

Abstract

Park managers use personal interpretation to achieve a variety of outcomes for park visitors and the natural environment. This project examines whether these outcomes are achieved, the factors influencing how the outcomes are achieved, and the overlap among these factors across the outcomes. Based on interviews with visitors in three Alberta provincial parks, respondents indicated clear positive changes in enjoyment and perceived learning, but provided less evidence towards changes in attitudes and behavioral intentions. Many factors overlapped across the outcomes. These results will help interpretation practitioners plan, deliver, and evaluate programs for achieving desired outcomes in an efficient manner.

Introduction

Most park systems use personal interpretation for various goals, such as education, improved visitor experiences, and enhanced nature protection (Barrie & Knapp, 1998; Hvenegaard, 2017; Wright & Matthews, 2015). Personal interpretation involves dynamic face-to-face interaction between interpreters and visitors (Weiler & Ham, 2010), such as with guided hikes, point duties, and amphitheater programs, and is effective due to its spontaneous nature, adaptability to changing situations, and ability to meet the needs of a diverse audience (Wearing & Neil, 2009). Personal interpretation can impact visitor satisfaction (Stern & Powell, 2013), knowledge (Ren & Folta, 2016), attitudes (Ballantyne, Packer, & Falk, 2011), and behavior (Hofman & Hughes, 2018; Hvenegaard, 2017; Kim, Airey, & Szivas, 2011). Skibins, Powell, and Stern (2012) indicate that “while there is much anecdotal evidence to support the basic principles of

interpretation, there is often a gap in empirical evidence for whether these principles influence visitor outcomes such as knowledge, awareness, and behavior and if so, how they do so.” (p. 26). To close this gap, interpretive practitioners must understand what changes in visitors due to a personal interpretation program, what factors influence those changes, and if those factors overlap (Hvenegaard & Shultis, 2016).

First, enjoyment and satisfaction are central goals for visitors and park managers (Manning, 2011). Satisfaction involves “positive feelings that an individual gains from engaging in activities, and the degree that he or she is content with those experiences” (Littlejohn, Needham, Szuster, & Jordan, 2016, p. 203). Visitor satisfaction with interpretive experiences is generally high and contributes greatly to satisfaction of an overall park experience (Ham & Weiler, 2007). Moreover, satisfaction or enjoyment contribute to a visitor’s ability to learn (Ainley & Ainley, 2011; Macklin, Hvenegaard, & Johnson, 2010; Powell & Ham, 2008). While enjoyment is a contributing factor to learning, many visitors also learn for the sake of enjoyment (Zeppel, 2008).

Second, interpretation enhances visitor learning (Ren & Folta, 2016; Walter, 2013). Coghlan and Kim (2012) showed that combining multiple sources of interpretation increased the knowledge of tour boat visitors to the Great Barrier Reef. In interpretation for children, recognition, recall, and application of the subject significantly increased after interpretation, especially with appropriate themes and structure (Tarlton & Ward, 2006). The factors that influence learning are also relevant to achieving other outcomes for interpretation, such as attitude change and behavioral intentions (Ballantyne et al., 2011a; Kim et al., 2011; Stern & Powell, 2013).

Third, knowledge of a subject can alter a person's attitudes towards the subject (Ham, 2009; Marion & Reid, 2007; Tilden, 1977; Wright & Matthews, 2015). An attitude is a person's evaluation of something "whether it's good or bad, right or wrong, positive or negative" (Ham, 2009, p. 52), and provides the foundation for behavioral actions (Stern, Dietz, & Guagnano, 1995). Many of the factors that enhance visitor experience and attitudes also impact visitor satisfaction and behavioral intentions (Stern & Powell, 2013).

Last, park managers seek behavior change, through interpretation, in order to promote environmental protection and visitor safety. The Theory of Planned Behavior (Ajzen, 1991) states that attitudes, subjective norms, and perceived behavioral control influence the intentions towards performing a behavior, which in turn, are good predictors of actual behavior (Ajzen, 1989; Armitage and Conner, 2001). The attitudes towards a behavior depend on the "degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question" (p. 188), which means that a visitor's decision to behave in a particular way should be consistent with their knowledge of, and attitudes toward, a subject. Using this theory, Powell and Ham (2008) found that interpretation could positively influence visitors' attitudes and behavioral intentions of pro-conservation behaviors. Kim et al. (2011) also showed that strengthened beliefs about a behavior were strongly associated with attitudes and behavioral intentions. Similarly, Hines, Hungerford, and Tomera (1987) determined that knowledge of issues, knowledge of action strategies, locus of control, attitudes, verbal commitment, and an individual's sense of responsibility influenced their intentions to be involved in environmental behavior.

Most studies have examined the impacts of interpretation by focusing on a single outcome, specific outcomes perceived by the park visitor (Ballantyne et al., 2011a), key factors identified through meta-analyses of key interpretive documents (Skibins et al., 2012), factors

affecting interpretive outcomes through experimental design (Hofman & Hughes, 2018), or factors identified through observation of the interpretive events (Stern & Powell, 2013).

