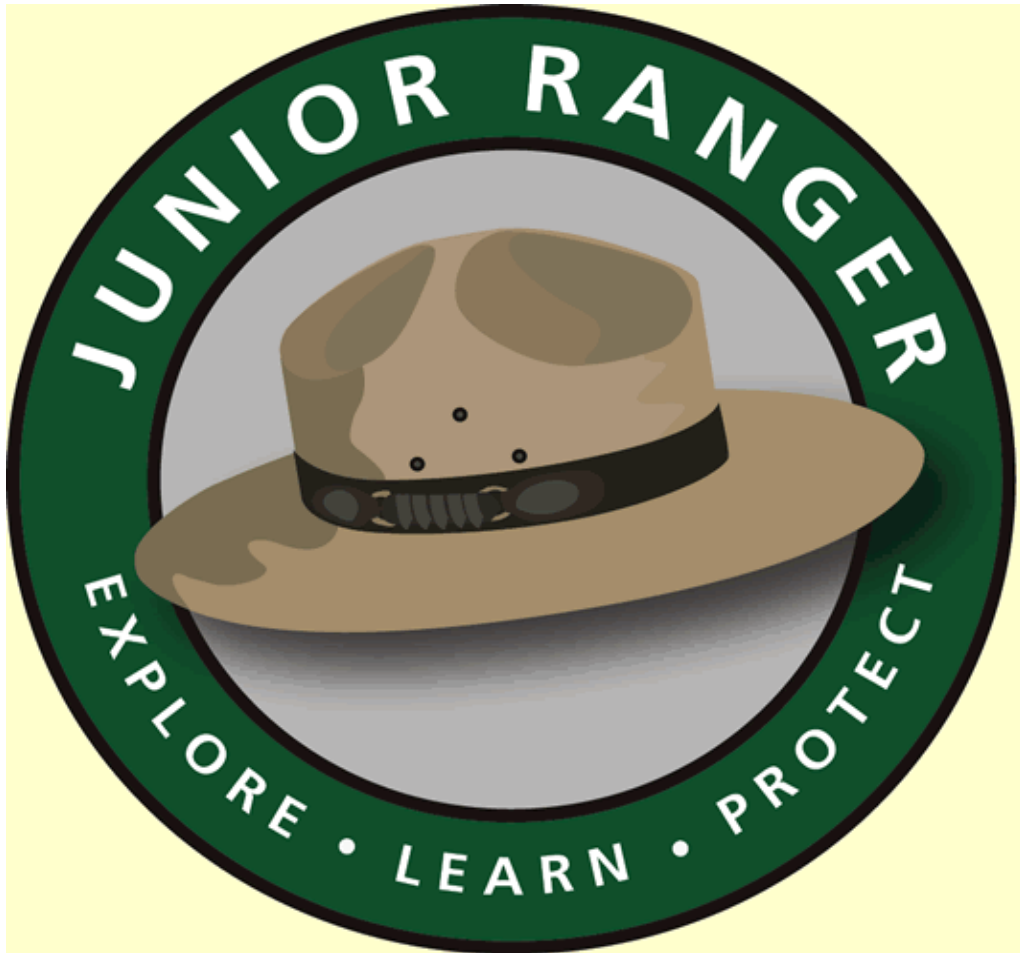


**Stewardship 101:
An Evaluation of the Great Smoky Mountains National Park
Junior Ranger Program**



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Noteworthy Findings

- *The GRSM JR program had immediate, positive, and significant impacts on participants' in-park behaviors, thereby complementing resource protection efforts.*
- *The GRSM JR program had immediate, positive, and significant impacts on participating children's awareness, interest, and engagement pertaining to park resources. The program also had significant immediate impacts on attitudes, subjective norms, empowerment, in-park behaviors, activism behavioral intentions, and conservation behavioral intentions related to stewardship (Table 5).*
- *Six months after participation in the JR program children retained positive benefits in awareness, attitudes, empowerment, and in-park behaviors.*
- *Adults who attended the GRSM JR program reported immediate, positive, and significant impacts in awareness of park resources. The program also had significant immediate impacts on attitudes, subjective norms, empowerment, in-park behaviors, activism behavioral intentions, and conservation behavioral intentions pertaining to stewardship (Table 6).*
- *Six months after participation in the JR program, adults lost all immediate positive gains in all outcomes of interest. Although adults reported an elevated intention to participate in increased levels of stewardship behaviors, 6 months later the results suggest that they had not changed these behaviors.*
- *Children's stewardship attitudes and behaviors were positively related to levels of awareness, interest in learning, and engagement in thinking about issues related to park resources and stewardship.*
- *Children's intentions and behaviors were positively related to their attitudes, subjective norms, and feelings of empowerment.*
- *Immediately after the JR program, adults' stewardship behaviors and behavioral intentions were positively correlated with their levels of awareness, interest, and engagement pertaining to park resources, as well as attitudes, subjective norms, and empowerment pertaining to stewardship behaviors.*
- *After returning home, adults' home conservation behaviors were not correlated with levels of awareness, interest, and engagement pertaining to park resources; or subjective norms or feelings of empowerment related to stewardship.*

EXECUTIVE SUMMARY

Introduction

With nearly 9.5 million visitors in 2009, Great Smoky Mountains National Park (GRSM) is the most visited national park in America. As a means of dealing with such vast numbers of visitors, GRSM has invested a great deal of assets and effort into visitor interpretation and education programs in an effort to enhance the visitor experience and support resource stewardship. One of Great Smoky Mountains National Park's (GRSM) most popular interpretation programs is its Junior Ranger (JR) program, with approximately 18,000 participants during the summer of 2009. This report presents the results of an evaluation of the GRSM JR program's effectiveness in improving awareness and interest in park resources and influencing positive stewardship attitudes and behaviors among youth participants ages 8-13 and their accompanying parents or guardians (collectively referred to as "participants" in this report). In addition, this research sought to investigate the factors that influence participation in stewardship behaviors. Specifically, this research investigated the following questions:

