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Visitors' delayed responses to interpretive talks and interpreters' expectations for visitor responses

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VISITORS' DELAYED RESPONSES TO INTERPRETIVE TALKS AND
INTERPRETERS' EXPECTATIONS FOR VISITOR RESPONSES

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ABSTRACT

National Park visitors' delayed responses to interpretive talks are examined

and compared to professional interpreters' expectations for visitor responses to

interpretive talks. The premise is that through an understanding of visitors'

delayed responses, interpretive programs can be refined to further the goals of

visitor learning and appreciation as well as the development of a sense of

stewardship. Informal learning theory, schema theory, and constructivist learning

theory provide a conceptual and theoretical framework for the research.

Visitors to nine U.S. National Parks participated in a computer-assisted

telephone survey/interview eight months after attending an on-site interpretive

talk (n=283, response rate 86%). Questions were designed to assess their lasting

perceptions of the interpretative talk. Further, visitors were asked to describe

what elements of the experience were most memorable. In the second component

of the study, 640 permanent interpreters employed by the National Park Service

(NPS) (response rate 56%) responded to a census web survey exploring: 1)

expectations for visitors' responses to interpretive talks, using questions that

paralleled those asked of the visitors, and 2) beliefs about what leads to

memorable experiences at an interpretive talk.

Analyses revealed that a majority of visitors were able to describe memorable

experiences, categorized as either general (n = 89; 32%) or talk/topic specific (n =

150, 53%). Interpreters suggested five major themes believed to lead to

memorable experiences: interpreter/ranger skills, relevance, connections, learning, and involvement. Items that were comparable for visitors' perceptions and interpreters' expectations for responses were strongly correlated (Rho = .834, $p \leq .001$).

The implication is that visitors value experiences where interpreters actively seek to engage the audience. Further, interpretive talks can have a measurable impact on visitors' long-term memories. Informal learning theory, constructivist learning theory, and schema theory provide useful perspectives from which to understand the process and results of engagement. While interpreters recognize the need for and value of engaging visitors, this knowledge may not always translate into practice. Training that emphasizes visitor engagement at multiple levels is essential for memorable interpretive talks.

DEDICATION

This dissertation is dedicated to Jack Anderson, with gratitude for his steadfast support and encouragement.

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CHAPTER ONE

INTRODUCTION

Environmental interpretation is a communication process that aims to reveal meanings and encourage relationships between visitors and natural or cultural resources rather than simply communicating factual information (Larsen, 2002a,b; National Association for Interpretation [NAI], 2000; Tilden, 1957). A goal of interpretation is for visitors to perceive an experience as memorable, inspiring and enjoyable. Additional goals include promoting the development of a sense of stewardship and encouraging increased appreciation and understanding of natural and/or cultural resources. Effective interpretation offers visitors opportunities to build personal connections[1] and encourages visitors to perceive the resource as personally relevant. Interpreters in a variety of settings seek to provide inspiring, enjoyable, and memorable educational experiences that foster the development of a personal stewardship ethic (National Park Service [NPS], 2001). For example, a specific goal may be to influence the visitors' perspectives with respect to resources or protected areas. Further goals for interpretation include creating opportunities for visitors to learn and to be inspired, by provoking curiosity, and instilling a sense of stewardship (Ham & Krumpe, 1996).

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[1] Personal connections are individual emotional and/or intellectual bonds to the resource (Goldman, Chen, & Larsen, 2001; Knapp & Benton, 2004).

An interpretive talk provides opportunities for visitors to become aware of specific resources and the values or meanings they represent. For example, an interpretive talk may present the purpose of a place. Human relationships to, and relationships among thenatural, cultural, and/or historical environment may be addressed (Beck & Cable, 1998; NPS, 2000). A talk may relate to and build on a visitor's past experience and previous knowledge, or it may be their first exposure to the subject. The purpose of this dissertation is 1) to explore and better understand visitors' delayed perceptions of and responses to interpretive talks, and 2) to explore the congruency between visitors' responses and what practicing interpreters expect visitors responses to be.

Visitors' responses to an interpretive talk reflect a talk's effectiveness at achieving the goals of interpretation. Understanding visitors' responses, including action(s) taken as a result of an interpretive talk, allows researchers and interpreters to refine the use of interpretation to enhance the visitor experience and further visitors' understanding, appreciation, and stewardship of resources. In addition, Whatley (1995) suggests that the success or failure of an interpretive talk is determined not only by the visitor's immediate perception of personal relevance, but also by their understanding and retention of the program content over time.

Visitors may respond immediately to a talk, learning new facts and reacting to new ideas; however, as visitors integrate the talk with their previous knowledge, experiences, and beliefs, as well as with ongoing experiences, they may discover further relevancies of the talk. Alternatively, they may cease to consider the talk

entirely once it is over. Identifying aspects of an interpretive talk that become part of a visitor's long-term memory (their individual, relatively permanent record of experience, knowledge, and facts) is integral to understanding the results of interpretation (Nieuwenstein, 2004). Therefore, understanding visitors' delayed responses to an interpretive talk may enable agencies to enhance the visitors' experience while more effectively working towards the goals of interpretation.

Evaluating Interpretive Talks

Attempts to evaluate interpretation have taken a number of different forms. Wagar (1976) was among the first to describe the difficulty of quantifying this "human enrichment," and provided an outline for conducting evaluation using hierarchical levels of interpretive objectives. He suggested measuring the achievement of specific objectives, such as visitor retention of specific facts to infer achievement of broader but immeasurable goals (e.g., 'instilling a sense of pride'), as well as the lasting influences of interpretation. Wagar, and Roggenbuck and Propst (1981) suggested a number of techniques to evaluate interpretation (Table 1.1), although survey/questionnaires and interviews predominate in the literature (Table 1.2).

Table 1.1

Techniques for evaluating interpretation.

Direct audience feedback	Using questionnaires
Auditing by an "expert"	Self-testing devices
Peer review	Panel of outsiders
Suggestion boxes	Time-lapse photography
Direct measures of audience behavior	Following randomly selected individuals
Observation of audience attention	Length of viewing or listening time
Voting	Formal and informal interviews

Adapted from Wagar, 1976, and Roggenbuck & Propst, 1981

Table 1.2

Selected examples of techniques for evaluating interpretation and the time frame of implementation (1979-2005).

Study	Technique	Time frame
Ham & Shew, 1979	Interview (rating scale questionnaire)	Immediate on-site
Hammitt, 1982	Photo questionnaire	Immediate on-site
Mengak, Dottavio & O'Leary, 1986	Survey	On-site initial contact with mail follow-up at 3-4 week point
Burde, Peine, Renfro & Curran, 1988	Survey	Immediate on-site
Warder, 1988	Survey	Immediate on-site
VanderStoep & Gramann, 1988	Film analysis (of change in visitor behavior)	Immediate on-site
Ryan & Dewar, 1995	Questionnaire testing audience learning	Immediate on-site *and* three-month mail follow-up
Morgan, 1996	Survey (experiment)	Immediate on-site
Knapp & Barrie, 1998	Pretest/posttest questionnaire	Immediately prior to and after on-site experience
Stewart, Hayward, & Devlin, 1998	Interviews and observations	Immediate on-site
Beckmann, 1999	Formal and informal observations; structured interviews; informal interviews; self-administered questionnaire	Immediate on-site
Moscardo, 1999	Questionnaire	Immediate on-site

Table 1.2 (Continued)

Selected examples of techniques for evaluating interpretation and the time frame of implementation (1979-2005).

Goldman, Chen, & Larsen, 2001	Focus group interviews	Immediate on-site
Knapp & Poff, 2001	Interviews	One week post site visit and four months post site visit
Knapp & Yang, 2002	Semi-structured interview	Telephone interview more than one year later
Packer & Ballantyne, 2002	Questionnaire	Immediately pre- and post- on-site experience
Anderson, Kelling, Pressley-Keough, Bloomsmith & Maple, 2003	Questionnaire	Immediate on-site
Hwang, Lee & Chen, 2003	Survey/questionnaire	Immediate on-site
Knapp & Benton, 2005	Interviews	Telephone interview two years after experience
Hughes & Saunders, 2005	Survey	Immediately pre- and post- on-site experience
Wiles & Hall, 2005	Survey	On-site pre- and post-test
Tarlton & Ward, 2006	Questionnaire	Pre-test five days before program, post-test five days after

Source: the author

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Experiments testing for change in observed behaviors and tests of knowledge retention have been a popular method of evaluating interpretation (Hughes & Saunders, 2005; Morgan, 1996; Moscardo, 1999; Packer & Ballantyne, 2002; Roggenbuck, 1979; Vander Stoep & Gramann, 1988; Wiles & Hall, 2005). These measures most commonly take the form of pre- and post- experience questionnaires. Limitations of such experiments may include failing to take into account the visitors' previous knowledge, or perceptions of personal relevance. Further these experiments have not attempted to capture visitors' delayed responses.

Warder (1988) tested visitors' knowledge, satisfaction with, enjoyment of, and opinions about interpretation. Burde, Peine, Renfro, and Curran (1988) investigated the success of interpretive services in communicating with visitors at Great Smoky Mountains National Park. In 2003, Anderson, Kelling, Pressley-Keough, Bloomsmith, and Maple implemented a questionnaire addressing the visitor's experience of oral interpretation at the Atlanta Zoo. Hughes and Saunders (2005) ascertained the influence of interpretation on knowledge and environmental attitude immediately before and after visitors' experience at Penguin Island, Australia. Beckmann (1999) examined visitor learning using a pretest/posttest research design, while Packer and Ballantyne (2002) assessed the impact of motivational factors on visitor learning.

Interviews and focus groups have also been used to explore visitors' responses to interpretation immediately after the experience (e.g. Goldman, Chen, & Larsen 2001; Stewart, Hayward, & Devlin, 1998). Reflecting a belief that quantitative

measures may not tell the whole story, Beckmann (1999) used structured and semi-structured interviews along with observation and questionnaires to capture the diversity of responses to questions about an interpretive talk.

Only a few studies have explored visitors' delayed perceptions of or responses to interpretation. Although achieving persistent behavioral change has been described as an appropriate objective for interpretation, previous studies have rarely captured longitudinal information. However, a few examples can be found and provide some direction for research. Knapp and Poff (2001) interviewed students using a grounded theory framework four months after an environmental interpretive program. Knapp and Yang (2002) used a phenomenological approach to investigate participant recollections of their experience approximately one year after their participation in an interpretive program. Ryan and Dewar (1995) sent visitors a post-test questionnaire three months after their interpretive experience to test visitor recall in an evaluation of interpreters' communication competence.

Ham and Shew (1979) used interviews to collect visitor responses to items on a 5-point rating scale as well as open-ended comments regarding likes and dislikes of interpretation in an early example of mixed-methods research in interpretation. Until recently, few examples of mixed methods studies have been published in this field, although Knapp and Barrie (1998) and Yalowitz and Wells (2000) reflect on their usefulness in evaluating interpretation. One example of this method is Beckmann's (1999) mix of survey questions, structured and informal interviews, and informal observations of visitor behavior during and

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immediately after visitors' experiences with interpretive walks, talks, and exhibits in Australian National Parks. However, published studies that are explicitly designed with a mixed methods approach are uncommon, and no mixed method studies that address visitors' delayed responses to an interpretive talk have been found in the literature. Finally, most evaluations of interpretation refer to program-specific objectives (e.g. Wiles & Hall, 2005), rather than addressing expectations for longer-term outcomes based on accepted goals for interpretation (including agency goals and policies).

The Need for Evaluation

Intuition and informal feedback may be the only source of evaluation received by interpreters. With limited funds, agencies may prioritize other areas or focus on developing "new" interpretation instead of evaluating the "old" (Beckmann, 1999). While interpreters may have a sense of visitors' responses to an interpretive talk, they may not accurately predict these responses (Anderson & Blahna, 1996; Combs, 1999; Graft, 1989). Research that identifies visitors' responses to an interpretive talk as well as the congruence between these responses and what/how practicing interpreters expect visitors to perceive/respond provides a useful form of evaluation.

Visitors come to interpretive talks with their own points of view and widely varying backgrounds. From a talk, visitors will draw their own conclusions. Their responses may be immediate or may evolve over time, as the visitor integrates the talk into the context of their individual life experiences. When done

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well, interpretive talks "serve as a sort of memory glue" for long-term understanding (Whatley, 1995, p.26). Understanding visitors' delayed responses to interpretive talks can help identify aspects of effective interpretive talks which serve the broad purpose and goals of interpretive programs: to foster the development of a personal stewardship ethic in the provision of memorable educational and recreational experiences (NPS, 2001).

Audience response is the best measure of evaluation, according to Roggenbuck and Propst (1981). Understanding visitors' responses to interpretive talks can influence decisions regarding how to improve future programs (Kirkpatrick, 1996). Identifying and measuring the results of interpretation enables interpreters and agencies to quantify their work in areas that can be difficult to measure. Support for this type of evaluation also changes the cultural perspective, where training is seen as a critical investment rather then an ancillary or unnecessary cost (Interior Directors Training Council [ITDC], 2003). Interpretation has not always been stringently evaluated; a measured, theory-based evaluation incorporating both visitor and interpreter perspectives is critical if interpretation is to effectively meet its goals (Knudson, Cable, & Beck, 2003; Lacome, 2003).