However, few studies have examined the relationships among the outcomes of interpretation and the overlap among the factors affecting the outcomes, as identified by visitors participating in the interpretive programs. Therefore, this study seeks to answer the following research questions:

1. What changes did visitors experience regarding enjoyment, perceived learning, attitudes, and behavioral intentions after participating in a personal interpretation experience?
2. What factors did visitors identify that contributed to or detracted from their enjoyment, perceived learning, attitudes, and behavioral intentions from the personal interpretation program?
3. How do the visitor-identified factors that influence interpretive outcomes overlap in affecting enjoyment, perceived learning, attitudes, and behavioral intentions?

Methods

Our study sites were three provincial parks in central Alberta, Canada, offering personal interpretive programs during July-September (Table 1) which focus on natural and human history topics and involve various strategies, such as dramatic presentations, point duties, and guided walks (Hvenegaard & Shultis, 2016). The topics, themes, and target outcomes were influenced by provincial agency priorities, local management issues, and visitor interests. We (university professors and research assistant) interviewed campground visitors aged 18 years or older between August 4 and September 6, 2017 at the campground amphitheatre (the meeting location for many personal interpretation events) or at campground sites near the amphitheatre.

We walked the campground loops systematically when campers were most likely to be at their campsites (i.e., 10:00-12:00 and 15:00-17:00), with equal sampling effort over the weekend and weekday periods. We randomized sampling by interviewing the next available visitor as long as they were not visibly occupied by other pressing issues. We asked respondents about the topics listed in Table 2 about a recent personal interpretation program. Interviews were 10-20 minutes in length and were voice recorded. After transcribing each respondent's answers, we developed themes inductively for each open-ended question, and assigned codes for later analysis.

Respondents could provide multiple responses to each open-ended question related to changes in visitor outcomes, as well as factors influencing those changes. We determined the number of times each response was given by the set of respondents and the percent of the total responses for each response category or subcategory (Table 3) using SPSS (IBM Corporation, 2010). For factors that overlapped in affecting the four outcomes, we looked for quotations from the earlier questions on each outcome to identify ways in which respondents addressed multiple outcomes. Thus, we did not quantify the numbers of overlapping responses for each category.

Results

Respondent Characteristics

The study produced 24 respondents (43% response rate). Reasons for refusals included visitors putting their kids to sleep, being busy, and not having been to an interpretive program. The sample was 58% female and 42% male. The average age of respondents was 45.4 years (range = 31-65). Using 30,000 residents as a threshold, 21% of respondents lived in rural areas and 79% lived in urban areas. All respondents came from the central Alberta corridor, including

Edmonton and Calgary. Respondents visited Alberta's national or provincial parks an average of 6.6 times a year. Within the last year, the average number of day-trip days in Alberta's parks was 2.9, the average number of overnight days was 10.3, and the average number of overall days spent in a park was 13.2.

Of the respondents, 67% had been to an interpretive program within a week and the other 33% had been to an interpretive program beyond a week. Of these interpretive programs, 61% were amphitheatre programs, 9% were guided hikes, 9% were lecture-based programs 4% were point duties, and 17% were other interactive activities (see Hvenegaard & Shultis, 2016 for explanations).

Outcomes from Interpretive Programs

Regarding visitor enjoyment, 95% of the 21 responses indicated that the experience was enjoyable or very enjoyable, while 5% were not enjoyable. Visitor comments addressed the themes of overwhelming approval, modest enjoyment, planning to attend, and repeat interest (Table 4).

Regarding perceived learning, 55% of the 40 responses provided moderately to very detailed descriptions, concentrating on the focus of the event or approach to learning (Table 4). However, 45% of responses indicated no learning or only a very general description of the topic.

Regarding attitudes, 79% of the 29 responses indicated a positive change towards the topic (Table 4). Of the positive responses, 39% specified more respect, awareness, or appreciation, 35% increased understanding, 13% increased curiosity, and 13% felt part of the larger conservation or stewardship efforts. However, 21% of the responses indicated a neutral or

negative change (half of these were because respondents already had positive attitudes toward the topic).

Regarding potential behavior change, 55% of the 31 responses were positive (Table 4). Of these, 47% referred to learning about and accessing nature, 35% to environmentally friendly behavior, 12% to safety, and 6% to educating others. However, 45% of the initial responses were neutral or negative. Of these, 50% already had environmentally friendly behaviors, 36% said that the event had no take-home message, and 14% said that only their attitudes had changed.

Regarding what environmentally friendly behaviors respondents participate in at home and while camping (Table 5), we received 55 responses for the former (mostly recycling, conscious utility use, and lifestyle choices) and 54 responses for the latter (mostly camping style choices, consumer choices, and recycling).

Factors Affecting Outcomes

Respondents provided 73 responses about the factors that contributed to enjoyment, focusing mostly on entertainment, theatrics, interpreters, educational approach, visitor involvement, and a variety of learning approaches (Table 6). Most of the 25 responses about the event being unenjoyable indicated nothing, with minor references to environmental and other factors.