1. To what degree does the GRSM Junior Ranger program influence participants' awareness, interest, levels of engagement, attitudes, subjective norms, feelings of empowerment and behaviors pertaining to stewardship?
2. Is there a significant difference between children's and adults' awareness, interest, levels of engagement, attitudes, subjective norms, feelings of empowerment and behaviors pertaining to stewardship?
3. What factors influence individuals to participate in stewardship behaviors?

Questionnaire Development and Conceptual Foundation

In order to investigate the influence of JR on participating children (ages 8-13) and their accompanying adults, we developed a series of survey scales in cooperation with GRSM staff and significant stakeholders. These scales were also based on social psychological theory in an effort to effectively measure awareness, interest, and levels of engagement pertaining to park resources, as well as attitudes, subjective norms, empowerment, and behaviors associated with stewardship (Table 1). Stewardship behaviors, as defined by GRSM staff and significant stakeholders, are comprised of in-park behaviors, activism behaviors, and out-of-park conservation behaviors and separate scales were created to measure each (Table 2).

In an effort to investigate factors that may influence individuals' performance of environmentally positive behaviors associated with stewardship, we grounded our research using two social psychological theories. The primary theoretical foundation of this research is the Theory of Planned Behavior (TPB), a

well-substantiated theory from the field of social psychology, which suggests that human behavior and behavioral intentions are largely driven by one's attitudes toward the behavior and his/her knowledge or beliefs related to the likely outcomes of that behavior; social and peer pressures and norms about performing the behavior (subjective norms); and beliefs regarding one's perceived ability to perform a behavior (perceived behavioral control or empowerment) (Ajzen, 1988, 2002).

In conjunction with the TPB, we also used a communication theory known as the Elaboration Likelihood Model (ELM) to examine both the factors that influence participation in stewardship behaviors and the effects of JR on participants' attitudes and behaviors associated with stewardship (Petty & Wegener, 1998; Chaiken, Liberman, & Eagly, 1989; Petty & Cacioppo, 1986, Brown, Ham & Hughes, 2010). The ELM suggests that thematic interpretation and other communication may influence attitudes and behaviors through two potential routes, the central route and the peripheral route (Ham, Brown, Curtis, Weiler, Hughes, & Poll, 2007; Petty & Cacioppo, 1986).