Although mixed methods studies of visitor responses to interpretation have been recommended by several researchers in the field (Knapp & Barrie, 1998; Yalowitz & Wells, 2000), published results are uncommon (e.g. Beckmann, 1999). No studies using mixed methods to investigate visitors' delayed responses to an interpretive talk have been found in the literature. Further, few studies

examining the relationship between visitors' responses and responses anticipated by practicing interpreters have been found. Therefore, using mixed methods to explore and explain these issues may enable researchers and interpreters to better understand how the goals of interpretive talks may be achieved.

Problem Statement

Despite a desire to better understand the longer-term results of interpretation, most research examining visitors' responses to an interpretive talk has been conducted immediately after the experience. The relatively small pool of research on the lasting effects of interpretation limits understanding of the effects of interpretive programs. Thus, this dissertation furthers our understanding of visitors' delayed responses to interpretative talks, and contributes to the need for a theoretically-informed longitudinal study of visitors' responses to interpretive talks.

Recognizing the increasing pressure to demonstrate the results of interpretation, it may prove advantageous to understand visitors' delayed responses to interpretive talks as they relate to the responses expected by practicing interpreters. In addition, determining the relationship(s) between visitors' responses and what practicing interpreters expected visitors to perceive may guide the provision of effective training, help interpreters to create and present effective interpretive talks, and help researchers, managers, and practitioners more fully understand and effectively communicate the influence and results of interpretation.

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Purpose and Objectives

The major purpose of this research is to determine visitors' delayed responses to an interpretive talk, to determine the responses practicing interpreters anticipate or expect from visitors, and to determine the similarities between the two. Thus, the objectives of this study are:

1. to determine the underlying dimensions of visitors' delayed perceptions of an interpretive talk;

2. to determine if visitors report memorable experiences over time;

3. to determine what actions visitors report having done as a result of the interpretive talk since the talk at which they were initially surveyed;

4. to examine differences in visitor perceptions of the interpretive talk relative to the social/family group with whom they attend;

5. to examine the relationship between the underlying dimensions of visitors' responses and the presence or absence of reported memorable experiences;

6. to determine the underlying dimensions of visitors' perceptions/responses that practicing interpreters expect visitors to report;

7. to determine themes of what practicing interpreters think makes an interpretive talk memorable;

8. to examine differences in what practicing interpreters with different employment-related variables expect visitors to perceive;

9. to describe the degree of congruence between the underlying dimensions of visitors' reported perceptions and what practicing interpreters expect visitors to perceive;

10. to determine the similarities between individual items for visitors' reported responses/perceptions and what practicing interpreters expect visitors' responses/perceptions to be for comparable items.

Organization of the Dissertation

Chapter I has introduced research related to the evaluation of interpretation and described the need for this dissertation. The problem statement and research objectives were stated. Chapter II presents the conceptual and theoretical background, as well as the literature review. Chapter III presents the hypotheses, methods of data collection and data analysis procedures.

Chapter IV addressed the research questions and associated hypotheses for visitors; Chapter V reports the descriptive results and hypothesis testing results for interpreters. Chapter VI reports the results of the research questions and the hypothesis testing for similarities between visitors and interpreters. Chapter VII summarizes the findings, discusses implications, and suggests areas for further research.

Definitions

Underlying dimensions: The shared variance among a set of variables, where the reduced factors are groupings of variables that measure a common entity or construct (Mertler & Vannatta, 2005).

Personal connections: Individual emotional and/or intellectual bonds to the resource (Goldman, Chen, & Larsen, 2001; Knapp & Benton, 2004). For example, through an interpretive talk, an individual may experience a feeling of sadness for the loss of life incurred at a Civil War battle site (an emotional connection). Alternately, an individual may gain insight into the relationships among elements of a functioning ecosystem (an intellectual connection).

Visitor perceptions: Reported responses to or beliefs about an experience.

Theme(s): Common or unifying elements or ideas.

Resource: The setting and objects within it as well as the intangible meanings that the park preserves, manages, and interprets.

Mixed Methods: According to Creswell (2003), mixed methods are appropriate for "a research problem that incorporates the need both to explore and to explain. It follows a purpose statement and research questions focused on understanding a problem using both qualitative and quantitative methods and the rationale for using multiple forms of data collection and analysis" (p. 208).

Limitations

This dissertation was a preliminary attempt to gain an understanding of visitors' delayed responses to interpretive talks, to determine what practicing interpreters expect visitors' perceptions and responses to be, and to determine the congruency between the two. As an initial investigation, the limitations are such that would be found in a first generation study. This is true specifically with respect to determining the usefulness of individual items used to measure visitors' delayed responses. Although the items used were pre-tested with multiple groups, additional testing and refinement is necessary in the ongoing process of developing a useful scale for measuring visitor learning and the making of meaning as delayed responses to a successful interpretive talk. The following specific limitations must be considered.

First, analyses in this dissertation are based only on responses from visitors who attended a series of pre-determined talks at eight NPS sites in the summer of

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2005. These talks were not developed by the researcher, but by the interpreters in accordance with NPS policy. Thus, the researcher had no control over the content of the talks. This may have affected the items determined in the EFA, as elements suggested in the literature as integral to the development of meaning, learning, and a memorable response may not have been incorporated into the interpretive talk.

Second, the analyses in this dissertation are limited to interpretive talks and do not consider other forms of interpretation, for which different results may be obtained. Third, differences in specific topical material for the interpretive talks attended by visitors was not explored. Fourth, in the comparison of items between visitors' responses and interpreters' expectations for those responses, not all items may have been ideal for comparison, due to differences in phrasing. A related concern is the measure of visitors' responses approximately eight months after the interpretive talk. Interpreters were not asked what they believed visitors' responses would be eight months after attending an interpretive talk, but instead, what they thought visitors responses would be without specifying a specific timeline. These responses are thus useful for comparison with other data sets but may not be ideally comparable to the set of visitor responses.

Fourth, only the responses of permanent NPS interpretive staff (i.e. no seasonal staff) are included in the current research. Seasonal, volunteer, and intern interpreters form a large part of the peak season staff in many national parks. As the permanent interpreters who responded to this survey had an average of almost eight years (7.95) of experience in their positions, their responses may

reflect a wealth of informal and formal training experiences that are not as readily

available to other staff. These responses cannot be assumed to generalize to other

groups of non-permanent interpreters.

CHAPTER TWO

CONCEPTUAL BACKGROUND AND RELATED LITERATURE

The first section of this chapter discusses 1) informal/free choice learning theory, 2) schema theory, and 3) constructivist learning theory (CLT). An overview and model of memory from a cognitive psychological perspective is presented, followed by a discussion of knowledge and meaning in long-term memory. Visitor learning from interpretive talks is reviewed.

The second section presents the conceptual framework and expands on the elements of each theory that are critical to understanding visitors' delayed responses to an interpretive talk. Literature in interpretation and cognitive psychology, including the individual construction of meaning, is integrated. Drawn from this literature, the constructs of prior knowledge/ experience, relevance, attention, provocation, and social and physical contexts that form the basis of the conceptual framework are discussed.

The third section introduces the literature related to interpreters' expectations for visitor responses to interpretation. Research investigating the relationship between visitors' responses to interpretation and what interpreters expect visitors to perceive is reviewed. Finally, the use of mixed methods for research on interpretation is described.

Informal Learning/Free Choice Learning

Interpretation is commonly described as informal or free-choice learning[2],

where attendance at a program is voluntary, motivation for attending is varied,

visitors have diverse backgrounds, and the individual construction of meaning is

both personal and dependant on context (Butler, 1993; Cherem, 1977; Goldman,

Chen, & Larsen, 2001; Falk, 2005; Falk & Dierking, 2000; Ham & Krumpe,

1996; Ham & Shew, 1979; Koran, Willems & Camp, 2000; Loomis, 1996; Packer

& Ballantyne, 2002; Rennie & Johnston, 2004). According to informal learning

theory, although there may be considerable similarity in the ways people respond

to interpretive talks, individual perceptions of the experience and construction of

meanings may vary. At an interpretive talk, however, the expectation of visitor

learning is commonly articulated as well as an explicit management goal

(Knudson, Cable, & Beck, 2003; NPS, 2001).

Learning has traditionally been viewed as a linear knowledge-transmission

process. Informal learning theory, however, suggests that learning is a

cumulative, cooperative process (Falk, 2005). In contrast to formal learning or

training (such as in a school setting), Eraut (2004) suggests that informal learning

provides greater individual freedom for learners. Informal learning takes place in

a wide variety of settings and situations, and may also be complementary to the

process of learning from experience. Koran, Willems, and Camp (2000, p.9)

suggested some descriptors that differentiate formal and informal learning (Table

2.1), while Packer and Ballantyne (2002) suggest that opportunities for learning

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[2] Hereafter, the term informal learning will be used for clarity and brevity.

offered in leisure settings usually include the following characteristics: 1) the setting provides direct experience with real objects, people, or places; 2) learning is voluntary; 3) learning is stimulated by the needs and interests of the learner; 4) learning is often socially mediated; and 5) visitors come in heterogeneous groups with diverse prior knowledge and experience (p. 184).

As opposed to traditional formal learning, additional fundamental aspects of informal learning include individual agency and social learning from others. The epistemological foundation of this emergent theory is informed by Dewey's and Vygotsky's theories on the nature of learning (Meyers, 2005; Rennie & Johnston, 2004). Dewey emphasized the agency of the individual in creating knowledge (Dewey, 1939, 1966; Meyers). In an informal learning context, individual learning reflects prior knowledge, perceived relevance, familiarity or novelty of information, and the context of the experience. Individuals construct meaning and memory based on the situation, as they assess the available information and options, evaluate the results of their thinking, and reflect any changes they deem necessary (Bandura, 1999; Falk & Dierking, 2000, 2002). Thus, while visitors may report similar responses, each may perceive different aspects as meaningful and/or realize different knowledge.

Table 2.1.

A comparison of formal and informal learning settings.

Formal	Informal
Takes place in the classroom	Takes place in museums, zoos, aquaria, businesses, and the 'field'
Learning conditions are prescribed	Learning is through free choice
Motivation is extrinsic	Motivation is internal/intrinsic
The content is prescribed	Content is variable and changing
Content is organized and sequenced	Content frequently is not organized or sequential
Attendance is mandatory	Attendance is voluntary
Time is standardized	Each learner decides how much time is spent
All students experience all content	Many kinds of objects, displays, and content are experienced
Learners are of similar ages	Learners are of all ages
Learners have similar backgrounds	Learners have diverse backgrounds
Communications and language are generally formal and constrained	Communications and language are more likely casual and diverse

Adapted from Koran, Willems, and Camp, 2000, p.9

Vygotsky described two types of learning: *intermental* (within the learner), and *intramental* (socially constructed), recognizing the cooperative nature of learning in transmitting knowledge (Falk & Dierking, 2000; Meyers, 2005; Roschelle, 1995). Learning occurs at both an individual and social level

(Vygotsky, 1934/1986). The social context further influences individuals'
reactions to an experience and may affect which aspects of an interpretive talk are
perceived as relevant, meaningful, and memorable after a period of time (Bandura
1999; Falk & Dierking). Both individual and social learning are integral to
informal learning theory and to an understanding of what visitors perceive and
how they learn from and create meaning as a result of attending interpretive talks.

Research on informal learning has occurred in diverse settings. Eraut (2000,
2004), Guile and Griffiths (2001), and Williams (2003), among others, have
examined the role of informal learning in the workplace for a variety of
professionals, technicians, and managers. Research in other informal or free-
choice learning environments, such as museums, zoos, and parks has examined
the informal learning process in adults and children (e.g. Falk, 2004, 2005; Falk &
Dierking, 2000, 2002; Martin, 2004; Packer & Ballantyne, 2002; Rennie &
Johnston, 2004; Storksdiek, Ellenbogen, & Heimlich, 2005).

Learning, both informal and formal, is best understood as a complex process
involving multiple parts of the brain as the individual recognizes and responds to
outside information (Bruning et al, 2004). A typology of informal learning was
proposed by Eraut (2004) (Table 2.2). Linking the time of focus (past, current,
future) to the level of intention (implicit, reactive, and deliberative learning)
suggests that past episodes of informal learning can be analyzed. Specifying
constructs of interest within a specific informal learning experience and
examining associated responses can help determine aspects of the experience that
contribute to achieving intended goals.

Table 2.2

A typology of informal learning.

Time of focus	Implicit learning	Reactive learning	Deliberative learning
Past episode(s)	Implicit linkage of past memories with current experiences	Brief near-spontaneous *reflection* on past episodes, events, incidents, experiences	*Discussion* and *review* of past actions, communications, events, experiences
Current experience	A selection from experience enters episodic memory	*Noting* facts, ideas, opinions, impressions; *asking* questions; *observing* effects of actions	*Engagement* in decision making, problem solving, planned informal learning
Future behavior	Unconscious expectations	*Recognition of* possible future learning opportunities	*Planning* learning opportunities; *rehearsing* for future events

(Adopted from Eraut, 2004, p. 250).

Schema Theory

As an information processing model of perception and cognition, schema theory suggests that individuals organize the information that they receive into frameworks or networks that represent the knowledge stored in memory (Axelrod, 1973; Bruning, Schraw, Norby & Ronning, 2004). Schema theory is not a physical learning theory, but is useful as a model for conceptualizing how individuals represent knowledge in relation to their past experience (McVee, Dunsmore, & Gavelek, 2005). Further, although schema theory is used in

research on learning, the question of schema origination has been inadequately addressed (McVee, Dunsmore, & Gavelek). The utility of schema theory lies in helping researchers to understand the role of an individual's prior knowledge as a potential influence on their response to an interpretive talk. An overview of schema theory is presented in the following section; its usefulness in this dissertation is as an organizational/conceptual tool.

