBA/non-IMBA members and expected values from mountain biking. However, significant differences were found between the attributes ascribed to mountain biking and health consequences expected from mountain biking, with IMBA members scoring higher on both attributes and consequences than non-IMBA members. No differences were found with respect to gender on attributes, but differences were found between men and women and their perceptions of values and consequences, with women scoring higher on both these dimensions. No differences were found between married/nonmarried bikers. No significant differences were found between age groups (13–34, 34–40, 41–50, 51+) and consequences or attributes; however, the 13–34 group viewed perceived values significantly higher than their older counterparts (41–50 and 51+) did.

Hill et al. (2015) also found no significant differences between IMBA/non-IMBA members and prevention benefits from mountain biking. However, significant differences were found between the improvement and psychological benefits of mountain biking, with IMBA members scoring higher on both improvement and psychological benefits than non-IMBA members. Differences were found in terms of prevention and psychological benefits, with men scoring higher on prevention and women scoring higher on psychological benefits. Differences were found related to improvement and prevention benefits. No significant differences were found between age groups and improvement or psychological benefits; however, the 13–34 age group cohort was significantly lower than the 51+ age group cohort in prevention benefits. Semiquantitative data indicated a strong desire for improved flow ($n = 1,004$), long route options ($n = 777$), technical ($n = 761$), signage ($n = 733$), and bike-specific trails ($n = 707$). Semiquantitative data also indicated a desire for decreased or eliminated use restrictions ($n = 300$), multiuse trails ($n = 164$), and steep climbs ($n = 123$).

Discussion

This study explored the differences between IMBA and non-IMBA members, and specific trail interests of mountain bikers. Findings from the larger study indicate that IMBA members scored higher on perceived values of mountain biking, as well as improvement and psychological benefits (Hill et al., 2015). It seems that mountain bikers who also belong to IMBA as members gain more value than nonmembers because they are more attached to the sport in its entirety, not just as participants. This is similar to previous research on place attachment and Appalachian Trail hikers (Hill et al., 2014). In addition, this study explored the various elements users would like to see added to or taken away from mountain bike trails and/or trail systems. Open-ended feedback indicated that riders want trails with better flow, longer trails, and trails designed with their specific interests in mind.
Implications for Practice

Public land managers can use this research to guide decisions regarding resource allocation and landscaping of trails. In addition, this research may be useful to outdoor recreation programmers to better understand the “participants” while on park trails and to allow for better recognition of benefits of biking on trails. For example, trail administrators could market the benefits of biking trails differently to women by focusing on the psychological benefits, and they could focus on prevention benefits, particularly to older men (Hill et al., 2015). Last, the data indicate that both men and women perceive similar improvements to their health from biking, but women enjoy the psychological (social) aspects of biking more than men do. Outdoor advocacy groups could also use this research to promote the benefits of mountain biking, as well as to inform their marketing and recruitment strategies. Exploring the needs of mountain bikers, and their differences, might help isolate motives for mountain biking. The building of mountain parks is at an all-time high; researchers need to further investigate the benefits and values for users. These new data will be useful for park managers and programmers to effectively identify the needs of mountain bike trail users and better target market their product.

References


Benchmarking Outdoor Expeditionary Program Risk Management Strategies

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In 2003, the University of Utah and the National Outdoor Leadership School (NOLS) completed a study that developed a risk management taxonomy in the outdoor adventure industry and assessed how different outdoor expeditionary programs (OEPs) managed risk (Szolosi, Sibthorp, Paisley, & Gookin, 2003). By unifying the language around risk, the goal was that OEPs would be better able to understand how their risk management strategies compared to that of similar organizations; however, to do so, they needed empirical data against which to compare themselves. The study ultimately resulted in the identification and definition of 21 risk management strategies and 15 categories of hazards that OEPs typically encounter. OEPs then completed a survey in which they ranked what strategies they use to manage each hazard. Among the key findings were that larger organizations (defined by budget and user field days) tend to employ more risk management strategies than smaller organizations do. The survey also produced a ranked list of how frequently OEPs use each strategy.