The central route to persuasion is thought to draw upon a person's awareness of a subject and their level of interest to engage in elaborative thoughts regarding a persuasive message. If a communication effort leads to "elaboration," the potential to develop a lasting change in a person's salient beliefs, attitudes, and behaviors increases. Attitudes developed through the central route to persuasion tend to be relatively accessible, persistent over time, resistant to change, and predictive of behavior (Petty, McMichael, & Brannon, 1992).

The peripheral route to persuasion involves much less effort and is strongly influenced by peripheral cues such as the characteristics of the message, the messenger, or the context in which it was received (Petty & Cacioppo, 1986). In a park setting, a sign that targets littering behavior often uses this peripheral route. When a message is short and contextual, elaboration may be unnecessary. Similarly, if a person's interest or awareness is low, an individual may be unwilling to engage in elaborative thoughts. When this happens, these peripheral cues, such as signs, park staff providing communication, and the park setting, may be persuasive. The peripheral route to persuasion is likely to cause only a temporary change in attitudes or behaviors and is apt to be less influential or enduring unless peripheral cues are constantly present or repetitive (Ham, Brown, Curtis, Weiler, Hughes, & Poll, 2007; Brown, Ham & Hughes, 2010).

According to the ELM, if participation in the JR interpretive program can raise a participant's level of awareness, spark an interest in learning about park resources and stewardship issues, and encourage "elaboration" on those issues, it is likely to improve participants' attitudes toward stewardship behaviors, which will in turn increase the frequency in which the participant engages in stewardship behaviors. As NPS interpretation seeks to engage visitors and facilitate personal relationships with park resources, ELM compliments the TPB in predicting visitors' stewardship behaviors. In total, we developed three TPB

scales (see Table 1): attitudes, subjective norms, and empowerment; and three ELM scales (see Table 1): awareness (ELM), interest (ELM), and engagement (ELM), to investigate the factors that may influence future stewardship behaviors.

Table 1. Stewardship Scales: Awareness, Interest, Engagement, Attitudes, Subjective Norms and Empowerment

Scale: Definition	Items
Awareness (ELM): <i>knowledge of park resources and stewardship issues and events</i>	
	Climate change can harm Great Smoky Mountains National Park
	Protecting a lot of different kinds of animals will help keep our planet healthy
	Having healthy trees in the park helps clean the air we breathe
	The National Park Service takes care of historic places so people can enjoy them
	Leaving garbage out in the park can make wild animals sick
	My family will benefit because the National Park Service protects parks for the future
Interest (ELM): <i>interest in learning about stewardship issues</i>	
	The plants in Great Smoky Mountains National Park
	How to keep the park's rivers and streams clean
	How to preserve cultural sites in the park
	The history of Great Smoky Mountains National Park
	How to protect animals in the park
	Other national parks
Engagement (ELM): <i>the amount of time people have spent thinking about a stewardship subject</i>	
	The benefits of being in the outdoors
	How I should behave when visiting the park
	The harm some people do to the park by their actions
	The ways I can help protect our national parks
	How important parks are to the planet
	The history of Great Smoky Mountains National Park
Attitudes (TPB): <i>how much a person positively or negatively values the performance of a stewardship behavior (*negative)</i>	
	Cleaning up trash left by others
	*Feeding wild animals like bears
	*Littering in the park
	* Leaving food out where wild animals can eat it
	* Picking wildflowers in the park
	* Writing on trees or buildings
	* Keeping things like arrowheads that are found in Great Smoky Mountains National Park
Subjective Norms (TPB): <i>social pressures a person feels to engage, or not to engage, in a potential stewardship behavior</i>	
	My friends think it's great that I visit national parks
	My family wants me to help protect the environment
	In general, I try to do what my family wants me to do
	My family wants me to stay a safe distance from wild animals
	My family would be proud of me if I donated some money to the park
	My friends would approve of me volunteering at a park
Empowerment (TPB): <i>the feelings of control a person believes they have over factors which they think may help or hinder their ability to engage in a stewardship behavior</i>	
	How much I learn about this park is really up to me
	I can change the amount of electricity we use at home
	I have the power to help protect the environment
	It is up to me to make sure I don't cause harm when I am outside in nature
	It is up to me to limit the amount of water I use