Historically, schemas [3] were described by Kant as organizing structures that shape and are shaped by experience as they mediate between an individual's internal and external world (Bruning et al., 2004; Johnson, 1987; McVee, Dunsmore, & Gavelek, 2005). Piaget (1952) suggested that as individuals develop, they assimilate new experience into existing schemas and/or alter existing schemas to fit the experience as part of learning. Cognitive theorists and researchers of the 1970's brought schema theory to the fore in attempts to understand memory and associated cognitive phenomena (e.g. Rumelhart & Ortony, 1977; Rumelhart, 1981).

According to Rumelhart and Ortony (1977), schema theory describes how memory is organized so as to permit relevant information to be accessed when required; schemas represent knowledge and are integral to the process of comprehension. Rumelhart (1984) noted several important features of schemas (Table 2.3). Schema theory continues to be used in research on perception, memory, and problem solving, including the effect of context in the development of memory, among other areas (Bruning et al., 2004; Shea & Wulf, 2005).

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[3] In accordance with the *Publication Manual of the American Psychological Association* (5th Ed.), the term 'schemas' is used rather than 'schemata.'

Table 2.3

The major features of schemas.

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1. Schemas have variables

2. Schemas can be embedded, one within another

3. Schemas represent knowledge at all levels of abstraction

4. Schemas represent *knowledge* rather than definition

5. Schemas are active processes

6. Schemas are recognition devices whose processing is aimed at the evaluation of their goodness of fit to the data being processed

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(Adopted from Rumelhart, 1984, p.169).

Individual schemas represent collections of knowledge and are interlinked with other schemas. Schemas may represent objects, ideas, events, and experiences where the contents of memory are conceptualized as a linked configuration of 'slots'. These slots are the contents of memory, and knowledge is perceived, encoded, stored, and retrieved according within pre-existing schemas. Alternately, pre-existing schemas are altered to fit a new experience, or new schemas are developed (Bruning et al., 2004). The instantiation (activation) of schemas as information is processed results in traces that form the basis of our long-term memory (Rumelhart, 1981).

Existing schemas provide an individual with a scaffold where new information can be assimilated and integrated into prior knowledge. For example, having a schema for 'cup' helps an individual understand other containers (McVee, Dunmore, & Gavelek, 2005). This process is what explains our ability

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to 'fill in' information that is not explicitly presented (McVee, Dunsmore, & Gavelek, 2005; Pichert & Anderson, 1977). According to Ham (1983) and Bruning et al. (2004), the ability to relate new information to prior knowledge is critical to the way we perceive, comprehend, and are able to recall information. This suggests that an interpretive talk is more likely to be memorable and learning is more likely to result when information is associated with prior knowledge.

Constructivist Learning Theory (CLT)

Advances in cognitive and neurosciences have shaped our understanding of learning, from early behaviorism and social cognition to information processing models and constructivism. CLT focuses on what people learn; how they organize, integrate, and associate new information to form meaning (von Glasersfeld, 2005). Learning is actively constructed through both individual engagement in an activity as well as through the process of interacting with others (Cobb, 2005; Hein, 1991). Cobb posits that these two perspectives are complementary, and contends that both individual learning and learning from others must be considered.

Learning at an individual level requires opportunities for the learner to actively integrate sensory input with previous knowledge to construct personally relevant meaning (Roschelle, 1995). The social and physical context of the experience affects initial perception and processing, and the integration of or reflection on new knowledge over time can significantly enhance the original learning experience. Hein's (1991) nine guiding principles of CLT for free-

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choice learning settings complement the use of informal learning theory and schema theory in developing a conceptual framework to guide this inquiry (Table 2.4).

Comparing Key Elements that form the Conceptual Background

Informal learning theory, schema theory and CLT are similar in a number of ways, and complementary in developing an approach to understanding visitors' delayed responses to an interpretive talk. A summary of key elements is displayed in Table 2.5. The development of a conceptual framework to facilitate understanding of visitors' delayed responses to an interpretive talk is enhanced by integration of common aspects.   Also necessary is an understanding of the processes of developing long-term memory and making meaning. Memory and the construction of meaning are discussed in the next section.

Table 2.4

Hein's nine general principles of constructivist learning theory (CLT).

Principles of Constructivist Learning Theory (CLT)

Learning is an active process in which the learner uses sensory input and constructs meaning out of it

People learn to learn as they learn (the construction of meaning also requires the development of systems of meaning)

The mental process of constructing meaning is a crucial part of learning

Learning is influenced by language

Learning is a social activity

Learning is contextual

Some prior knowledge is necessary (new knowledge must build on existing structure)

Learning takes time (including reflection and repeated diverse exposure)

Motivation (to learn) is key

Adapted from Hein (1991)

Table 2.5

Elements that influence visitor responses to interpretive talks.

Theory	Key Elements	When learning occurs	Potential result
Informal Learning	Individual agency (freedom of choice)	Immediately and over time	Individual learning, meaning-making, and memory
	Context		
	Prior knowledge/ experience		
	Perceived relevance		
	Familiarity vs. novelty of information		
Schema Theory	Prior knowledge	Immediately and over time	Individual variation in learning, meaning-making and memory
	Context		
CLT	Individual engagement	Learning takes time	Individual integration and organization of information to form meaning and systems of meaning
	Learning from others		
	Form and style of communication		
	Social and physical context		
	Prior knowledge		

Source: the author

Memory- A Cognitive Psychological Perspective

The informal learning that may take place at an interpretive talk includes the initial processing of sensory information, working memory (also called short-term memory), and long-term memory, where information is encoded into personal knowledge (Bruning et al., 2004; Nieuwenstein, 2004). Traditional information processing models developed by cognitive scientists (e.g. Atkinson & Shiffrin, 1968) reflect these memory processes of information acquisition, storage, and retrieval. Koran, Koran, and Foster (1988) recommend integrating a cognitive psychological perspective to understand immediate and delayed responses in informal learning settings. To illustrate the process of making meaning and developing knowledge from an experience at an interpretive talk, the modal model is presented as a schematic (Figure 2.1). The modal model illustrates the immediate processing of sensory information, followed by working (or short-term) memory processing based on meaning, with personally relevant information ultimately stored in long-term memory (Bruning et al.; Nieuwenstein).
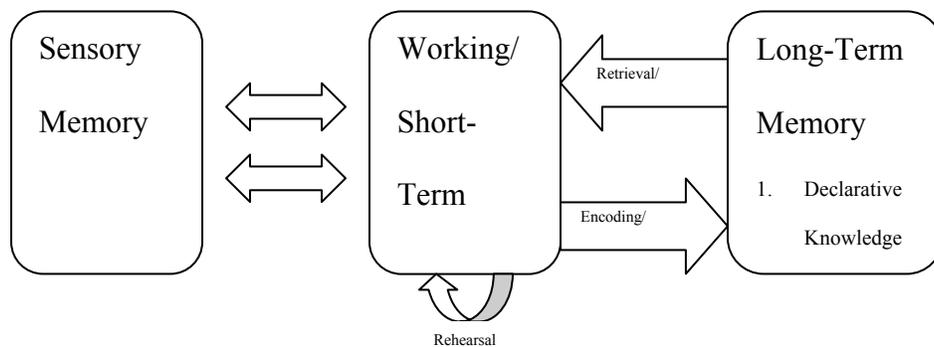
Figure 2.1. The modal model of memory (Bruning, et al., 2004).

The modal model describes memory as a series of systems. The first system, sensory memory, includes perception and pattern recognition. Perception is the process by which individuals allocate attention to incoming stimuli, which is followed by the association of this information with a recognizable pattern. Attention, prior knowledge, and context directly influence what individuals perceive, what they recognize, and how they then assign meaning (Bruning et al., 2004; Falk & Dierking, 2000, 2002).

Working memory is the second system within the modal model. After initial processing in sensory memory, information is processed for meaning (Bruning et al., 2004). Nieuwenstien (2000) suggests that working memory holds information that is relevant to the individual's goals, activities, or interests. However, the capacity and duration of working memory is limited, as first described by Miller (1956). Individuals are typically able to retain five to nine "chunks" of information for a limited period of time. The duration of information in working memory is affected by capacity overload and the interference of additional or other information. There is a strong relationship between working memory and long-term memory; meaning is made from what is perceived as relevant in active working memory and then encoded into long-term memory (Bruning et al.).

Individual Construction of Meaning from Memorable Experiences

The theoretical bases of meanings have been studied in interpretive sociology, symbolism, constructivism, phenomenology, and behaviorism. Meanings can be conceptualized as subjective beliefs, transcendent symbols, cultural

understandings, intuitive consciousness, or stimulated responses (Chen, 2003).

According to von Glasersfeld (2005), creating meaning is the process of linking

prior and newly received knowledge gathered through individual experience and

social processes. Cobb (2005) suggests that, while meaning-making may be

considered an individual process from a cognitive constructivist perspective,

sociocultural constructivists would emphasize the importance of social and

cultural practices in the making of meaning. Creating meaning is the experience

of relating signs, symbols, concepts, or propositions to relevant components of an

individual's cognitive structure (Ausubel, 2000).

Meanings are formed in context. The construction of meaning from an

interpretive talk must consider visitors' prior knowledge, the perceived relevance

of a topic, and the social and physical aspects of the experience. For example,

Tuan (1977) and Stewart, Hayward and Devlin (1998) suggest that meanings can

be understood in the context of place. Thus, a visitor may construct meaning in

relation to a setting or place after attending an interpretive talk and learning to

associate a specific environment with a threatened species. Another visitor,

whose motivation for attending was simply to please a family member, may

construct very different meanings based on social and cultural interactions,

perhaps forming an opinion of the role of environmental protection in preserving

threatened species.

Goldman, Chen, and Larsen (2001) examined the creation of meaning and the

types of personal connections reported by visitors who had attended an

interpretive program and determined that visitors actively ascribe meanings to

park resources. However, the degrees and levels of meaning varied based on the individual's interest(s), social consensus, and specific resource attributes. Visitors create meaning that reflects their personal perspectives (Larsen, 2002a,b; NPS 2000a). The degree of a visitor's engagement (i.e. the amount of attention paid) will also influence the meaning constructed from the experience (Rennie & Johnston, 2004).   For example, one visitor may construct meaning(s) through conscious reflection on and consideration of the talk, or in talking with others about the experience, while another may not actively engage in this process. Prior knowledge and perceived relevance can also affect the meanings each visitor constructs. A subject matter expert may find different meanings in the talk than a visitor who has no previous knowledge of a topic or who has not been provoked to consider new information or new perspectives.

Uzzell (1998) suggests that visitors who find an experience meaningful are likely to have processed information through working memory into long-term memory. According to Roschelle (1995), an experience is memorable when prior knowledge, present experience, and future purposes are coherently united. Constructing meaning is integral to the process of integrating information into long-term memory. Thus, visitors' delayed responses to an interpretive talk reflect whether an experience was memorable and suggest that the meaning of the experience can be assessed.

Knowledge and Meaning in Long-term Memory

Cable, Knudson, and Theobald (1986) suggest that measuring achievement of the goals of interpretation should take place over a period of time and assess the lasting effects of the experience. In an informal learning environment, interpreters should see themselves as part of a long-term learning process (Roschelle, 1995). Long-term memory is the relatively permanent collection of knowledge and experiences accumulated over a lifetime (Bruning et al., 2004; Nieuwenstien 2004). Meaning and organization are more important in long-term memory than in sensory and working memory, as recall depends on our understanding of what information means and our ability to find it. Both conscious (explicit) and unconscious (implicit) memory corresponds to a past event. Explicit memory is the conscious recall of past events or experiences (Bruning et al.). Extensively studied by memory researchers, explicit recall requires intentional information retrieval. Implicit memory is a record of earlier experience that influences our behavior but is not available for conscious recall. For example, research shows that skill in driving a car is influenced by implicit memory (Bruning et al.). Only the explicit aspect of long-term memory is considered here, as the process of determining visitor responses to an interpretive talk requires participants to recall or reflect on their experience.