Since then, the outdoor industry has largely maintained a focus on the staff team, participants, environment, and equipment as the central areas in which risk can be managed (Dallat, Salmon, & Goode, 2015). Attention to these areas can be seen, for example, in the Meyer and Williamson (1998) accident matrix, which looks at potentially unsafe conditions, potentially unsafe acts, and potential errors in judgment. The accident matrix continues to be widely taught, and one can draw parallels between the categories it attends to and the 2003 survey hazards. The purpose of this study was to update the findings to understand how the use of risk management strategies has changed. A second goal was to identify OEPs’ contemporary concerns.

Method

We first reviewed the 21 risk management strategies and 15 field-based hazards identified in the original study through a Delphi process (Paisley, Sibthorp, & Szolosi, 2003). The Delphi process was used to build consensus among a panel of experts on the main OEP field-based hazards and the strategies most commonly used to mitigate them. Based on feedback from a purposive sample of risk management experts, minor changes were made to the wording of the survey (e.g., “Participant misbehavior” was changed to “Participant behavior”). Two of the original hazards were deleted because subsequent feedback suggested these hazards were captured elsewhere in the survey. One risk management strategy was changed to reflect more contemporary vocabulary.

We contacted four organizations to which North American OEPs commonly belong: the Association for Experiential Education (AEE), the Association of Outdoor Recreation and
Education (AORE), the Wilderness Education Association (WEA), and the Wilderness Risk Management Conference (WRMC). Each of these organizations received information about the study and forwarded the survey to their respective members/mailing lists. The process duplicated the original procedure.

To analyze the data, we employed cluster analysis to empirically generate groups of OEPs that shared similar characteristics using demographic data. Cluster analysis is a statistical technique that creates groups based on, in this case, data such as number of field days, remoteness of operating area, budgets and organizational mission. We compared risk management strategies by group to determine which strategies were most used by each group type. While the survey showed how each hazard is managed (e.g., environmental hazards are managed by field staff training), our main interest was in understanding how reliant each group is on specific risk management techniques. In addition, we tabulated concerns that OEPs have for the upcoming field season and how they plan to manage risk in 2017.

Results

We obtained a convenience sample of 262 participants after removing surveys that were incomplete. The cluster analysis resulted in four somewhat distinct groups (see Table 1 for characteristics). Participants reported that their programs offer backpacking, climbing, paddling, winter sports, rafting, mountaineering, sailing, cycling, trapping, caving, stand-up paddleboarding (SUP), surfing, high ropes, horse-packing, canyoneering, primitive skills, trail maintenance, dog sledding, scuba, and cultural immersion.

A graph of risk management strategies by frequency of use by cluster is presented in Figure 1. A table showing the most commonly used risk management strategies is shown in Table 2. Survey respondents reported that they are most concerned in the 2017 season with managing the following hazards: (1) Risk Inherent in the Program, (2) Environment, (3) Driving/Transportation, (4) Lack of Participant Supervision, and (5) Staff Performance.

Table 1

<table>
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<th>Characteristics of Clusters</th>
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<tr>
<td><strong>Cluster 1:</strong> Camps and campus recreation</td>
</tr>
<tr>
<td>33% of sample</td>
</tr>
<tr>
<td>more recreational-oriented missions</td>
</tr>
<tr>
<td>less field staff experience</td>
</tr>
<tr>
<td>more open participant selection</td>
</tr>
<tr>
<td>operating areas closer to assistance</td>
</tr>
<tr>
<td><strong>Cluster 2:</strong> Large OEPs</td>
</tr>
<tr>
<td>44% of sample</td>
</tr>
<tr>
<td>longer duration staff trainings</td>
</tr>
<tr>
<td>greater years of operation</td>
</tr>
<tr>
<td>more experienced field instructors</td>
</tr>
<tr>
<td>operate in more remote terrain</td>
</tr>
<tr>
<td>report more field days (they are bigger)</td>
</tr>
<tr>
<td><strong>Cluster 3:</strong> Guiding companies</td>
</tr>
<tr>
<td>14.4% of sample</td>
</tr>
<tr>
<td>shorter staff training</td>
</tr>
<tr>
<td>more experienced field staff</td>
</tr>
<tr>
<td>more recreational programming</td>
</tr>
<tr>
<td>more remote field sites</td>
</tr>
<tr>
<td>more restrictive insurance</td>
</tr>
<tr>
<td><strong>Cluster 4:</strong> Therapeutic programs</td>
</tr>
<tr>
<td>8.5% of sample</td>
</tr>
<tr>
<td>more therapeutic-oriented mission</td>
</tr>
<tr>
<td>longer staff training</td>
</tr>
<tr>
<td>larger number of field days</td>
</tr>
<tr>
<td>more selective process for enrollment (participant selection)</td>
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<tr>
<td>lower student to instructor ratio</td>
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Figure 1. Common risk management strategies by cluster.
Table 2