Table 2. Stewardship Behavior Scales

<i>Scale: definition</i>	Items
<i>In-Park Behaviors:</i> positive behaviors which the NPS wants to encourage or negative behaviors which the NPS is attempting to curtail (*negative behaviors)	
	*Feed wild animals
	*Pick wildflowers
	*Take artifacts found in the park
	Clean up litter left by others
	Learn more about the park's natural environment
	Dispose of trash properly
	Store food out of reach of wildlife
<i>Activism Behaviors:</i> behaviors that seek to influence the use of natural resources or the actions of others through direct or indirect action	
	Volunteer to help the environment
	Make places for wildlife in my neighborhood
	Talk to others about protecting nature
	Ask my family to use less electricity at home
	Suggest visiting national parks to other people
	Help clean up a local park when asked
<i>Conservation Behaviors:</i> personal behaviors intended to conserve natural resources	
	Turn off the water when brushing my teeth
	Recycle
	Ride public transportation when available
	Reuse things like plastic bottles or bags
	Walk or bike instead of riding in the car
	Turn off lights when not being used

Methods

Data collection occurred in the summer of 2009. Surveys were distributed to two independent samples of visitors to GRSM. Individuals who had not yet participated in JR, yet intended to do so during their visit, were asked to complete a baseline or “pre-test” survey. Using a systematic sampling technique, baseline surveys were administered from Wednesday, July 15th – Saturday, July 18th to children ages 8-13, and their accompanying parent or guardian. Adults and their children in the targeted age range were approached and asked their willingness to complete a questionnaire. We collected pre-test surveys from 164 children and 98 adults with a response rate of 79%.

We also administered surveys to individuals after attending JR which we refer to as “post-test” surveys. Post-test surveys were administered from June 21st – August 8th to JR program participants (ages 8-13) and their accompanying parents or guardians after the children had completed the program and received their JR badges. We collected surveys from 185 children and 216 adults and had a response rate for the post-test of 97%.

To investigate the more long term influences of participation, 86% of post-test respondents volunteered to provide their name and address to participate in a 6 month after “follow up” questionnaire. After elimination of duplicates, 301 follow up surveys were mailed using a modified Dillman approach. We received surveys from 86 children and 71 adults and had a response rate of 52%. The intent of all research activities was to examine changes—if any—in participants’ awareness, interest, levels of engagement, attitudes, subjective norms, feelings of empowerment, and behaviors pertaining to stewardship, as well as to examine the factors that possibly influenced any changes that may have occurred.

Results

Visitor Characteristics: The children that completed our stewardship survey had a mean age of 10, on average had completed 4th grade, were 52% female, and were 90% white (Table 3). The accompanying adults, who completed our stewardship survey, had a mean age of 44, were college educated (M=15.6 years of education), were 62% female, and were 96% white.

Table 3. Summary of Participant Demographics

Demographic Item	Children	Adults
Age	Mean = 10.25 years	Mean = 43.74 years
Years of Education	Mean = 4.26 years	Mean = 15.6 years
Gender	52.3% Female / 47.7% Male	61.7% Female / 38.3% Male
Race	90.2% White, not of Hispanic Descent	95.9% White, not of Hispanic Descent

GRSM Trip Characteristics: Approximately 85% of JR respondents indicated that they used a JR activity book; respondents spent an average of 5 days in GRSM and attended on average 2.8 ranger-led talks. For over 52% of child respondents, this was their first visit to GRSM and for 40% of JR post program respondents this was their first JR program. Thirty three percent of adult post program respondents participated in the “Not-so JR” program.

Comparison of Visitor Characteristics: A statistical comparison of visitor characteristics, including demographics and experience use history (EUH), was conducted in part to verify the comparability of pre, post, and follow-up test groups. Results showed that while there was not perfect equivalence across samples, the differences were not such that they unduly influenced outcomes, leading to the conclusion that comparisons between test groups are valid.