Three types of knowledge in memory are commonly distinguished from both a practical and neurophysiological basis (Figure 2.2). Memory does not contain information in the exact form in which it was received, but rather contains the meaning of that information to the individual (Bruning et al., 2004). Further,

cognitive theorists suggest that memory, and associated meanings, are stored in networks or organizing mental frameworks, where knowledge is used to interpret experience.

```
                    ┌─────────────────────────┐
                    │   Long-Term Memory      │
                    │                         │
                    │      ● Implicit         │
                    └─────────────────────────┘
            ┌───────────────┼───────────────────┐
┌───────────────────┐ ┌───────────────────┐ ┌───────────────────┐
│ Declarative       │ │ Procedural        │ │ Conditional       │
│ Knowledge         │ │ Knowledge         │ │ Knowledge         │
│  Knowing "what"   │ │  Knowing "how"    │ │  Knowing "when"   │
└───────────────────┘ └───────────────────┘ └───────────────────┘
      ┌────────┴────────┐
┌──────────────┐ ┌──────────────┐
│ Semantic     │ │ Episodic     │
│ Memory       │ │ Memory       │
└──────────────┘ └──────────────┘
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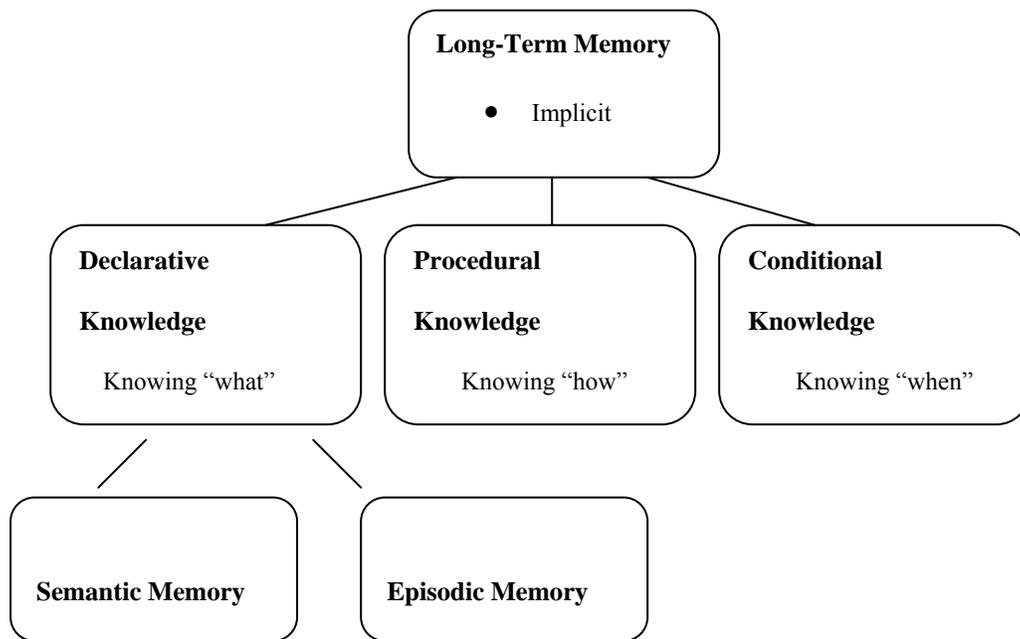
Figure 2.2. Knowledge in long-term memory (Bruning et al., 2004, p. 38).

Declarative knowledge is factual knowledge. Some examples of declarative memory from an interpretive talk might include recalling that bears eat gallons of ladybugs as they store fat for winter hibernation, realizing the historical role played by African American politicians, or knowing that underwear was used to identify the bodies of unknown soldiers. These items of general knowledge are

part of the information contained in semantic memory, a branch of declarative knowledge. Semantic memory contains organized knowledge of words, concepts, and associations. For example, recalling a geographic location requires a search of the semantic memory (Bruning et al., 2004). Episodic memory, the second branch of declarative knowledge, incorporates 'personal tags,' where memories are associated with personally dated, autobiographical experiences (Bruning et al.). While there is some debate about the degree of separation or relationship between semantic and episodic memory, both types of memory must be integrated for effective function. A broad knowledge base is necessary for effective thinking and reasoning, while episodic memories allow individuals to locate themselves in time and space while maintaining "a reasonably accurate picture of their experiences" (Bruning et al., p. 39).

Procedural knowledge is what allows individuals to perform activities. Knowing how to drive a car or administer a survey demonstrates recall of procedural knowledge (Bruning et al., 2004). While declarative and procedural knowledge set the stage for action, conditional knowledge is knowing *when* and *why* to effectively use elements of declarative and procedural knowledge. Most learning incorporates all three types of knowledge; the application of declarative and procedural knowledge requires the linkage of content to appropriate actions (Bruning et al.).

Visitor Learning

Visitor learning is an explicitly stated goal for many agencies and organizations that offer interpretive programs. Understanding what visitors remember and learn from interpretation is critical if programs are to succeed (Loomis 1996). As described in Chapter 1, evaluations of visitor learning have taken many forms, including true-false, forced-choice, and open-ended response questions designed to capture retention of specific facts (i.e. Ryan & Dewar, 1995; Wiles & Hall, 2005). However, Ham (1992) suggests that visitors retain meaningful thematic messages from interpretive communications, rather then specific facts. In addition, the variability in what visitors attend to, find meaningful, learn, and remember suggests that a broad approach to assessing visitor learning is necessary.

Within agencies that provide interpretive programs, and among interpreters, it is widely assumed that visitors will learn from an interpretive program or experience (Ryan & Dewar, 1995; Ham, 1983; Ham & Krumpe, 1996, Knudson, Cable & Beck, 2003; NPS, 2001; Uzzell & Ballantyne, 1998). Visitor education and learning is an explicit goal for many of the government, private, and non-profit agencies who offer interpretive programs. Visitors themselves have expressed the desire to learn as a primary reason for attending interpretive programs (Beckmann, 1999). Packer and Ballantyne (2002) found that visitor satisfaction was directly related to learning. How to measure this learning, however, has been addressed from two distinct perspectives.

First, direct measurement (such as asking visitors to list items from a presentation, answer multiple choice or true-false questions, or complete short-answer questions) has been used across a variety of settings (e.g. Ryan & Dewar, 1995; Wiles & Hall, 2005). Visitors have been asked to use a rating scale to respond to statements of fact about an interpretive presentation (e.g. Anderson et al., 2003). Ham (1992) suggests that if visitors are able to repeat the 'theme statement' of the interpretive presentation, it can be assumed that learning has successfully occurred. According to Ryan and Dewar (1995), success is achieved when the audience correctly retains the content of the presentation.

A second approach emphasizes the meaning of the experience to the individual and the personal connections formed as a result of an interpretive program. Interviews are commonly used, and some research has assessed visitors' delayed responses to a program. For example, Goldman, Chen, and Larsen (2003) conducted on-site focus group interviews to determine the meanings visitors attached to NPS sites. Knapp and Yang (2002) conducted semi-structured interviews that explored what participants at an interpretive program remembered more than one year after the experience. This approach emphasizes the individual nature of the experience.

Whatever the approach to assessing visitors' responses, personal factors such as prior knowledge, perceived relevance, presence of provocation, and the context of the experience influence what visitors find memorable and integrate into long-term memory. While there may be clear similarities in what individual visitors remember from an interpretive talk, the personal connections formed and the

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perceptions and knowledge integrated into long-term memory are dependent on

these personal and contextual factors. Based on the importance of these factors, a

conceptual framework of these constructs was developed (Figure 2.3).
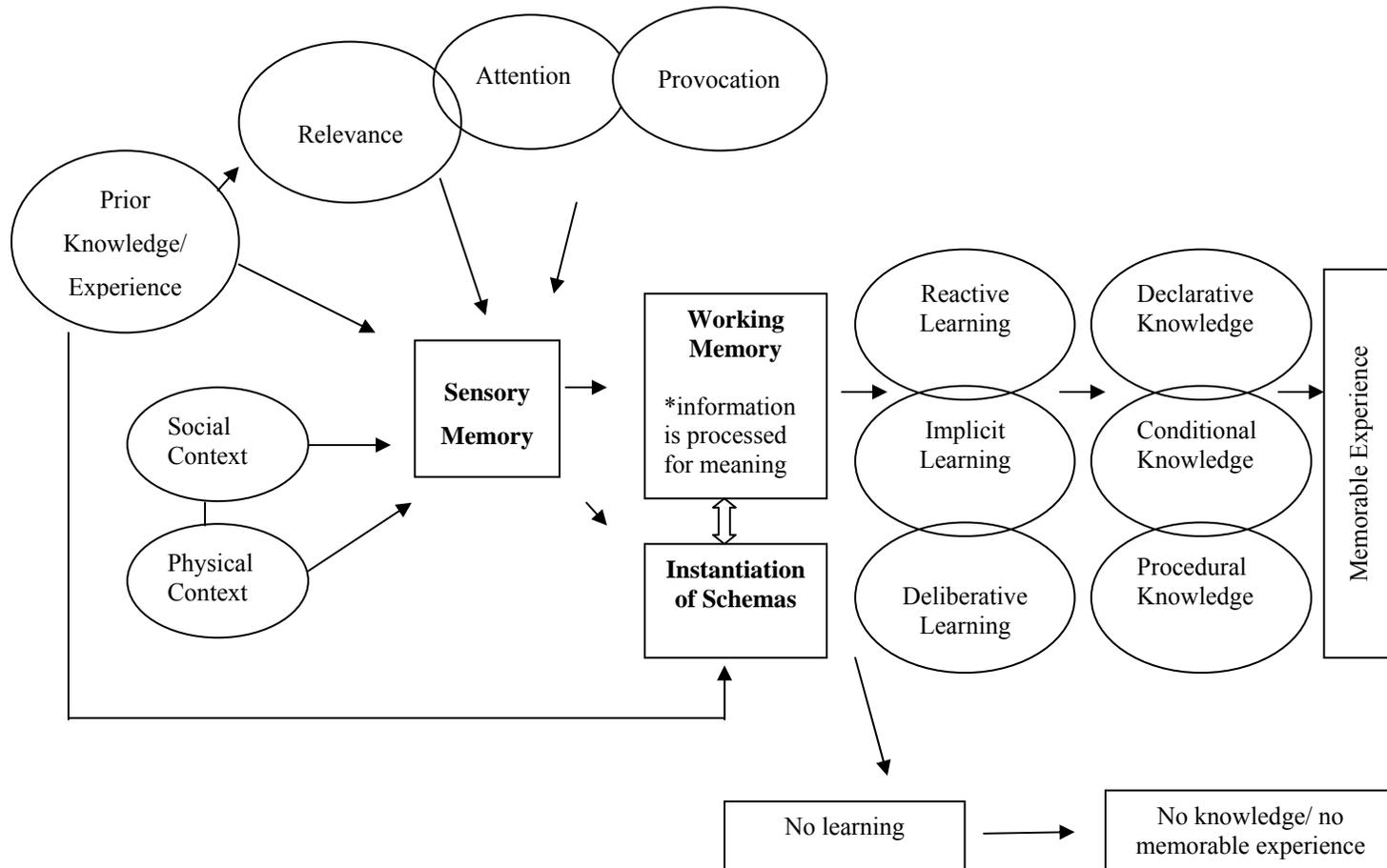
Figure 2.3. A conceptual framework for understanding responses to interpretive talks. (Source: the author).

Based on the related literature, constructs that have been shown to influence visitors' perceptions of and responses to interpretive programs were selected for inclusion in the conceptual framework presented in Figure 3. These constructs are discussed and include: prior knowledge and experience, relevance (and attention), provocation, and the social and physical context.

.

Prior Knowledge and Experience

Prior knowledge and experience influence how individuals pay attention and how they perceive, recognize, and understand information (Bruning et al., 2004). Personal interests, history, level of familiarity with the resource or surroundings, and expectations interact to facilitate understanding and appreciation (Beckmann, 1999; Cottrell, 2003; Hammitt, 1982; Markwell & Weiler, 1998; Packer & Ballantyne, 2002). For example, a visitor who chooses to attend an interpretive talk knows that a park ranger is about to present information. During the talk, prior knowledge guides the processes of pattern recognition, understanding, and integration of related information. The same stimulus can be interpreted differently, for different visitors, depending on the individuals' prior knowledge, the degree of attention paid to the talk, and the context in which the information is received (Bruning et al.). Roschelle (1995) argues that a large body of findings confirms that learning proceeds primarily from a basis of prior knowledge, and suggests that the integration of new information is dependent on this prior knowledge base.

According to Ausubel (2000), the selective process of anchoring new material to existing ideas in the cognitive structure is integral to learning. Newly emergent meanings and understanding are assimilated and linked to established prior knowledge, the existing degree of which influences the retention or forgetting of new material. The individual's existing cognitive structure (i.e. prior knowledge and experience) is a major factor influencing learning and retention in the same field of knowledge (Ausubel; Falk & Dierking, 2000, 2002; McVee, Dunsmore, & Gavelek, 2005).

Measuring prior knowledge has been operationalized in different ways. Using a bipolar adjective rating scale, Bitgood and Bishop (1991) reported more positive emotional ratings of the museum for repeat visitors who had prior knowledge of what to expect. Lee (1998) found significant relationships between prior knowledge and positive or negative attitudes towards nuclear power in an evaluation of the effectiveness of interpretive programs. Goldman, Chen, and Larsen (2001) recognized that visitors to NPS sites bring a range of pre-existing meanings and prior knowledge. Through a series of interviews they determined that visitors arrived with a variety of expectations and degrees of knowledge that shaped their perceptions of the experience.

Perceived Relevance

According to Lewis (1980), Sharpe (1982), and Tilden (1957), visitors must be able to relate what is presented in an interpretive program to their personal interests and experience. Personally relevant information is more easily attended

to and remembered, as it is more deeply encoded by the visitor (Ham, 1983).

Relevance in interpretation, according to Ham (1992), means that the experience

is meaningful and personal. Individuals are motivated to attend and attend to

interpretive programs that they perceive as relevant (Beck & Cable, 1998; 2002).

However, it does not follow that elements of an interpretive program need only

reinforce existing knowledge (Sharpe, 1982). Knudson, Cable and Beck, (2003)

state that an interpretive talk that provokes visitors to think differently or

promotes critical thinking about a topic will be more successful in promoting

lasting learning and personal connections. Further, the diversity of visitor

backgrounds means that not all visitors perceive the same degree of relevance

(Falk & Dierking, 2000). Audiences perceive and understand information

"through their own life-experience filters" (Brochu & Merriman, 2002, p. 17).

While new information may not always relate to personal experience, when at

least some similarities or associations are available, individuals are better able to

comprehend otherwise novel information (Knudson, Cable & Beck, 2003;

McVee, Dunsmore, &Gavelek, 2005). Thus, to realize meaning, learning, and to

develop personal connections, visitors should be able to relate elements of the talk

to their personal experience.

   Attention and motivation influence what visitors perceive as relevant. At an

interpretive talk, visitors are free to choose whether to attend, how long they will

pay attention, and how much attention they will direct to the presentation (Ham &

Krumpe, 1996). Numerous studies, particularly cognitive psychological

experiments, provide evidence that people focus their attention on the stimuli

most important to them (Ham, 1983). Thus, the meaning, learning, and personal

connections that may result from an interpretive talk depend on its relevance and

its ability to capture the audience's attention; information not attended to is not

learned or remembered (Ausubel, 2000; Hammitt, 1982; Loomis, 1996).

Attention

Attention is "the mental energy used to perceive, think, and understand"

(Bruning et al., p. 17) and, according to Nieuwenstein (2004), is a primary

determinant of what, and how well, information is learned. An individual must

pay attention to ensure that information is processed and remembered. However,

the cognitive resources individuals use as they perceive, think, and understand are

limited by processing capacity (Bruning et al.). Attention is allocated differently

depending on the situation, including internal and external factors such as time of

day, subjective energy level, and mood (Johnson & Proctor, 2004). In an

informal learning environment, an interpretive talk is a resource-limited task,

where learning is expected to improve if more resources are focused on attending

to the presentation.

Individuals are able to focus their attention (Johnson & Proctor, 2004),

highlighting areas than can then be processed into memory (Nieuwenstein, 2004).

The limited number of items that can be attended to and processed at one time

results in individuals choosing to focus their attention on some items and not

others (Nieuwenstein). Ham (1983) suggests that audiences will attend more

faithfully to presentations that are perceived as relevant. Central to acquiring

information, attention is prominent in determining what information is perceived as relevant and integrated into long-term memory.

Provocation

According to Tilden (1957), interpretation should provoke, not simply instruct. Provocation is a form of deliberately introduced dissonance that challenges members of an interpretive audience to consider their knowledge and personal beliefs in a new light. According to Larsen (2002b), provocation offers the audience a chance to find something of personal relevance from a variety of potential meanings. As part of interpretation, provocation is also a process of asking questions that allow people to reach their own conclusions (Hammitt, 1981). Thus, a nominal definition of provocation reflects what is widely accepted by interpreters; provocation is the stimulation of a reaction that promotes a desire to learn, to understand, and ultimately to act (Beck & Cable, 2002; Tilden, 1957).

Although a number of studies have examined changes in visitor learning, behavior, and attitude, it is difficult to find published work explicitly measuring aspects of provocation in the literature. According to Beckmann (1999), standard evaluative measurement does not easily accommodate interpretive goals such as provocation. However, aspects of an interpretive talk that arouse or provoke interest can be helpful in stimulating motivation to learn, according to Packer and Ballantyne (2002). Douglas and Ellis (2005) studied visitor mindfulness, where questioning techniques were used to provoke engagement at heritage sites. Ambiguity and the resulting dissonance were proposed to result in increased

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cognitive processing, increasing visitor engagement with an interpretive experience.