Respondents provided 40 replies about the factors that supported their learning experience (Table 6). Of these, most indicated theatrics, followed by entertainment, the interpreters, visitor involvement, and repetition. Regarding factors that hindered learning, most responses indicated nothing, while a few addressed parents' own kids or environmental factors.

Regarding factors causing attitude change, we received 24 comments (Table 6), split between educational components (e.g., knowledge, respect or connection, and safety) and presentation style components (experience, theatrics, aural aids, and visual aids).

Among the 31 responses about why respondents' behavior had changed, most dealt with increased knowledge or awareness, positive or memorable experiences, park staff, and the realization of consequences (Table 6). When asked if they felt any social pressure to act in a certain way about the topic, 78% of the responses were affirmative. The reasons were equally distributed between the responsibility to educate others, the notion that everyone needs to do their part, and the idea that environment should be protected for current and future generations. When asked if they believed that behaving in an environmentally friendly manner would create a positive response, 56% of the respondents said yes, 25% said yes if everyone does their part, and 19% said yes, but there will always be people that won't change.

Overlapping Factors

Factors affecting interpretive outcomes displayed overlapped several ways. First, most of the categories of factors (and percentages) were similar for both enjoyment and perceived learning. These factors include entertainment, theatrics, interpreters, visitor involvement, and the variety of learning approaches (Table 6). Some respondents recognized that factors could contribute to both enjoyment and perceived learning, as indicated in Table 7.

Second, the factors contributing to enjoyment and perceived learning also contributed to attitude change. For example, when asked why they had different attitudes about a topic, most responses dealt with education and specifically with an increase in knowledge about the topic (Table 6). In addition, the presentation style factors (Table 6) supporting enjoyment and perceived

learning (e.g., theatrics, visual aids, and aural aids) also contributed to attitude change about the topic. Furthermore, memorable experiences contributed to attitude change, learning, and enjoyment since those experiences resulted from theatrics, the interpreters, visitor involvement and learning approaches (Tables 6).

Third, the enjoyment and perceived learning outcomes were factors affecting changes in attitude and behavioral intentions. The attitude response about feeling more informed suggests the educational value of personal interpretation (Hvenegaard, 2017). Similarly, the behavioral intention of wanting to educate others suggests the role of learning and attitude change that can prompt a change in future behavior (Hvenegaard, 2017). The attitude change of having more understanding and appreciation is linked to the intention of behaving environmentally friendly (Stern et al., 1995). Lastly, the attitude response of increasing curiosity about the interpretive topic can be related to the behavioral intention of respondents wanting to learn about and access nature on their own.

Fourth, respondents noted two key factors for why their behavioral intentions changed. First, the factor of increasing knowledge about a topic is obviously linked to perceived learning. As noted, realizing the consequences of one's behaviors helps create a larger perspective about the interpretive topic. Second, the behavior change factor of producing a positive or memorable interpretive experience was influenced by attitude changes resulting from the interpretive experience.

Discussion

Interpretive Outcomes and Overlapping Factors

This case study reinforces how personal interpretation can achieve many potential outcomes at the same time, including enjoyment, perceived learning, attitudes and behavioral intentions of park visitors. Moreover, many interrelated factors contribute to the success of these interpretive outcomes.

The vast majority of respondents had very enjoyable personal interpretation experiences. Participation in an interpretive event often contributes to overall satisfaction of a park experience (Stern & Powell, 2013), and most park visitors expect an interpretive experience during their stay (Schliephack, Moyle, & Weiler, 2013). In this study, as in others (Stern & Powell, 2013), entertainment and theatrics, especially comedy and fun, contributed to visitor entertainment. Laughter has positive psychological and physiological effects on people (Hassed, 2001), and is frequently used as a therapy technique (Deshpande & Verma, 2013). Therefore, incorporating elements of fun and humor into interpretive programs can increase visitor satisfaction and can reduce visitor stress towards a topic. Although realism is important, the upbeat manner in which information is presented is crucial to visitor satisfaction and views of the environment, interpreters, and the park (Skibins et al., 2012).

The majority of respondents provided moderate to substantial details about what they have learned. Most park visitors expect to learn from interpretive programs (Schliephack et al., 2013), and those programs can result in substantial learning (Powell & Ham, 2008) which can last over time (Hughes, Packer, & Ballantyne, 2011). Factors contributing to perceived learning in this study included theatrics, entertainment, the interpreters, visitor involvement, and a variety of learning approaches. This study's results about learning-related factors are similar to results found by Skibins et al. (2012), which highlighted the importance of multisensory and multiple activities, active audience engagement, and multiple delivery styles. Similarly, Wanzer and

Frymier (1999) found that humor is associated with increased perceived learning. In addition, theatre increases enjoyment and promotes learning when it encourages abstract thought and insight, as was found in medical research (Rossiter et al., 2008), policy development (Nisker Martin, Bluhm, & Daar, 2006), and nature interpretation for children (Macklin et al., 2010). Finally, this study showed how songs contributed to both enjoyment and learning, as is found in other learning situations, such as language acquisition (Fonseca Mora, 2000). All aspects of theatrics were effective, in part, by incorporating various learning approaches. Surprisingly, respondents in this study did not mention the role of interpretive themes, since other research shows that thematic presentations are associated with positive knowledge gain (Skibins et al., 2012), higher information recall, and more application than non-thematic presentations (Tarlton & Ward, 2006).