Table 4. GRSM Trip Characteristics, Prior NP and JR Experience, and Intentions to Visit NPs and Participate in JR

GRSM Trip Characteristics	Children	Adults
Did you (or your child) complete a JR activity book while taking part in the JR program at GRSM?	84.5% Yes	90.1% Yes
If you are an adult, did you participate in the “Not-So-Junior Ranger” program during your visit to GRSM?	N/A	32.9% Yes
How many days did you spend in GRSM during your visit last summer?	FU Mean = 5.15	FU Mean = 5.11
How many ranger led programs did you go to during that visit?	FU Mean = 2.85	FU Mean = 2.83
Experience Use History (EUH)		
How many other national parks have you visited? (0 =0; 1 =1 visit; 2 =2-3 prior visits; 3=4-6 visits; 4=7-9 visits, and 5=10 or more)	Pre Mean = 1.78	Pre Mean = 2.70
	FU Mean = 2.38	FU Mean = 3.10
How many other National Park Junior Ranger programs have you taken part in? ((0=0, 1=1, 2= 2-3, 3=4-6, 4 = 7-9, 5 = 10 or more)	Pre Mean = .35	Pre Mean = .63
	Post Mean = 1.67	Post Mean = 1.55
How many trips have you made to GRSM in the last 5 years? (0 = 0; 1 = 1 trip; 2 = 2-3 prior trips; 3=4-6 trips; 4=7-9 trips, and 5= ten or more)	Pre Mean = 1.82	Pre Mean = 2.21
	Post Mean = 1.78	Post Mean = 2.11
Future National Park and JR Participation		
Do you plan to visit other national parks in the future?	Pre 91.3% Yes	Pre 94.9% Yes
	Post 90.6% Yes	Post 98.6% Yes
Do you plan on participating in a JR program during your next visit to a national park?	76.5% Yes	69.0% Yes

Effects of Participation

The following findings, associated with the effects of participation, are related to research question 1): **“To what degree does the GRSM JR program influence participants’ awareness, interest, levels of engagement, attitudes, subjective norms, feelings of empowerment and behaviors pertaining to stewardship?”**

Children’s Findings: The GRSM JR interpretive program had an immediate, positive, and significant impact on awareness, interest, levels of engagement, attitudes, subjective norms, empowerment, in-park behaviors, activism behavioral intentions, and conservation behavioral intentions (Table 5).

Six months after participation in the JR program, children demonstrated long-term positive benefits in awareness, attitudes, empowerment, and in-park behaviors. The results suggest that the GRSM JR program improved children’s awareness, interest, and engagement in learning about park resources, as well as in-park behaviors and home conservation behaviors.

Table 5. Summary of Children’s Significant Outcomes based on Composite Mean Scores

Scale	Immediate Effects (Pre-Post)	Longer-term Effects (Pre-Follow Up)
Awareness	Increase	Increase
Interest	Increase	
Engagement	Increase	
Attitudes	Increase	Increase
Subjective Norms	Increase	
Empowerment	Increase	Increase
In Park Behaviors	Increase	Increase
Activism Behaviors	Increase	
Conservation Behaviors	Increase	

Significance level: * $p < .05$

Adults’ Findings: Adults who attended the GRSM JR interpretive program reported immediate, positive, and significant impacts in awareness of park resources, attitudes, subjective norms, empowerment, in-park behaviors, activism behavioral intentions, and conservation behavioral intentions (Table 6). No immediate effects on interest or engagement were reported.

Table 6. Summary of Adults’ Significant Outcomes based on Composite Mean Scores

Adults’ Scale	Immediate Effects (Pre-Post)	Longer-term Effects (Pre-Follow Up)
Awareness	Increase	
Interest		Decrease
Engagement		Decrease
Attitudes	Increase	
Subjective Norms	Increase	
Empowerment	Increase	
In-Park Behaviors	Increase	
Activism Behaviors	Increase	
Conservation Behaviors	Increase	

Significance level: * $p < .05$

Six months after participation in the JR program, adults appeared to lose all post program increases in awareness, attitudes, subjective norms, empowerment, as well as in all three behavioral measures pertaining to stewardship. Results suggest that adults received significant immediate benefits from attending JR. The long term results suggest that when adults returned home, their awareness, attitudes, subjective norms, empowerment, and their behaviors reverted back to pre-park visitation levels.