Provoking the visitor may be a necessary component in the learning process, according to Warder (1988), and of the potential results of provocative interpretation, visitor learning may be most commonly studied (e.g. Anderson et al., 2003; Beckmann, 1999; Burde, Peine, Renfro & Curran, 1988; Knapp & Poff, 2001; Knapp & Barrie, 1998; Loomis, 1996), although visitor attitude or behavior change has also been studied (e.g. Knapp & Barrie, 1998; Vander Stoep & Gramann, 1988). Knapp and Benton (2004) addressed aspects of provocation in a study that suggested successful interpretation includes the promotion of critical thinking skills. Related research includes Goldman, Chen, and Larsen's (2001) exploration of meanings attached to national parks, and Ryan and Dewar's (1995) evaluation of the communication process between interpreters and visitors. Other studies (e.g. Carr, 2004; Veverka, 1992) reflect specific objectives for interpretation that suggest the usefulness of provocation.

Information that is presented in an interesting (i.e. provocative) way is an important situational factor for learning (Packer & Ballantyne, 2002). Although references to Tilden's call for provocation appear with some regularity, (Cherem, 1977; Hammitt, 1981; Hwang, Lee, & Chen, 2005; Knapp, 1995; Roggenbuck & Propst, 1981; Warder, 1988; Whatley, 1995), provocation is rarely operationalized in studies that evaluate interpretation. For example, although Ham and Shew (1979) report "thought provocation" as a result of a guided walk, and Cable, Knudson, and Theobald (1986) studied change in attitude and

behavior, like most published research, neither study explicitly defined nor measured provocation. Ultimately, the overall pattern in interpretation research is that the effectiveness of provocation in stimulating visitor learning, the creation of meaning, and the formation of personal connections is recognized, but explicit measurement of its application is lacking.

Context

Cognitive psychologists (e.g. Greeno, 1998; Cobb & Bowers, 1999; Ceci & Roazzi, 1994) have proposed that most thinking and learning is situated in specific physical and social contexts, both as they occur for individuals and as individuals interact (Koran, Willems & Camp 2000). Context affects the experience of an interpretive talk; the physical and social surroundings can have either positive or negative influences, or both (Loomis, 1996). According to Ham (1983), a social and physical context that encourages the visitor to attend, and to attend to, an interpretive program should increase the value of the program.

<u>*Social Context*</u>

Informal learning experiences may occur for a single visitor, within a family group, a group of adults, or a school group, to name just a few possible permutations. The experience of an interpretive talk is shaped by the social group with which an individual attends, and by the actions and interactions of other visitors. Social groups are an integral component to learning, as they provide and influence opportunities for making meaning through shared experiences,

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reinforcing or changing beliefs, or helping to decipher information (Cobb, 2005;

Hilke, 1989; Meyers, 2005.) These within-group processes may occur during or

immediately after an informal learning experience, or they may occur over time,

as the visitor integrates the experience into later social group interactions and

have been the focus of research in a variety of informal learning settings (Blud,

1990; Goldman & Schaller, 2004; Falk & Dierking, 2002; Uzzell, 1989).

Interpreters also influence the social learning process. Whatley (1995) states

that interpreters are commonly perceived as knowledgeable and as a credible

source of information. The position of relative authority held by the interpreter

motivate the visitors to pay attention and perceive the information presented as

credible (Cable, Knudson, & Theobald, 1986).

Physical Context

When an informal learning experience, such as an interpretive talk, effectively

integrates aspects of the surrounding environment, visitor understanding will be

enhanced (Falk & Dierking, 2002). According to Packer and Ballantyne (2002),

being able to see or experience the physical things or places that are the focus of

an interpretive experience will increase learning and satisfaction with the

experience. Physical context includes design, advance organizers and orientation,

and reinforcing events outside/after the experience (Falk & Dierking). Design

consists primarily of the environmental factors that support or distract from the

talk. Orientation and advance organizers offer visitors a degree of comfort or

security in knowing what is expected of them. Advance organizers, according to

Ausubel (2000) can provide an anchor to help the visitor bridge the gap between what is already known and new material being presented. For example, clearly identifying the meeting place for an interpretive talk in an area that provides clues to what will be presented eliminates some uncertainty and makes visitors more receptive to the content presented. Finally, reinforcing events and experiences that occur in settings other than that in which the original talk was held, but that are perceived as relevant to the interpretive talk, are critical to the visitors' integration of the content presented at the experience (Falk & Dierking).

The Relationship between Visitors' Responses and what Practicing Interpreters Expect Visitors to Perceive

The desire to understand visitors' perceptions, cognitions, and responses is broadly reflected in research on interpretation. Knapp and Benton (2004) reviewed the elements of interpretation that reflect the research in this area, and assert that effectively communicating with visitors requires that interpreters understand their audience. Understanding and connecting with visitors enables managers to predict public responses (Brooks, Warren, Nelms, & Tarrant, 1999). Patterson (1989) recommended that visitor perspectives be integrated into the provision of visitor-oriented services, such as interpretation.

However, Graft (1989) reported that interpreters were amazed at the incongruence between what they expected visitors to respond to and learn from an interpretive experience and what visitors reported, and Combs (1999) reported that visitor perspectives were not correctly recognized by museum professionals. This failure to recognize visitor perspectives reflects a pattern in visitor research

based in informal or free-choice learning settings, where visitor characteristics such as motivation (e.g. Slater, 2003), involvement, place attachment, and satisfaction, (e.g. Hwang, Lee, & Chen, 2005), meaning (e.g. Goldman, Chen, & Larsen, 2001; Gross & Zimmerman, 2002), expectations and enjoyment (e.g. Beckmann, 1999), and attitudes (e.g. Brooks, Warren, Nelms, & Tarrant, 1999) are studied, but the relationship between these characteristics and what managers or staff predict, expect, or anticipate responses to be is not often tested. Knott and Noble (1989) suggest that this may be the result of presumed knowledge on the part of interpretive or visitor services staff and reflects a lack of research in this area.

Anderson and Blahna (1996) report that there had been, to the date of their study, few empirical studies in park or museum settings that asked managers or staff members to predict visitor characteristics and views. The results of studies published to that point reported inconsistent results, suggesting poor predictive ability or mixed results, where staff with high levels of regular contact with visitors had better ability to predict visitor demographics, motivations, attitudes, and on-site behavior and managers and staff with less regular contact were less accurate (e.g. Clark, Hendee, & Campbell, 1971; Wellman, Dawson, & Roggenbuck, 1982). In their study, Anderson and Blahna (1996) report that a short period of high visitor contact enabled a range of staff to accurately describe visitor demographics and behavior, but the staff at an outdoor museum were otherwise poor predictors of visitor characteristics. Beck and Cable (1998) state that interpreters tend to underestimate the capability, knowledge, and

understanding of the visitor. Recently, Morgan (2005) confirmed that site

managers are not always knowledgeable about their audiences, and Knudson,

Cable, and Beck (2003) called for additional research to understand visitors, as

relying on interpreters' intuition and observation is not sufficient.

Mixed Methods Research

Combining research methods can be useful in understanding the complexity of

phenomena in the social sciences (Sale, Lohfeld, & Brazil, 2002). To be

considered a mixed methods study, a combination of one or more quantitative and

one or more qualitative methods must be used (Creswell, 2003; Creswell,

Tashakkori, Bazely, & Plano Clark, 2005 Sale & Brazil, 2004).   Mixed methods

allow the researcher to perform statistical analyses and identify broad numeric

trends while the depth and detail obtained through open-ended questions enriches

interpretation and understanding of results.

Rationale for a Mixed Methods Study

A mixed methods approach is most appropriate for the study of complex

phenomena that can be more fully understood using a combination of methods,

maximizing the strengths and minimizing the weaknesses of each (Creswell et al.,

2005; Greene, Caracelli, & Graham, 1989; Hanson, Creswell, Plano-Clark,

Petska, & Creswell, 2005; Tashakkori & Teddlie, 1998; Waysman & Savaya;

Yalowitz & Wells, 2000). Mixed methods reflect the pluralist perspective that

different scientific paradigms can inform and enhance one another (Patterson &

Williams, 1998). Explicit consideration of different paradigms in the conceptualization and operationalization of a study was suggested by Greene & Caracelli (1997). Purposefully collecting data and addressing concerns such as validity and trustworthiness from both positivist and interpretivist/constructivist perspectives can yield additional insight (Rocco et al., 1998).

A primary purpose for using mixed methods is to address research questions that both explore and explain as researchers seek to enhance understanding (Brennan, Luloff, & Finley, 2005; Creswell, 2003; Manning, Morrisey, & Lawson, 2005; Tashakkori & Teddlie, 1998; Teddlie & Tashakkori, 2005). Rocco et al. (1998) suggest that situational factors are a common impetus for the use of mixed methods designs, where pragmatic concerns must be considered along with the research question of interest. Mixed methods allow researchers to better understand research problems, expand results obtained through statistical analyses, identify variables for measurement based on qualitative approaches, and address the needs of specific groups that may not be served by single-method approaches (Hanson et al., 2005). In recreation and visitor studies research, using mixed methods has been recommended to complement and strengthen the results of an evaluation and to advance understanding in an area of interest (Hein, 1995; Knapp & Barrie, 1998; Koran, Willems, & Camp, 2000; MacKay & Campbell, 2004; Manning, Morrisey, & Lawson, 2005; Roggenbuck & Propst, 1981; Yalowitz & Wells, 2000).

Quantitative and qualitative data are collected simultaneously in a nested

concurrent mixed methods approach (Creswell, 2003) (Figure 2.4). The next

chapter describes the development of a survey instrument with rating scale

responses as well as interview questions designed to collect data that may reflect

broader perspectives than obtainable through the scaled responses alone. The

strengths of this strategy include being able to collect two types of data during one

collection phase and gaining access to perspectives that cannot be gained from

one type of data alone (Creswell, 2003; Manning, Morrisey, & Lawson, 2004;

Yalowitz & Wells, 2000).
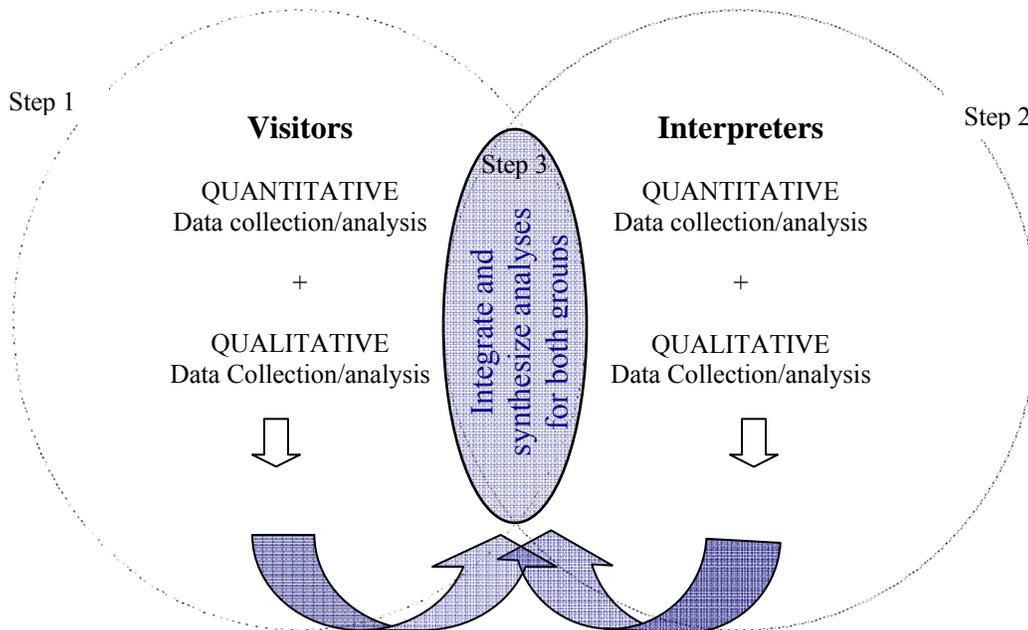
Figure 2.4. The nested concurrent mixed-methods procedure (adapted from
Creswell, 2003).

Summary

This chapter has presented an overview of informal learning theory, schema theory, and CLT. Meaning and the formation of knowledge in memory were described. From the relevant literature, six concepts were determined to potentially play an important role in the formation of memorable experiences. These elements are integrated into a conceptual framework which directs the development of the research questions and the methods used to answer them as presented in the following chapter.

CHAPTER THREE

METHODS

As part of a larger NPS Interpretive Development Program (IDP) evaluation

of a training program for interpretive talks, the methods presented in this chapter

focus on assessing visitors' delayed perceptions of and responses to an

interpretive talk. A second aspect evaluates interpreters' expectations for visitors'

perceptions/responses. The IDP program, which includes training and

development opportunities, is designed to assist interpreters in achieving the NPS

professional standards for interpretation of cultural and natural heritage. The

national parks and specific talks chosen for use in this study, as well as the time

frame for measuring visitors' delayed responses, were determined by the NPS

Training Manager for Interpretation as part of the larger IDP evaluation.

First, this chapter describes the study setting and initial sampling procedures.

Next, the rationale for the timeline of delayed responses is discussed, followed by

a description of the visitors and interpreters who participated. Research questions

and associated hypotheses are presented. The process of developing the

computer-assisted telephone instrument (CATI) for visitors is followed by a

description of the development of the web-based survey instrument for

interpreters. Mixed-methods data analysis procedures are then described, and

validity and reliability approaches are presented. Finally, implicit values,

potential bias, and ethical considerations are discussed.

Study Sites and Interpretive Talks

As part of the first phase of the larger NPS study, data were collected at eight U.S. national parks (Table 3.1). All participating parks were identified by the NPS Training Manager for Interpretation and offered interpretive talks with a natural environment or cultural/historical theme. These specific parks were selected as they comprise a range of environments and locations accessible to a variety of potential visitors. Each talk was developed by individual interpreters in accordance with NPS policy; however, all talks within a park addressed the same topic and similar themes.

At each park, the NPS supervisor identified all interpreters who were presenting a pre-determined talk during a week-long period identified by the researcher.   When possible, interpreters with a range of backgrounds were purposively selected to represent a variety of experience histories (e.g. permanent interpretive staff, seasonal staff, volunteers, and interns). Based on projected visitor numbers, staff availability, and published schedules, up to five talks per interpreter were included (i.e. some talks had an audience of more than 20 visitors at a time, while others had audiences of only a few individuals. When audiences were small, additional talks for the same interpreter were included whenever possible to capture a larger sample.) This purposive sampling was designed to achieve an overall goal at least 365 visitors completing an initial intercept survey and agreeing to participate in the follow-up CATI survey.