Respondents in this study noted the value of using several different learning approaches and repeating material to their learning. Similarly, Coghlan and Kim (2012) found that repetition through interpretive layering, or combining multiple sources of interpretation, is an effective learning tool. Interpretive layering uses multiple perceived learning factors, particularly through different forms of repetition, which positively affects memory (Hintzman, 1976).

There was considerable overlap among the factors affecting enjoyment and perceived learning (e.g., theatrics, entertainment, visitor involvement, and the interpreters). Visitor enjoyment and having an active mental state are positively correlated (Moscardo & Pearce, 1986), which increases receptivity of information and memory of the experience. This overlap suggests that creative use of similar strategies can help achieve both enjoyment and perceived learning outcomes. The link between enjoyment and interest in learning has been shown for adolescent science students (Ainley & Ainley, 2011) and for park visitors at interpretation

programs (Moscardo & Pearce, 1986). Visitor learning and enjoyment also contribute to a visitor's overall park experience (Packer, 2006; Zeppel, 2008).

Respondents noted that interpreters were important contributors to enjoyment and perceived learning, demonstrating the importance of human interaction. Personal interpretation produces high visitor satisfaction (Stern & Powell, 2013), especially with interpreters who are confident, emotionally authentic, charismatic, and verbally engaged. This study's respondents noted similar qualities about the interpreters. Thus, it is important to hire interpreters with these skills to achieve these target outcomes.

According to Tilden (1977), knowledge increases appreciation and can alter one's attitude. Similarly, knowledge and attitudes can have a cyclic relationship where basic knowledge contributes to attitudes, which then can motivate continued learning, and so on (Ramsey & Rickson, 1976). If park visitors' attitudes inspire them to desire more knowledge, they will return to interpretive programs and, in turn, learn more about the environment. Moreover, attitudes directly support behavior change. For example, in Galapagos National Park, tourists' willingness to financially support conservation was positively correlated to their attitudes towards the parks management actions (Powell & Ham, 2008). This study's respondents identified memorable experiences as contributing to attitude shifts, as was found by Ballantyne, Packer, and Sutherland (2011). A best practice in interpretation is to use affective messaging (Skibins et al., 2012), since the affective network of the brain involves interest and motivating aspects of learning (Hinton, Miyamoto, & Della-Chiesa, 2008). Therefore, incorporating emotions into interpretation helps visitors learn motivates change in attitude towards a subject (Wright & Matthews, 2015).

This study's respondents indicated positive change in behavioral intentions, but the responses were less detailed than for other questions. Respondents primarily indicated that they intended to learn more and access nature on their own. Thus, interpretation can help inspire people to pursue outdoor recreation, which is valuable in relation to a Nature-deficit Disorder associated with urban living and consumer culture (Louv, 2005). Visitors were modestly inclined to behave environmentally friendly, suggesting that interpretation can support the preservation, conservation, and protection purposes of parks (e.g., Province of Alberta, 2000).

Behaviors are complex, and although this study did not measure behavior change, or thoroughly identify reasons for changes in behavioral intentions, there were interconnections between behavioral intentions and the other interpretive outcomes. Many responses about behavioral intentions overlapped with attitude change responses, as noted by the Theory of Planned Behavior (Ajzen, 1991). As expected, there were similar factors for both attitudes and behavioral intentions, especially learning and having a positive experience. Education exposes people to different behaviors and the reasons for choosing those behaviors. Positive attitudes generated through enjoyable experiences can promote engagement in environmentally friendly behaviors (Hines et al., 1987).

Implications, Limitations, and Future Research

This study has a few applications for parks agencies. First, by documenting personal interpretation outcomes, park managers can make budgetary and employment decisions to maximize those outcomes. Second, park managers can use interpretation outcomes as benchmarks for monitoring and improving interpretive services and training of interpreters (Cole, 1998). Third, an improved understanding of the factors that contribute to interpretive

outcomes can guide interpreters to most effectively impact park visitors (Skibins et al., 2012). The key factors can also be used as an evaluation tool for how park programs and staff meet interpretive outcomes.

There are also a few limitations to this study. First, the small sample size limits the study's ability to draw firm generalizations about relationships among factors and outcomes. Second, using open-ended questions for some variables limited our ability to statistically analyze other relationships. Third, the study gathered data from only three provincial parks in Alberta, limiting the potential for generalizations to other parks. Fourth, since most respondents reflected on amphitheater forms of personal interpretation, other forms of interpretation and their factors were not equally represented in the study.