A Comparison of Children’s & Adults’ Outcomes

Presented in this section are results from the research question: 2) **“Is there a significant difference between children’s and adults’ awareness, interest, levels of engagement, attitudes, subjective norms, feelings of empowerment and behaviors pertaining to stewardship?”**

Results from the pre-test indicate that adults started with higher mean scores on every factor except conservation behaviors (Table 7). After participation in the JR interpretive program, the post-test children eliminated the disparity between their composite mean scores and those of the adults for all factors except awareness and attitudes. Six months after participation in the JR program, the follow-up children’s group reported composite mean scores equal to those reported by adults on all factors except attitudes. Participation in the JR program resulted in the immediate and longer-term elimination of the existing discrepancy between children’s and adults’ levels of interest, amount of engagement, strength of subjective norms, feelings of empowerment, and frequency of participation in positive in-park behaviors and activism behaviors. After a six month span of time, children’s awareness levels also equaled adults.

Table 7. Comparison of Adults’ and Children’s Pre, Post & Follow-Up Composite Mean Scores

Scale	Sample	Pre Mean ¹	Sig. <.05 Dif.	Post Mean ¹	Sig. <.05 Dif.	FU Mean ¹	Sig. <.05 Dif.
Awareness	Adults	4.64	*	4.74	*	4.64	
	Children	4.43		4.66		4.60	
Interest	Adults	4.31	*	4.28		4.07	
	Children	3.94		4.20		4.09	
Engagement	Adults	4.30	*	4.41		3.90	
	Children	4.07		4.33		4.12	
Attitude	Adults	4.76	*	4.89	*	4.82	*
	Children	4.43		4.72		4.72	
Subjective Norms	Adults	4.25	*	4.41		4.29	
	Children	4.09		4.33		4.21	
Empowerment	Adults	4.57	*	4.67		4.65	
	Children	4.32		4.59		4.54	
In-Park Behavior	Adults	4.48	*	4.66		4.54	
	Children	4.21		4.62		4.47	
Activism Behavior	Adults	3.68	*	3.99		3.54	
	Children	3.35		3.92		3.34	
Conservation Behavior	Adults	3.87		4.04		3.81	
	Children	3.87		4.02		3.88	

¹-Means are based on a 5 point Likert scale (composite is the total of all means divided by number of items comprising the scale) and higher values reflect more positive outcomes

* Significantly different mean scores at $p < .05$

Factors that Correlate with Stewardship Behaviors

In an effort to answer research question 3) “**what factors influence certain individuals to participate in stewardship behaviors?**”, we investigated the correlations between stewardship behaviors (in-park, activism, and conservation behaviors) and ELM factors (awareness, interest, and engagement), TPB factors (attitudes, subjective norms, and empowerment), and **GRSM visitor and experience** characteristics. In addition, the relationships between ELM factors (awareness, interest, and engagement) and attitudes were also examined. In this investigation we used a more stringent significance level of $p < .01$ to ensure more accuracy when reporting the relationships between the variables.

ELM and TPB Factors & Stewardship Behavior

Children’s Results: Results suggest that children’s stewardship attitudes and behaviors are positively influenced by raising levels of awareness, sparking an interest in learning, and engaging participants in thinking about issues related to park resources and stewardship. In addition, the results suggest that children’s intentions and actual stewardship behaviors are positively influenced by improving their attitudes, strengthening their subjective norms, and increasing their feelings of empowerment.

Significant positive correlations between stewardship attitudes and behaviors and the factors associated with the ELM (awareness, interest and engagement) and TPB (attitudes, subjective norms, and empowerment) were found before, immediately after, and 6 months after attending JR.

Table 8. Children’s Correlations for Theoretical Factors and Stewardship Behavior Scales

Children’s Correlations Scales		In-Park Behaviors	Activism Behaviors	Conservation Behaviors	Attitude
Awareness	Pre	Positive**	Positive**	Positive**	Positive**
	Post	Positive**	Positive**	Positive**	Positive**
	FU	Positive**	Positive**	Positive**	Positive**
Interest	Pre	Positive**	Positive**	Positive**	
	Post	Positive**	Positive**	Positive**	Positive**
	FU	Positive**	Positive**	Positive**	
Engagement	Pre	Positive**	Positive**	Positive**	
	Post	Positive**	Positive**	Positive**	Positive**
	FU	Positive**	Positive**	Positive**	
Attitude	Pre	Positive**		Positive**	
	Post	Positive**	Positive**	Positive**	
	FU	Positive**			
Subjective Norms	Pre	Positive**	Positive**	Positive**	
	Post	Positive**	Positive**	Positive**	
	FU	Positive**	Positive**	Positive**	
Empowerment	Pre	Positive**	Positive**	Positive**	
	Post	Positive**	Positive**	Positive**	
	FU	Positive**	Positive**	Positive**	

Significance level: ** $p < .01$

Adults' Results: Immediately after the JR program, adults generally intended to or did engage in positive stewardship behaviors more frequently when their levels of awareness, interest, and engagement (the ELM factors) were increased. Six months after the JR program, the results suggest that no significant relationship existed between conservation behaviors and the factors associated with ELM or TPB (Table 9). For adults, attitudes also appeared not to correlate with the three stewardship behaviors.