Table 3.1

Parks included in the study

Park Name	Location	Park Type	Talk title	No. of talks	Interview Contacts
Frederick Douglass National Historic Site	DC	Historical/Cultural	Life of Frederick Douglass	18	65
Gettysburg National Cemetery	PA	Historical/Cultural	Cemetery Talk	9	78
Glacier National Park	MT	Natural Environment	Alpine Talk	14	62
Mammoth Cave National Park	KY	Natural Environment	"Is caving 4 U?"	9	53
Shenandoah National Park	VA	Natural Environment	Birds of Prey	3	34
Harpers Ferry National Historical Park	WV, MD, VA	Historical/Cultural	"A most abominable little village"/ "John Brown"	14	47
Chesapeake & Ohio Canal National Historical Park	MD, WV, DC	Historical/Cultural	Story of the C &O	7	19
Assateague Island National Seashore	MD, VA	Natural Environment	Aquarium Talk	4	13
Total				78	371

Time Frame for Measuring Visitors' Delayed Responses

Working or short term memory is limited in capacity and is of brief duration. According to Bruning et al. (2004), Ericsson and Kintsch (n.d.)., Nieuwenstien (2004), and Miller (1956), without conscious rehearsal or repetition, items in working memory are encoded to long term memory, or are lost in seconds or minutes. Long-term memory is the repository of memory traces developed over days, weeks, months, and years (Bruning et al.). Elements of an interpretive talk that are perceived as memorable and are encoded into long-term memory may be accessed over an indefinite period of time. Therefore, measuring visitors' delayed responses could take place at different points in time after the talk. Reflecting the dearth of published research exploring visitors' delayed responses to interpretive programs, including talks, the choice to measure responses eight months after the experience is useful in comparative analysis with other ongoing research and as a point from which to develop further research.

There are few published studies examining visitors' delayed responses to interpretation, although researchers (e.g. Uzzell, 1998; Whatley, 1995) have emphasized the value of recognizing visitors' long-term understanding. Some examples include Knapp and Poff's (2001) use of a grounded theory approach to determine the impact of an interpretive program immediately and four months after the experience. Knapp and Benton (2005) and Knapp and Yang (2002) interviewed small groups of visitors one and two years after an event to determine responses to a variety of interpretive programs. Ryan and Dewar (1995) employed a survey instrument three months after an interpretive

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experience. However, no other examples of research specifically addressing

visitors' delayed responses to interpretation were found.

One goal for the larger NPS study from which the data for this dissertation is

drawn is comparability with other ongoing NPS studies. The time frame for the

implementation of this instrument was also influenced by the Office of

Management and Budget (OMB) mandatory review and approval process.

Lacking a strong theoretical basis for measuring visitors' delayed responses at a

specific point in time, reflecting the dearth of publications in this area, and for

potential comparability with other ongoing research, visitors' delayed responses

were measured eight months[4] after their experience at an interpretive talk.

Participants

<u>*Visitors*</u>

At each pre-determined interpretive talk, all visitors aged 18 and older were

invited to complete an intercept survey. Respondents to the intercept survey

were asked to provide contact information for the purpose of participating in a

follow-up telephone interview. Visitors who attend interpretive talks are a self-

selected group, suggesting a nonprobability sampling approach is appropriate.

This purposive sampling approach reflects the purpose of the study in seeking to

collect the richest possible data (Babbie, 2001).

At the pre-determined interpretive talks, all adult visitors were approached on

arrival by a Clemson University graduate assistant and invited to participate in

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[4] The delayed response period (eight months) was somewhat arbitrary; not based on literature or
cognitive psychology principles.

the study. The purpose of the study and procedures for maintaining

confidentiality of information were briefly explained, and visitors were offered a

clipboard with the intercept instrument, a letter with additional details about the

study, and a pencil. Immediately prior to the start of the talk, the graduate

assistant repeated the request for participation, indicated the presence of drop

boxes for returning survey materials and thanked the audience. The graduate

assistant remained with the group for the duration of the talk. Visitors were

reminded of the survey at the end of the talk, and the graduate assistant was

available for questions before, during, and after the talk.

Visitors who completed the initial intercept survey and provided contact

information for the second phase of the NPS study formed the participant pool

for this dissertation. Approximately seven and a half months after the initial

intercept, all visitors who provided contact information were sent a postcard

reminder (Appendix A) that they would shortly receive a telephone call from

Clemson University regarding their experience at the interpretive talk.

Interpreters

All identifiable permanent NPS interpreters were invited to respond to a web

survey. The use of a web survey facilitates the inclusion of the entire population

of permanent interpreters. An initial employee list intended to include all

permanent interpretive staff in GS levels 5-12 was generated through the NPS

payroll system (N=1823). However, it is possible that some staff positions may

have been miscoded or not included, or that there were individuals on the list whose duties did not include interpretation.

Due to union regulations, all interpretive staff in the National Capitol Region were removed from the list (N=51). All interpreters who had participated in the pilot study of this survey were also deleted (N=65). Next, all job codes and GS levels were reviewed. All individuals with a GS level above 12, all superintendents, and all individuals who were assigned a specific non-interpretive job title (i.e. dispatcher, supervisory archeologist, small craft operator, etc.) were deleted (N=464). The resulting list of all known potential permanent interpreters was then randomly cross-checked with individual park employee lists. The final list included 1243 names and email addresses.

Research Questions

The following research questions focus on analysis of descriptive data as well as testable hypotheses. These questions guided the development of the data collection instruments and procedures. In the sections that follow, the development and implementation of the CATI visitor survey and the web-based interpreter survey are described.

The first purpose of this research was to determine visitors' delayed perceptions of and responses to an interpretive talk (Table 3.2). The second purpose of this research was to determine what practicing interpreters anticipate visitors' reported perceptions and personal connections to be (Table 3.3). A third

Table 3.2

Research questions addressing visitors' delayed perceptions of and responses to an interpretive talk.

Research Question	Hypothesis
1. What are the underlying dimensions of visitors' delayed perceptions of/responses to the interpretive talk?	n/a
2. Do visitors report memorable experiences of the talk approximately eight months after the on-site talk?	n/a
3. What actions do visitors report having taken as a result of the interpretive talk approximately eight months after the experience?	n/a
4. Are there differences in visitor perceptions of the interpretive talk relative to the social/family group with whom they attend?	H1o: There will be no significant difference among the dimensions of visitors' reported perceptions of the interpretive talk relative to the social/family groups with whom they attended the talk.
5. Can visitors' reports of memorable experiences be reliably predicted by the dimensions of reported perceptions?	H2o: Visitors' reports of memorable experiences cannot be reliably predicted by the dimensions of reported perceptions of the interpretive talk.

purpose was to examine similarities or congruencies between visitors' reported

perceptions of interpretive talks and what practicing interpreters anticipate these

responses to be (Table 3.4). Table 3.5 summarizes the research questions,

variables, proposed analysis, and purpose.

Table 3.3

Research questions addressing what practicing interpreters anticipate/expect visitors' responses to be.

Research Question	Hypothesis
6. What are the underlying dimensions of what practicing interpreters anticipate/expect visitor's perceptions of/responses to interpretive talks to be?	n/a
7. What events and/or practices do interpreters think makes an interpretive talk memorable?	n/a
8. Does past employment and training predict differences in what practicing interpreters anticipate visitors' reported perceptions and responses to be?	H3o: There will be no significant difference(s) in what practicing interpreters anticipate visitors' reported perceptions and personal connections to be relative to interpreters' previous employment/training background.

Table 3.4

Research questions addressing similarities or congruencies between visitors'
responses and responses anticipated by practicing interpreters.

Research Question	Hypothesis
9. Are there similarities and differences between the dimensions of visitors' perceptions of an interpretive talk and the dimensions of what practicing interpreters anticipate these responses or perceptions to be?	H4o: There is no significant difference between the rank orders of similar items between the underlying dimensions of visitors' responses and the underlying dimensions of responses expected by practicing interpreters.
10. Are there significant differences between comparable visitors' perception and interpreters' anticipated response items within dimensions?	H5o: There are no significant differences for individual comparable items between visitors' perceptions and responses anticipated by practicing interpreters.

Table 3.5

Overview of research questions and purposes.

Research Questions/ Hypotheses	Variables	Level of Measurement	Analysis	Purpose
RQ 1: What are the underlying dimensions of visitors' delayed perceptions of/responses to the interpretive talk	40 items Q13-Q53 (e.g. "The interpretive talk *provoked you to think differently*")	Interval: 5 point scale (agreement) with 'don't know/ don't remember' filter	Exploratory factor analysis	Data reduction. Weighted factor scores will be used as variables in subsequent analyses.
RQ 2: Do visitors report memorable experiences approximately eight months after the on-site talk?	Q.2 + prompts (e.g. "What was memorable about the topic of the talk?")	Qualitative data	Thematic conceptual matrix	To determine presence/ absence and type of memorable response.
R.Q. 3: What actions do visitors report having taken as a result of the interpretive talk approximately eight months after the experience?	8 items Q5-12 (e.g. "Did you discuss this talk with another person?")	Nominal	Frequencies	To determine what visitors reported doing as a result of the interpretive talk.

Table 3.5 (Continued)

Overview of research questions and purposes.

Research Questions/ Hypotheses	Variables	Level of Measurement	Analysis	Purpose
R.Q. 4: Are there differences in visitors' perceptions of/responses to the interpretive talk relative to the social/family group with whom they attend?	IV: Q.1 (Who attended the talk with you?) DVs: Weighted factor scores from R.Q. 1	IV: Nominal DV: Interval	MANOVA, followed by ANOVA with post-hoc tests as necessary	To test H1o: There will be no significant differences among the dimensions of visitors' delayed perceptions relative to the social/family groups with whom they attended the talk.
R. Q. 5: Can visitors' reports of memorable experiences be reliably predicted by the dimensions of reported perceptions?	IV: Weighted factor scores from R. Q. 1 DV: Visitors' memorable experiences	IV: Interval DV: Categorical	Discriminant analysis	H2o: Visitors' reports of memorable experiences cannot be reliably predicted by the dimensions of reported perceptions of the interpretive talk.
R.Q. 6: What are the underlying dimensions of what practicing interpreters anticipate visitor's responses to interpretive talks to be?	37 items parallel to those for R.Q. 1 In web survey format	Interval: 5 point scale (agreement) with 'don't know' filter	Exploratory factor analysis	Data reduction. Weighted factor scores will be used as variables in subsequent analyses.

Table 3.5 (Continued)

Overview of research questions and purposes.

Research Questions/ Hypotheses	Variables	Level of Measurement	Analysis	Purpose
R.Q. 7: What events and/or practices do interpreters think makes an interpretive talk memorable?	1 item from web survey: "What makes an interpretive talk memorable?"	Qualitative data	NVivo software followed by manual coding to cross-check findings	To determine patterns, themes, and categories.
R.Q. 8: Does past employment and training predict differences in what practicing interpreters anticipate visitors' reported perceptions and responses to be?	IV: 1. years with NPS; 2. years in current position; 3. training received DV: Weighted factor scores from R. Q. 6	IVs: Interval (re-coded into five groups) and categorical DV: Interval	MANOVA, followed by ANOVA with post-hocs as necessary	To test H3o: There will be no significant difference(s) in what practicing interpreters anticipate visitors' responses to be relative to interpreters' previous experience/ employment background.

Table 3.5 (Continued)

Overview of research questions and purposes.

Research Questions/ Hypotheses	Variables	Level of Measurement	Analysis	Purpose
R.Q. 9: Are there similarities and differences between the dimensions of visitors' perceptions of an interpretive talk and the dimensions of what practicing interpreters anticipate these responses or perceptions to be?	Means of similar items appearing in both sets of underlying dimensions	Ordinal	Spearman's correlation.	To test H40: There is no significant difference between the rank orders of similar items between the underlying dimensions of visitors' responses and the underlying dimensions of responses expected by practicing interpreters
R.Q. 10: Are there significant differences between comparable visitors' responses and interpreters' anticipated response items?	Individual items from R. Q. 1 and R. Q. 6	Interval	T-tests	To test H5o: There are no significant differences for individual comparable items between visitors' perceptions and responses anticipated by practicing interpreters.