For future research, a larger sample size with closed-ended questions would allow for more rigorous testing for relationships among variables. Future studies could include other variables (e.g., thematic interpretation and mindfulness) that promote learning, attitude change, and behavior change (Skibins et al., 2012; Moscardo & Pearce, 1986). Future research could also test how behavioral intentions translate into actual behaviors (Zeppel, 2008). Other interpretive outcomes that arose during this study, such as connections to place and memorable experiences (Ballantyne et al., 2011b), should be examined in future research. Future efforts should also examine the outcome priorities and delivery strategies of interpreters, managers, and other park staff for specific interpretive topics.

Acknowledgements

This work was supported by the Social Sciences and Humanities Research Council of Canada under Grant # 435-2017-0471.

Disclosure Statement

No potential conflict of interest was reported by the authors.

References

- Ainley, M., & Ainley, J. (2011). Student engagement with science in early adolescence: The contribution of enjoyment to students' continuing interest in learning about science. *Contemporary Educational Psychology, 36*(1), 4-12.
- Ajzen, I. (1989). Attitude structure and behavior. In A. R. Pratkanis, S. J. Beckler, & A. G. Greenwald (Eds.), *Attitude structure and function* (pp. 241-274). Hillsdale, NJ: Lawrence Erlbaum.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211.
- Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British journal of social psychology, 40*(4), 471-499.
- Ballantyne, R., Packer, J., & Falk, J. (2011a). Visitors' learning for environmental sustainability: Testing short- and long-term impacts of wildlife tourism experiences using structural equation modelling. *Tourism Management, 32*(6), 1243-1252.

- Ballantyne, R., Packer, J., & Sutherland, L. A. (2011b). Visitors' memory of wildlife tourism: Implications for the design of powerful interpretive experiences. *Tourism Management, 32*, 770-779.
- Barrie, E., & Knapp, D. (1998). Ecology versus issue interpretation: The analysis of two different messages. *Journal of Interpretation Research, 3*(1), 21-38.
- Coghlan, A., & Kim, A. K. (2012). Interpretive layering in nature-based tourism: A simple approach for complex attractions. *Journal of Ecotourism, 11*(3), 173-187.
- Cole, D. N. (1998). Written appeals for attention to low-impact messages on wilderness trailside boards: Experimental evaluations of effectiveness. *Journal of Park and Recreation Administration, 16*(1), 65-79.
- Deshpande, A., & Verma, V. (2013). Effect of laughter therapy on happiness and life satisfaction among elderly. *Indian Journal of Positive Psychology, 4*(1), 153.
- Fonseca Mora, C. (2000). Foreign language acquisition and melody singing. *ELT Journal 54*(2), 146-152.
- Ham, S. H. (2009). From interpretation to protection: Is there a theoretical basis? *Journal of Interpretation Research, 14*(2), 49-57.
- Ham, S. H., & Weiler, B. (2007). Isolating the role of on-site interpretation in a satisfying experience. *Journal of Interpretation Research, 12*(2), 5-24.
- Hassed, C. (2001). How humour keeps you well. *Australian Family Physician, 30*(1), 25-28.
- Hines, J. M., Hungerford, H. R., & Tomera, A. N. (1987). Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. *The Journal of Environmental Education, 18*(2), 1-8.

- Hinton, C., Miyamoto, K., & Della-Chiesa, B. (2008). Brain research, learning and emotions: Implications for education research, policy and practice. *European Journal of Education, 43*(1), 87-103.
- Hintzman, D. L. (1976). Repetition and memory. *Psychology of Learning and Motivation, 10*, 47-91.
- Hofman, K., & Hughes, K. (2018). Protecting the Great Barrier Reef: Impact of a conservation documentary and post-viewing strategies on long-term conservation behaviour. *Environmental Education Research, 24*(4), 521-536.
- Hughes, K., Packer, J., & Ballantyne, R. (2011). Using post-visit action resources to support family conservation learning following a wildlife tourism experience. *Environmental Education Research, 17*(3), 307-328.
- Hvenegaard, G. T. (2017). Visitors' perceived impacts of interpretation on knowledge, attitudes, and behavioral intentions at Miquelon Lake Provincial Park, Alberta, Canada. *Tourism and Hospitality Research, 17*(1), 79-90.
- Hvenegaard, G.T. & Shultis, J. (2016). The role of interpretation. In P. Dearden, R. Rollins, & M. Needham (Eds.), *Parks and protected areas in Canada: Planning and management* (4th ed.). (pp. 141-169). Don Mills, ON: Oxford University Press.
- IBM Corporation. (2010). IBM SPSS Statistics for Windows, Version 19.0. Armonk, NY: IBM Corp.
- Kim, A. K., Airey, D., & Szivas, E. (2011). The multiple assessment of interpretation effectiveness: Promoting visitors' environmental attitudes and behavior. *Journal of Travel Research, 50*(3), 321-334.