In general, several non-significant correlations existed between follow-up variables, suggesting that context (home vs. park) may play an important role in predicting adult stewardship behaviors.

Table 9. Adults' Correlations for Theoretical Factors and Stewardship Behavior Scales

Adults' Correlations Scales		In-Park Behaviors	Activism Behaviors	Conservation Behaviors	Attitude
Awareness	Pre	Positive**	Positive**	Positive**	Positive**
	Post	Positive**	Positive**	Positive**	Positive**
	FU	Positive**	Positive**		Positive**
Interest	Pre		Positive**		-
	Post	Positive**	Positive**	Positive**	Positive**
	FU	Positive**			Positive**
Engagement	Pre	Positive**	Positive**	Positive**	-
	Post	Positive**	Positive**	Positive**	Positive**
	FU	Positive**	Positive**		Positive**
Attitude	Pre				
	Post	Positive**			
	FU				
Subjective Norms	Pre	Positive**	Positive**	Positive**	
	Post	Positive**	Positive**	Positive**	
	FU				
Empowerment	Pre	Positive**	Positive**	Positive**	
	Post	Positive**	Positive**	Positive**	
	FU	Positive**	Positive**		

Significance level: ** p<.01

Visitor and Experience Characteristics & Stewardship Behavior: No consistent statistically significant correlations emerged. Participation in other NPS JR programs or visiting other national parks did not have a significant relationship with participants' stewardship behaviors.

Relationships between In-park, Activism, and Conservation Behaviors

The results also suggest that significant positive correlations existed between in-park behaviors, activism behaviors, and conservation behaviors. If the frequency of a person engaging in one type of stewardship behaviors increased, i.e. in-park behaviors, then the frequency of that person engaging in the other two types of stewardship behaviors also increased.

Discussion and Recommendations

Effectiveness of JR Program

Immediate Impacts: The GRSM JR program had immediate, positive, and significant impacts on participating children's awareness, interest, and engagement pertaining to park resources. The program also had significant immediate impacts on attitudes, subjective norms, empowerment, in-park behaviors, activism behavioral intentions, and conservation behavioral intentions related to stewardship (Table 5). Adults who attended the GRSM JR program also reported immediate, positive, and significant impacts in awareness, attitudes, subjective norms, empowerment, in-park behaviors, activism behavioral intentions, and conservation behavioral intentions (Table 6).

Management Recommendation: It is recommended that park staff continue to provide interpretation pertaining to in-park behaviors as the GRSM JR program appeared to have immediate, positive, and significant impacts on participants' in-park behaviors, thereby complementing resource protection efforts. If there are particular visitor behaviors that emerge as problematic or important for resource protection in GRSM, then staff should construct educational messages utilizing both ELM and TPB theoretical approaches (see discussion below). A good resource for conducting this type of communication is: Ham, S. H., Brown, T. J., Curtis, J., Weiler, B., Hughes, M., & Poll, M. (2007). Promoting persuasion in protected areas: A guide for managers. Developing strategic communication to influence visitor behavior. Southport, Queensland, Australia: Sustainable Tourism Cooperative Research Centre.

Longer-term Impacts: Six months after participation in the JR program, children retained positive benefits in awareness, attitudes, empowerment, and in-park behaviors. These findings suggest that participation in the JR program makes a strong and lasting impression on children's awareness, attitudes, and empowerment which are positively correlated with stewardship behaviors (Table 8). However, children's levels of interest, engagement, and participation in activism and conservation behaviors returned to pre-visitation levels 6 months after leaving the park context.