Development of the CATI Survey Instrument for Visitors

The first section of the CATI survey instrument (Appendix B) consisted of a forced-choice question to determine with whom visitors attended the talk, followed by semi-structured questions and prompts to determine what visitors found memorable. Next, a series of questions were asked to determine actions visitors reported taking during the 8 months after the talk. The third section consisted of a series of five-point rating scale items that operationalized constructs from the study's conceptual framework (Figure 3). The three sections included 'don't know' and 'don't remember' filters (Foddy, 1993). Each interview ended with a section measuring selected demographic characteristics.

Semi-Structured Questions

A focused interview (a specific type of semi-structured interview) targets the participants' subjective judgments of stimuli or media event(s) (Flick, 2002). Elements of the focused interview are *non-directional*, where questions are initially unstructured and increased structuring is introduced to prevent the imposition of researchers' viewpoints. *Specificity* addresses the meaning of the event, and is supported by explicit reference to the stimulus situation. The *range* of the interview determines how many topics and to what depth they are explored, while *depth/personal context* requires that interviewers encourage respondents to reflect on the meaning of the experience beyond simple assessment. Three questions and eight prompts were used in the telephone interviews with visitors (Table 3.6).

Table 3.6

Semi-structured interview questions for visitors who attended an interpretive talk.

Construct from Conceptual Framework	Question	Prompts
Learning	1. Can you please tell me what the talk was about?	a. This is the talk where you filled out a short survey immediately after the talk.
		b. What do you remember hearing the ranger talk about?
		c. Did the talk have a particular theme, major idea, or focus?
Memorable/Meaningful Experience	2. What was memorable about the topic of the talk?	a. Did something you heard leave a lasting impression?
		b. What made that memorable to you?
		c. Why was that memorable?
Context	3. Why did you go to that specific talk?	a. What (if anything) made you go to that talk?
		b. Was there something that made that specific talk appealing?

Actions Visitors Report as a Result of the Interpretive Talk

Based on the literature, visitors were asked if they had done any of the following over the eight months since they had attended the talk (Table 3.7). Response categories were yes, no, and don't know/don't remember; responses to question 8a were open-ended.

Table 3.7

Actions visitors may report as a result of an interpretive talk.

Question	Stem	Behavior or action taken as a result
1	After the talk, did you	Discuss this talk with another person?
2		Recommend this talk to another person?
3		Seek more information about the topic?
4	As a result of the talk, while at the park, did you	Buy anything related to the topic of the talk?
5	As a result of the talk, have you	Sought more information about the topic?
6		Attended this talk more than once?
7		Attended other interpretive talks at a national park?
8	Did you	Do anything else as a result of this talk?
8a	*(if yes to previous)*	What did you do? (open)
9	Had you	Decided to attend the talk before you arrived at the park?

Visitors' Perceptions of and Responses to an Interpretive Talk

After examining the pertinent literature, sixty rating-scale items were initially

generated to measure visitors' perceptions of and responses to an interpretive talk.

This initial item pool was ultimately reduced to 41 items through an iterative

process that included feedback from NPS staff; parks, recreation, and tourism

management graduate students and faculty; requirements from the federal Office

of Management and Budget (OMB); and two pre-tests. Items were presented with

a seven-point response scale as follows: *Strongly Disagree, Disagree, Neither*

Agree nor Disagree, Agree, Strongly Agree, Don't Know and Don't Remember.

The items included in the final instrument are presented in Table 3.8.

Dependent and Independent Variables: Visitors

<u>*Dependent Variables*</u>

The 41 items used to measure visitors' perceptions of and responses to the

interpretive talk form the primary dependent variable for visitors. A second

dependent variable was the presence or absence of memorable responses. This

DV was operationalized through coding visitor responses to the question "What

was memorable about the topic of the talk?"

Table 3.8

Items included in the instrument to determine visitors' responses to an
interpretive talk approximately eight months after the experience.

The interpretive talk was…	enjoyable an important part of your park visit/experience organized held in an appropriate place relevant to the surroundings an appropriate length
The interpretive talk…	provoked you to think differently promoted critical thinking told a story had a clear theme provoked your curiosity increased your awareness of physical resources of the park related only to adults related only to children met your expectations
Before attending the talk…	you were familiar with the topic you knew what to expect
As a result of the interpretive talk, you…	gained an understanding of the park's mission gained an understanding of the park's history gained an understanding of the park's importance learned something new found the talk memorable formed a lasting bond with the resource related the talk to your life
As a result of the interpretive talk, you…	remembered the talk until now related the talk to issues or situations outside of the park saw how the park relates to the 'big picture' related the talk to something you already knew

Table 3.8 (Continued)

Items included in the instrument to determine visitors' responses to an interpretive talk approximately eight months after the experience.

	talked to another person about what you learned
	wanted to attend more interpretive talks
	felt connected to the park and what it represents
	thought about the park since your visit
	thought about the talk since your visit
The interpreter…	interacted with the audience
	attempted to connect with the visitor
	adjusted the presentation based on audience response
	responded to questions
	made you feel welcome
	actively involved the audience

Independent Variables

The first independent variable for visitors addressed the potential effect of social context (Falk & Dierking, 2000; Goldman, Chen, & Larsen, 2001; Rennie & Johnston, 2004). Visitors were asked if they attended the interpretive talk: *Alone, with family members, with friends, with family and friends, with an organized group, don't know,* or *don't remember.* A second IV was developed through exploratory factor analysis (EFA) of the 41 items measuring visitors' perceptions of and responses to an interpretive talk; the resulting factor scores were then used to predict whether visitors reported memorable responses to a talk after an eight month period.

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Four sociodemographic questions were asked of all visitors. Age was operationalized by asking visitors to report their year of birth. Gender was recorded as male or female. Race was presented as a two-part question, as mandated by the OMB, first asking respondents if they were Hispanic or Latino, and then asking which category best described their race (American Indian or Alaska Native; Asian; Black or African American; Native Hawaiian or other Pacific Islander; White; Prefer not to answer).

Pre-Testing of the CATI Survey Instrument

Pre-testing the visitor survey instrument was conducted in several steps. First, 21 graduate students in the Clemson University Parks, Recreation, and Tourism Department were asked to complete the survey during a research seminar class. The students were asked to think of an experience at an interpretive talk or presentation (such as at a park, museum, or historical site) and answer the survey items accordingly. In addition, students were also asked to identify questions or sections that were unclear, confusing, difficult, or awkward. Finally, the students were asked to suggest any ideas that arose during the process and to identify areas that may have been omitted. The survey was reviewed by a graduate research methods class in the Department of Education (n=7). This process resulted in the clarification of phrasing for a number of items. The NPS and OMB (the OMB's review and approval were required by law) then reviewed the instrument. As a result, the final instrument contained the semi structured questions presented in

Table 3.6, eight questions about visitors' behavior as a result of the talk

(Table3.7), and 41 rating scale items (Table 3.8).

Two field pre-tests (in January and April, 2006) were conducted. The purpose

of these pre-tests was to examine data collection procedures and discover

problems related to clarity, readability, or comprehension (Vogt, 2005). In

January 2006 at the 'First Friday' Interpretive Talk at the Clemson University

Botanical Gardens, visitors were invited to complete an on-site paper version of

the survey (Appendix C). The researcher attended the talk and invited all visitors

to complete the survey at the end of the talk. Eleven of the 12 visitors (92%)

completed the survey. Visitors were asked to reflect on the talk they had just

attended when answering the survey, and also to note any concerns, questions, or

difficulties they had in completing the instrument.

After completing the survey, each visitor was asked if they had any

comments, questions, or suggestions to improve the survey instrument. The

average length of time required to complete the survey was 13 minutes. Informal

discussion with the group of visitors indicated no items that were problematic (i.e.

incorrectly understood, unclear, or confusing). No items were removed as a result

of this pre-test.

The second pre-test was conducted through the Clemson University CATI lab.

Eleven visitors who had attended an interpretive talk at Great Smoky Mountains

National Park in late June of 2005 and who had agreed to participate in a

telephone interview the following spring were contacted in late March and early

April 2006. Ten of the eleven individuals were reached and six completed the

instrument, for an adjusted response rate of 60%. (One phone number was incorrect, two individuals were undergoing inpatient medical treatment and were unable to participate, one individual was unable to participate due to a hearing impairment, and one individual refused, expressing a preference for mail/email survey contact.) No items were problematic for respondents (i.e. incorrectly understood, unclear, or confusing). Average length of time to complete the survey was 12.5 minutes, with a standard deviation of 3.5 minutes.

The Data Collection Process for the CATI Visitor Survey

Two undergraduate students were trained and employed to implement the CATI survey (Appendix B). All visitor contact information (name, phone number, state of residence, and preferred call time) was entered into an SPSS file corresponding to the park at which they attended the interpretive talk. Telephone numbers that were disconnected, out of service, or incorrect were noted. If there was no answer at a number (or an answering machine was reached), that number was called up to 20 times over approximately two weeks or until a survey was completed or refused.

Development of the Web Survey Instrument for Interpreters

The web-based survey for interpreters first consisted of rating scale questions to determine what interpreters' anticipate or expect visitors' responses to interpretive talks to be. A second section included open-ended questions exploring interpreters' perceptions of what elements make an interpretive talk memorable. Employment/training history and demographic information were collected (Appendix D).

Dependent Variable

The initial pool of sixty items developed to measure visitors' responses was also the starting point to operationalize measures of interpreters' expectations for visitors' responses to an interpretive talk. Following the procedures described in developing the CATI visitor survey and in consultation with the NPS, a final list of 43 items that paralleled 37 of the items used in the visitor survey instrument was developed.

Independent (Socio-demographic) Variables

Interpreters were asked a series of employment history and socio-demographic questions. The number of years worked for the federal government and for the NPS, the number of years in their current position, as well as what type of training they had received for preparing and presenting interpretive talks was considered. Additional questions addressed the gender, age, and

race/national origin of interpreters, as well as their status as temporary or permanent and as part-time or full-time employees.

Pilot Testing the Web-Based Interpreter Survey

A pseudo-pilot test of the web survey for interpreters was conducted using the Clemson University OnQ Web Survey System. A group of 92 NPS peer certifiers were initially invited to participate in this pilot test. These individuals are part of the NPS Interpretive Development Program, and have been trained to evaluate interpretive programs and products. An introductory email was sent to all interpreters with a link to the web survey (Dillman, 2000). Three days after the initial email invitation, a second email was sent to all non-respondents, explaining the importance of their input and requesting the completion of the web survey. A final email was sent to all remaining non-respondents three days after the second email. Twenty surveys were completed after the first email, 17 after the second, and 29 after the final reminder for a total of 66 completed surveys. Due to the fact that some emails were undeliverable, the adjusted number of potential participants was 86, resulting in an adjusted response rate of 76.7%.

Several insights were gained from the pilot test. Initially, technical difficulties prevented several interpreters from accessing and completing the survey. These issues were addressed with staff from Clemson University who work directly with the OnQ system. Some potential participants were out of the office on an NPS training session for the duration of the pilot study, reinforcing the need to consider NPS scheduling constraints when planning the timing for implementation of the

full survey. Comments from participants provoked further discussion about the need for and intent of several items, and minor alterations in question order and phrasing were implemented.

Both visitor and interpreter instruments included 37 parallel questions to allow for direct comparison of visitors' perceptions of and responses to interpretative talks and what/how practicing interpreters expected visitors to perceive/respond. A major purpose of this study was to compare visitors' responses to interpreters' responses. Therefore, the variance on some items was expected to be small. However, for effective statistical and model testing, relatively high variance (i.e. >.8) is valuable (DeVellis, 1991).