- Littlejohn, K., Needham, M. D., Szuster, B. W., & Jordan, E. J. (2016). Pre-trip expectations and post-trip satisfaction with marine tour interpretation in Hawaii: Applying the norm activation model. *The Journal of Environmental Education*, 47(3), 202-212.
- Louv, R., (2008). *Last child in the woods: Saving our children from nature-deficit disorder*. New York, NY: Algonquin Books of Chapel Hill.
- Macklin, E. K., Hvenegaard, G. T., & Johnson, P. E. (2010). Improvisational theater games for children in park interpretation. *Journal of Interpretation Research*, 15(1), 7-13.
- Manning, R. E. (2011). *Studies in outdoor recreation: Search and research for satisfaction*. 3rd ed. Corvallis, OR: Oregon State University.
- Marion, J. L., & Reid, S. E. (2007). Minimising visitor impacts to protected areas: The efficacy of low impact education programmes. *Journal of Sustainable Tourism*, 15(1), 5-27.
- Moscardo, G., & Pearce P. L. (1986). Visitor centers and environmental interpretation: An exploration of the relationships among visitor enjoyment, understanding and mindfulness. *Journal of Environmental Psychology*, 6(2), 89-108.
- Nisker, J., Martin, D. K., Bluhm, R., & Daar, A. S. (2006). Theatre as a public engagement tool for health-policy development. *Health Policy*, 78(2), 258-271.
- Packer, J. (2006). Learning for fun: The unique contribution of educational leisure experiences. *Curator: The Museum Journal*, 49(3), 329-344.
- Powell, R. B., & Ham, S. H. (2008). Can ecotourism interpretation really lead to pro-conservation knowledge, attitudes and behaviour? Evidence from the Galapagos Islands. *Journal of Sustainable Tourism*, 16(4), 467-489.
- Province of Alberta. (2000). *Provincial Parks Act, Revised Statutes of Alberta 2000, Chapter P-35*. Edmonton, AB: Alberta Queen's Printer.

- Ramsey, C. E., & Rickson, R. E. (1976). Environmental knowledge and attitudes. *The Journal of Environmental Education*, 8(1), 10-18.
- Ren, Q., & Folta, E. (2016). Evaluating environmental interpretation with mixed method. *Journal of Interpretation Research*, 21(2).
- Rossiter, K., Kontos, P., Colantonio, A., Gilbert, J., Gray, J., & Keightley, M. (2008). Staging data: Theatre as a tool for analysis and knowledge transfer in health research. *Social Science & Medicine*, 66(1), 130-146.
- Schliephack, J., Moyle, B., & Weiler, B. (2013). Visitor expectations of contact with staff at a protected site. *Annals of Leisure Research*, 16(2), 160-174.
- Skibins, J. C., Powell, R. B., & Stern, M. J. (2012). Exploring empirical support for interpretation's best practices. *Journal of Interpretation Research*, 17(1), 25-44.
- Stern, P. C., Dietz, T., & Guagnano, G. A. (1995). The new ecological paradigm in social-psychological context. *Environment and Behavior*, 27(6), 723-743.
- Stern, M. J., & Powell, R. B. (2013). What leads to better visitor outcomes in live interpretation? *Journal of Interpretation Research*, 18(2), 9-43.
- Tarleton, J. L., & Ward, C. J. (2006). The effect of thematic interpretation on a child's knowledge of an interpretive program. *Journal of Interpretation Research*, 11(1), 7-33.
- Tilden, F. (1977). *Interpreting our heritage* (3rd ed.). Chapel Hill, NC: University of North Carolina Press.
- Walter, P. G. (2013). Theorising visitor learning in ecotourism. *Journal of Ecotourism*, 12(1), 15-32.
- Wanzer, M. B., & Frymier, A. B. (1999). The relationship between student perceptions of instructor humor and students' reports of learning. *Communication Education*, 48(1), 48-62.

Wearing, S., & Neil, J. (2009). *Ecotourism: Impacts, potentials and possibilities?* Oxford, UK: Butterworth-Heinemann.

Weiler, B., & Ham, S. H. (2010). Development of a research instrument for evaluating the visitor outcomes of face-to-face interpretation. *Visitor Studies*, *13*(2), 187-205.

Wright, P. A., & Matthews, C. (2015). Building a culture of conservation: Research findings and research priorities on connecting people to nature in parks. *Parks Journal*, *21*(2), 11-24.

Zeppel, H. (2008). Education and conservation benefits of marine wildlife tours: Developing free-choice learning experiences. *The Journal of Environmental Education*, *39*(3), 3-18.

Table 1. Characteristics of provincial parks in central Alberta, Canada, used to sample visitors.

Characteristic	Bow Valley Provincial Park (Bow Valley Campground)	Miquelon Lake Provincial Park	William A. Switzer Provincial Park
Location	100 km west of Calgary	63 km southeast of Edmonton	20 km northwest of Hinton
Natural region (subregions)	Rocky Mountain (montane, alpine, and subalpine)	Boreal Forest (dry mixedwood)	Rocky Mountain (montane); Foothills (upper foothills and lower foothills)
Size (ha)	3,129	1,299	6,123
Number of campsites	173	283	213
Number of campsite nights in 2017	19,604	16,030	11,436
Number of respondents	17	5	2

Table 2. Questions posed to respondents.