Adults lost all immediate positive gains, which parallels findings from other studies of adults who have received interpretation in park settings (e.g. Powell, 2004; Powell & Ham, 2008; Powell, Kellert, & Ham, 2008, 2009). These studies suggest that immediate benefits often do not last, and long term results are influenced dramatically by context (home environment vs. park setting).

Management Recommendation: As a means of reinforcing the immediate positive effects of participation in the JR program, it is suggested that park staff develop a means of communicating with visitors once they leave the park. The purpose of these communications would be to maintain visitors' awareness of stewardship issues, reinforce their interest in learning about park resources, and support engagement by provoking thoughts on issues pertaining to stewardship.

Factors that Influence Stewardship Behaviors

To help guide our investigation into the factors that may influence stewardship behaviors, we used two social psychological theories: Theory of Planned Behavior (TPB) and the Elaboration Likelihood Model (ELM). The TPB suggests that a person's attitudes toward a behavioral outcome, social norms related to performing a behavior, and perceived ability to perform the behavior all influence the choice to perform a behavior. ELM suggests that a person's awareness of a topic, interest in learning about a topic, and level of engagement in thinking about a topic influence a person's attitudes and subsequent behaviors related to that issue. Our findings suggest that the ELM factors (awareness, interest, and levels of engagement) were positively correlated with stewardship behaviors. The results also suggest that subjective norms and empowerment, which are part of the TPB, were consistently and positively correlated with stewardship behaviors. Children's attitudes toward stewardship behaviors were also correlated with in-park and conservation behaviors or behavioral intentions, but for adults, attitudes generally were not related to any of the stewardship behaviors.

Management Recommendation: Social psychological theories such as TPB and ELM can be useful not only for research but also for developing interpretation and communication strategies. Communication that can raise awareness, spark interest in learning, and provoke engagement in thought about an issue (all ELM factors) may lead to enhanced stewardship outcomes. In addition, when targeting attitudes and behaviors pertaining to stewardship, the results suggest that developing messages that explain the benefits to performing a behavior, target the social acceptability of performing a behavior, remove perceived barriers to performing a behavior, as well as introduce skills necessary for performing a behavior will lead to more positive outcomes.

Other Pertinent Results

Prior NP and JR Participation: Participation in other NPS JR programs or visiting other national parks did not have a significant relationship with participants' stewardship behaviors

Management Recommendation: Additional future research should investigate this relationship between prior experiences and stewardship behaviors.

Stewardship Behaviors: In-park behaviors, activism behaviors, and conservation behaviors were all positively correlated with each other.

Management Recommendation: Because of the correlation between in-park, activism, and home conservation behaviors, interpretive programs and other educational curriculum could be designed to illustrate and strengthen these relationships. In addition, opportunities could be created for visitors to engage in activism and conservation behaviors within the park (i.e. recycling, volunteerism, public transportation, bike rentals, or fund raising events).

Conclusion

The purpose of the evaluation was to examine the effectiveness of the GRSM JR program in improving awareness and interest in park resources and promoting stewardship attitudes and behaviors among youth participants ages 8-13 and their accompanying parents or guardians. In addition we investigated the factors that lead to increased behavioral intentions and behaviors associated with stewardship.

The results of the evaluation provide evidence of almost universal immediate positive effects for both children and adult participants on all factors under investigation, including: awareness, interest, levels of engagement, attitudes, subjective norms, empowerment and behaviors pertaining to stewardship. Six months after attending the JR program, children reported retaining these increases in awareness, attitudes, empowerment, and in-park behaviors. Finally, results suggest that awareness, interest, and levels of engagement, as well as subjective norms, and empowerment were positively correlated with stewardship behaviors.

The results from the JR program evaluation suggest that the program is successful at enhancing the visitor experience and improving awareness, interest, and engagement toward park resources and in positively influencing attitudes, subjective norms, empowerment, in-park and home behaviors and behavioral intentions associated with stewardship.

The final suggestion for improving stewardship outcomes within GRSM is to continue to explicitly design programs that focus on positively influencing the TPB and ELM factors, as the results suggest that positive in-park behaviors and home stewardship behaviors are influenced by these factors. Potential benefits of increasing Stewardship Behaviors are substantial: reduced negative impacts on park resources, improved levels of visitor enjoyment, and cost savings for the NPS through reduced enforcement.

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