Five Most Common Risk Management Strategies by Year

<table>
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<th>2003</th>
<th>2016</th>
<th>Essential*</th>
<th>Anticipated 2017**</th>
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<tr>
<td>Field Staff Training (75.1%)</td>
<td>Field Staff Training (78.4%)</td>
<td>Field Staff Training</td>
<td>Field Staff Training</td>
<td></td>
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<tr>
<td>Policies and Procedures (73.3%)</td>
<td>Policies and Procedures (69.6%)</td>
<td>Policies and Procedures</td>
<td>Policies and Procedures</td>
<td></td>
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<tr>
<td>Field Staff (Instructor) Judgment (73%)</td>
<td>Field Staff (Instructor) Judgment (65.3%)</td>
<td>Field Staff (instructor) Judgment</td>
<td>Field Staff (instructor) Judgment</td>
<td></td>
</tr>
<tr>
<td>Supervision of Participants (62%)</td>
<td>Supervision of Participants (45.9%)</td>
<td>Wilderness Medicine Training</td>
<td>Wilderness Medicine Training</td>
<td></td>
</tr>
<tr>
<td>Pre-Course Communication (57.1%)</td>
<td>Pre-Course Communication (42.9%)</td>
<td>Course Debriefings</td>
<td>Course Debriefings</td>
<td></td>
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* Essential strategies most frequently used by OEPs that used the least overall strategies, which suggests OEPs may be most dependent upon them or that they are most essential to managing risk.
** Percentages are not included because data from anticipated risk management strategies were not comparable with the 2003 and 2016 data.

Discussion

The overall results from the survey show that OEPs manage risk in ways that are more similar than they are different, and that how they manage risk has remained reasonably unchanged since the 2003 study. Between the two surveys, the top five strategies used was identically ranked. Only in the essential and future strategies did wilderness medicine training rank fourth, dropping participant supervision off the list. Based on the demographic data, we named the four clusters camps and campus recreation, large OEPs, guiding, and therapeutic programs. While some variations existed, the results show that they trended together in terms of which strategies were most frequently employed. However, a limitation of the study was that we did not obtain information that would explain why discrepancies between OEPs exist. Therefore, any explanations we offer are speculative in nature.

It seems likely that the needs of the organization and its mission determine how it uses risk management strategies. Campus recreation programs, for example, are tasked with serving the college community and tend to have open enrollment, which differs from therapeutic programs, which serve special populations and employ more restrictive participant screening to assess whether they will be able to meet their participants’ needs. Guiding companies are more likely to hire staff with previous experience and credentials and may therefore rely less on staff training as compared to other types of OEPs. Large OEPs, which are characterized by having more field days and larger budgets, may be able to afford to have larger staff sizes and consequently are better equipped to employ a large variety of risk management strategies.

This survey captures a snapshot of how OEPs employ risk management strategies, which is useful for comparing trends over time. That the results have largely remained unchanged may be neither a good nor bad outcome, but rather can be viewed as a starting point for discussions. Dallat et al. (2015) suggested that systems thinking would be an important addition to risk management. Nonetheless, it is impossible to identify the best way to manage risk given that it is a moving target dependent upon ever-changing circumstances. What matters is that OEPs continually engage with the subject, asking why and whether strategies should change.

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- All pages should be numbered consecutively in the upper right-hand corner.
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Spelling and Hyphenation

The authority is Merriam-Webster’s Collegiate Dictionary (2005).

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