Topic	Questions	Type of response
Past visits	Number of visits, number of day trips, and number of overnight days	Numerical
Recent experience with personal interpretation in a provincial park	Name of park, type of activities involved, motivation, topics covered, and enjoyment level	Open-ended
Factors that supported or hindered each outcome of the recent interpretation experience	Enjoyment, learning, attitude change about the topic, and behavior change about the topic	Open-ended
Behaviour change from interpretation experience	Potential influence of attitudes, social pressure, and creating a positive response	Open-ended
Regular environmentally-friendly behaviour	At home and while on this trip	Open-ended
Demographics	Age, gender, place of residence	Numerical, closed-ended, open-ended

Table 3. Coding for selected questions.

Question	Coding system
What was the primary activity of your most recent personal interpretation experience?	1 = amphitheatre, 2 = guided hike, 3 = point duty, 4 = birding workshop, 5 = interactive family activity, 6 = lecture-based
How enjoyable was the personal interpretation experience?	1 = not enjoyable, 2 = enjoyable, 3 = very enjoyable

What did you learn from the personal interpretation experience?	1 = nothing, 2 = general, 3 = moderately detailed, 4 = very detailed; later recoded to 1 = nothing or general, 2 = detailed
Did you feel any differently (have a change in attitude) towards the topic as a result of the personal interpretation experience?	1 = no, 2 = yes
Was there a change in your behaviour as a result of the personal interpretation experience?	1 = no, 2 = yes
When was your most recent park experience?	1 = current or previous night, 2 = within a week, 3 = this season 4 = within a year, 5 = over a year ago, 6 = over 5 years ago; later recoded to 1 = within a week, 2 = this season or longer

Table 4. Themes and comments regarding outcomes from personal interpretation programs.

Outcome	Theme	Representative comments
Enjoyment	Overwhelming approval	<ul style="list-style-type: none"> • “Not even the rain made it unenjoyable.”
	Modest enjoyment	<ul style="list-style-type: none"> • “I didn’t know what to expect and I was pleasantly surprised.”
	Planning to attend	<ul style="list-style-type: none"> • “We do pick our campgrounds knowing that they have [amphitheater programs].” • “We even drive to neighboring campgrounds so we can watch it.”
	Repeat interest	<ul style="list-style-type: none"> • “We loved it! We had seen the show before and wanted to come see it again.”
Perceived learning	Negative experience	<ul style="list-style-type: none"> • I did not like the “fear monger[ing] mentality” regarding a bear safety program.”
	Moderate to very detailed response – Focus of event	<ul style="list-style-type: none"> • “It was totally about learning, there was no extraneous stuff.”
	Moderate to very detailed response – approach to learning	<ul style="list-style-type: none"> • “There was lots of information but it was presented in a way that was not overwhelming.” • “There was more thoughtful learning about it, it wasn’t just regurgitation of facts.”
Attitude change	Nothing or very general	<ul style="list-style-type: none"> • “I was hoping to learn something new, but I didn’t. The kids learned lots though!” • “[The event] reinforced what I knew, and I picked up some new things.”
	Positive – respect, awareness, or appreciation	<ul style="list-style-type: none"> • “Yeah! I feel less scared of bears if I were to come upon one because they explained what to do if you come across the bear.”
	Positive – increased understanding	<ul style="list-style-type: none"> • “I feel more informed - it makes you think differently and pay more attention to what you see.”

	Positive – increased curiosity	<ul style="list-style-type: none"> • “And my daughter is interested in learning more too now... you just start to think about it a little bit right?”
	Positive – felt part of conservation or stewardship	<ul style="list-style-type: none"> • “[In regards to] conservation we really felt the need to leave the bones behind so that the next person can see them.”
	Neutral or negative change	<ul style="list-style-type: none"> • “No, I wouldn’t say so. We have a bit more appreciation and I want to conserve the mountains, but not because of the show.”
Behaviour intentions	Positive – increased desire to learn about and access nature	<ul style="list-style-type: none"> • “It was a success for me if [my daughter] is wanting to learn more about a topic of science or nature.” • “Taking more time to enjoy it when you walk through the woods. Wanting to learn more and research more.”
	Positive – more inclined to behave environmentally friendly	<ul style="list-style-type: none"> • “[The show] made us more cognizant of the fact that when we leave camp for the day to make sure everything is put away and wiped down.” • “I’m sure if there was a whole topic on spiders I would probably think twice before killing one next time.” • “I want to do it to help the environment, we love camping, we enjoy the quiet, having nature. Everything is impacted by everything – there is the domino effect and you want to come out and enjoy nature so you have got to protect those environments.”
	Positive – safety	<ul style="list-style-type: none"> • “The kids have been paying attention to ticks and going through the bush, and I don’t have to yell at them about closing the screen door anymore to keep bugs and mice out!”
	Neutral/Negative – already in place	<ul style="list-style-type: none"> • “No, I think that we have been out camping long enough that we know how to handle the whole bear situation.”
	Neutral/Negative – no take home message	<ul style="list-style-type: none"> • “The conservation aspect is something they could maybe stress a little more on.”
	Neutral/Negative – only attitudes changed	<ul style="list-style-type: none"> • “As far as the rocks no [my behaviour won’t change], but the appreciation level [did].”

Table 5. Level of participation in environmentally friendly behaviours.

Location	Behaviour	Percent indicating yes
At home	Recycling	40
	Conscious utility use	20

While camping	Lifestyle choices (e.g., gardening, composting, owning a small house, choosing not to have children)	18
	Consumer choices	11
	Camping style choices (e.g., keeping a clean campsite, proper waste disposal, low noise pollution),	31
	Consumer choices (e.g., reusing products, buying environmentally friendly products, bringing items from home)	19
	Recycling	18
	Not disturbing the environment	13
	Conscious utility use	13

Table 6. Factors contributing to enjoyment and learning from personal interpretation programs.

Outcome	Contribution	Factor	Percent of category	Examples
Enjoyment	Supported	Entertainment	22	Enjoyable, comedic, fun
		Theatrics	19	Song, dance, costume
		Interpreters	16	Enthusiasm, knowledge, skill
		Educational approach	14	Repetition
		Visitor involvement	12	Personal interaction, audience participation
	Hindered	Variety of learning approaches	11	Different activities (e.g., involving sight, sound, touch, and movement)
		Being outside	6	-
		Nothing	76	-
		Environment	12	Wind, rain, insects
		Crowding	4	-
Perceived learning	Supported	Inappropriate language	4	-
		Use of fear	4	-
		Theatrics	28	Song, dance, costumes, character <ul style="list-style-type: none"> “There was more thoughtful learning about it; it wasn’t just regurgitation of facts.”
		Entertainment	17	Enjoyable, comedic, fun

		Interpreters	17	Enthusiasm, knowledge, skill
		Visitor involvement	15	<ul style="list-style-type: none"> • “I like how they give the kids audience participation – it keeps them engaged” • “It is really effective if you get people touching things because it anchors [their learning].”
		Repetition	10	<ul style="list-style-type: none"> • “[They used] repetition: play, then song, entertainment, backboard, summary at the end, and real world examples.” • “There were different activities for different interests and learning types.”
		Variety of learning approaches	8	<ul style="list-style-type: none"> • “There were different activities for different interests and learning types.”
		Visual aids	5	Pictures, backboard, props
	Hindered	Nothing	54	-
		Parents’ own kids	17	-
		Environment	13	Wind, rain, insects
		Other issues	17	Missing a portion of the event, crowding, uncertainty of the interpretive location, business distractions
Attitude change	Supported	Educational	54	<p>Increased knowledge (62%)</p> <ul style="list-style-type: none"> • “I know I learned more for sure, and the kids learned more for sure.” <p>Increased respect or connection (31%)</p> <ul style="list-style-type: none"> • “By experiencing it - you get an appreciation for it” <p>Increased safety (8%)</p> <ul style="list-style-type: none"> • “I’m less scared if I were to come across a bear... and I feel a lot safer.”
		Presentation style	46	<p>Memorable experience (46%)</p> <ul style="list-style-type: none"> • “It was a positive experience” <p>Theatrics (27%)</p> <ul style="list-style-type: none"> • “how it was presented – the facts stick in your mind” <p>Aural aids (18%): discussions, songs</p> <p>Visual aids (9%): displays, pictures, artifacts</p>

Behavioural intention	Supported	Knowledge or awareness	31	<ul style="list-style-type: none"> • “Just knowing a little bit more, awareness has contributed to me wanting to know and experience more in our time here.”
		Positive or memorable experience	31	<ul style="list-style-type: none"> • “If you have a positive experience you want to be reminded of it and learn more.”
		Park staff	25	<ul style="list-style-type: none"> • “I think when you hear from parks staff you get a real human view of how special they are for the environment and it does make you change.”
		Realizing consequences	13	<ul style="list-style-type: none"> • “I don’t want to provoke bees in any way because I don’t want to get stung – I know the consequences.”

Table 7. Links between factors and outcomes resulting from personal interpretation.

Outcomes Linked	Representative comments
Enjoyment and perceived learning	<ul style="list-style-type: none"> • “It made learning fun.” • “They took at dull subject and turned it into something incredible.” • “It was not ‘boring’ informative – it was entertaining informative”
Perceived learning and attitudes	<ul style="list-style-type: none"> • “I think you just always have more appreciation for something when you learn how complex it really is. My daughter is interested in learning more too now.” • “[The message] had impact beyond the show as well, and I appreciate that. It was a success for me if [my daughter] is wanting to learn more about a topic of science or nature or environmental studies. That is why we are here, is so that she appreciates [those things].”
Enjoyment, perceived learning, and attitudes	<ul style="list-style-type: none"> • “If you have a positive experience you want to be reminded of it and learn more.”