Data Collection Procedures for the Web Survey of Interpreters

Data were collected through a self-administered web survey in September 2006, following procedures recommended by Dillman (2000) and Porter and Whitcomb (2003). Using a list of names and email addresses provided by the NPS, potential respondents were sent a cover letter via their NPS email account (Appendix D). This email included a link to the web survey. The initial invitation to participate informed interpreters about the purpose of the study as well as the importance of their participation, and assured them that confidentiality would be maintained and that no individual names would be attached to any information or associated with any results.

Five days after the initial invitation to participate, all non-respondents were sent a follow-up email reiterating the importance of their participation and the

value of their input as well as a reminder that all responses would be held in strictest confidence. A link to the web survey was included. A final reminder email, also containing the link to the web survey, was sent to all non-respondents five days after the first reminder (10 days after the initial email). This email included a date when the study would no longer accept responses and reiterated the importance of each individual's input. The survey remained open for a total of 23 days.

<center>*Approach to Mixed Methods Data Analysis*</center>

Descriptive analyses and hypothesis testing were conducted using the Statistical Package for the Social Sciences (SPSS) 13.0. Qualitative data analysis procedures were conducted based on guidelines provided by Miles and Huberman (1994) and Creswell (2003), and incorporated NVivo qualitative analysis software. The process of data mixing within the analyses was conducted in accordance with Creswell's recommendations for conducting a concurrent nested mixed methods study.

Data Screening

Two numerical data sets (VISIT1) and (INTERP1) were screened for missing data and outliers (Mertler & Vannatta, 2005). The corresponding data sets containing the responses to semi-structured open-ended response questions (VISIT2) and (INTERP2) were reviewed for accuracy of data entry to prepare for

the process of data reduction through coding and a presence/absence matrix

(Miles & Huberman, 1994.)

Data Analysis Procedures (see Table 3.5 for overview)

<u>*Research Question 1*</u>

Exploratory factor analysis (EFA) was used to determine the shared variance among a set of variables, where the reduced factors are groupings of variables that measure a common entity or construct (Mertler & Vannatta, 2005). Although the variables chosen for this study were based on relevant literature and theory, EFA is the appropriate analysis as the goal is to group and consolidate correlated variables (Mertler & Vannatta). Maximum likelihood analysis (ML) with promax rotation was used to determine the existence of underlying dimensions of visitors' perceptions and to reduce the number of variables to more efficiently measure the proposed constructs (Fabrigar, Wegener, MacCallum, & Strahan, 1999). The number of factors resulting from the initial factor analysis was examined using 'Kaiser's rule;' factors with an eigenvalue greater than one were considered for retention. A series of parallel analyses were then performed to determine the number of factors to retain (Garson, 2006; Preacher & MacCallum, 2003). Visual examination of a scree plot was used to confirm the number of factors chosen to answer this research question (Mertler & Vannatta, 2005). Interpretation of the factors reflected the size and direction of the factor loadings, with minimum loadings determined using Norman and Streiner's formula (1994). Cronbach's alpha was used to measure the internal consistency of the factors;

factors with alpha scores greater than .7 were considered for retention (DeVellis, 1991; Fishman & Galguera, 2003). Weighted factor scores were saved for later analysis.

Research Question 2

To develop a thematic conceptual matrix, visitors' responses of what was memorable from an interpretive talk were read and assigned to one of the emergent categories (Miles & Huberman, 1994). For the purpose of testing hypothesis 2, the data were further reduced to the presence or absence of a reported memorable response for each visitor. Cohen's Kappa was used to assess inter-rater reliability across the four independent readers who conducted the data analysis (Wegner, Flisher, Muller, & Lombard 2002).

Research Question 3

The actions visitors reported doing as a result of the interpretive talk are presented as descriptive statistics. Frequencies were tabulated for each of the eight items.

Research Question 4

Differences among the weighted factor scores representing dimensions of visitors' delayed perceptions (the DVs) relative to the social/family groups with whom they attended (the IV) were analyzed using a one-way multivariate analysis of variance (MANOVA). This procedure is appropriate when there are multiple

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DVs that share a common conceptual meaning and one or more categorical IVs and tests whether the likelihood of mean differences among groups on a combination of DVs is significant. Significance was determined using Wilks' Lambda and p-value of ≤.05 (Mertler & Vannatta, 2005).

   Research Question 5

   Discriminant analysis is a statistical technique used to describe and predict the classification of groups using interval-level IVs (here, the weighted factor scores representing dimensions of visitors' delayed perceptions and responses) and a categorical DV (the presence or absence of a memorable response) (Mertler & Vannatta, 2005). The purpose of this hypothesis was to determine if visitors' delayed perceptions of and responses to an interpretive talk predicted the presence or absence of a memorable response. To determine the dimensions that reliably predict visitor responses, data mixing occurred at this point in the analysis. As part of a nested concurrent mixed-methods study, qualitative and quantitative data should be integrated throughout the process of analysis and interpretation (Creswell, 2003). The visitor responses categorized in addressing R.Q. 2 served as the DV for the discriminant analysis. The IVs for this analysis consisted of the weighted factor scores for items representing the dimensions of visitors' responses determined through the EFA conducted in addressing R.Q. 1. Significance tests and evaluation of the strength of the relationship for each discriminant function included the eigenvalues, percent of variance, and canonical correlations. Wilks' lambda and chi-square tests of significance for each function

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assisted in determining which functions to interpret (Mertler & Vannatta, 2005).

Classification results and percent accuracy are reported.

Research Question 6

Maximum likelihood analysis with promax rotation was performed to determine the underlying dimensions of interpreters' expectations for visitors' perceptions of and responses to an interpretive talk (Fabrigar, Wegener, MacCallum, & Strahan, 1999). The weighted factor scores for items in each factor identified through this process formed the DVs for subsequent testing of hypothesis 3. These factors were also used in the analysis similarities between visitors' perceptions of interpretation and interpreters' expectations.

Research Question 7

NVivo qualitative software was used to identify possible themes and to classify interpreters' responses into nodes representing major and minor themes. An initial series of text searches was confirmed through manual coding and review of results.

Research Question 8

Differences among the means of the items representing dimensions of interpreters' expectations for visitors' perceptions (the DVs) relative to four employment experience and background items (the IVs) were analyzed using a series of one-way multivariate analyses of variance (MANOVA). Significance

was determined using Wilks' lambda and a p-value ≤.05 (Mertler & Vannatta, 2005). This series of analyses examined whether there are significant differences among the mean scores for interpreters' expectations with respect to the number of years worked for the federal government and for the NPS, the number of years in their current position, and the type of training received for preparing and presenting interpretive talks. Significant mean difference between groups on a dimension of interpreters' expectations was determined using LSD with a p-value of .05.

Research Question 9

This hypothesis tested for a significant difference between the rank orders of similar items of the underlying dimensions of visitors' responses and the underlying dimensions of responses expected by practicing interpreters. Spearman's rho was used, with a p-value of .05.

Research Question 10

The purpose of this hypothesis was to determine if there were significant differences for individual items between visitors' delayed responses and interpreter's expectations for these perceptions and/or responses (Mitra & Lankford. 1999). T-tests were conducted for all paired (comparable) items. Cohen'd *d* was used to determine effect size, by testing if significant differences (p-value ≤.05) reflected the large sample size or were due to differences between the two groups.

Validity and Reliability Approaches in Mixed Methods Research

Researchers using mixed-methods procedures recognize that the nature and method of questioning may influence results. The appropriate methods for each research question depend on the goals and purpose of the research. Context and values cannot be held constant or eliminated from the research process in the social sciences. The most controlled settings still result in data that are analyzed and interpreted by researchers with unique backgrounds and value orientations. Research using mixed methods can be systematic and highly structured, but consistency and integrity may be more important than generalizability. Mixed methods researchers can set boundaries without being reductionistic by building trustworthiness and emphasizing consistency. Incorporating measures of validity may also be appropriate for mixed methods researchers, again depending on the goals, purposes, and resources available to the researcher (Creswell, 2003)

In the process of quantitative data collection, validity is a primary concern. Content validity concerns the adequacy of items in representing a content domain. Identifying and randomly choosing from a representative sample of items from the universe of associated belief or attitude items may not be realistic (Babbie, 2001; DeVellis, 1991; Noar, 2003). However, if test items originate in theory and are informed by previous research, the likelihood that researchers are measuring what they think they are measuring (construct validity) is improved (Fishman & Galguera, 2003). The theoretical relationship between variables is addressed through construct validity. The use of the peer-reviewed literature, published models, consultation with experts, and continuous feedback from diverse sources

were instrumental in developing questions, collecting and analyzing data, and adding an element of trustworthiness to this data.

Reliability refers to constancy or stability of findings over time. Increased reliability results in decreased error variance, and can be accomplished by managing extraneous factors and instrument characteristics (Fishman & Galguera, 2003). Another benefit of more reliable measures is an increase in statistical power (DeVellis, 1991). The items chosen to represent each factor should demonstrate adequate internal consistency, measured with Cronbach's alpha (DeVellis; Fishman & Galguera). Values of Cronbach's alpha can range from 0 to 1, with values $\geq .07$ considered reliable (Streiner & Norman, 1989).

The concept of validity in qualitative data collection requires a different approach. Miles and Huberman (1994), suggest five main issues the researcher must consider to be confident in the quality, trustworthiness, or "goodness" of the data. Objectivity/confirmability is the first issue, which can be conceptualized as relative neutrality and explicitness about the biases that inevitably exist. This is achieved through a discussion of implicit values, identification of potential biases, and cross-checking of analyses by independent research associates to ensure that conclusions drawn depend not on the researcher but on data collected. The second issue is reliability/dependability/auditability. Underlying these terms are the ideas of consistency and clarity. Miles and Huberman suggest that connection to theory, meaningful parallelism, and the clear specification of analytic constructs help the researcher achieve these aims. Qualitative research is not

athoretical; it allows exploration of a research question that may not be fully addressed by quantitative methods (Creswell, 2003).

Internal validity/credibility/authenticity is related to internal consistency (Miles & Huberman, 1994), and is confirmed by review from independent researchers. Cohen's Kappa is used to determine inter-rater reliability (Wegner, Flisher, & Muller, 2002). External validity/transferability/fittingness requires explicit consideration of the scope and boundaries for the study as well as limiting effects of sample selection, as discussed in the results section(s).

Finally the utility/application/action orientation of a study is considered and discussed. This dissertation explored visitors' delayed responses to interpretive talks to 1) provide useful information to managers and interpreters on the longer-term results of interpretive talks, 2) suggest needs and strategies for future research, including the potential development of a meaningful scale for measuring visitors' responses to interpretation.

Implicit Values and Potential Bias

It is important to recognize the implicit values and potential bias in any study. This chapter has presented the methods used to collect and analyze data and describes the techniques used to address value and bias-related concerns. Specifically, the quantitative data analysis reports commonly accepted values (i.e. Cronbach's alpha for reliability) while the qualitative analysis relies on strict adherence to published procedures and employs Cohen's Kappa to assess inter-rater reliability.

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Potential Ethical Issues

As this dissertation examines and compares visitors' perceptions and responses with the perceptions and responses anticipated by interpreters, information may arise that may conflict with the stated goals and expectations of the NPS. To protect participants, all potentially identifying information was maintained in locked and/or password-protected files. Upon completion of the CATI and web surveys, all participants' names and contact information were separated from the data, rendering individual responses confidential and anonymous. The Human Subjects Review Committee of Clemson University, the NPS, and the Office of Management and Budget (OMB) reviewed and approved the visitor survey instrument and procedures. The Human Subjects Review Committee of Clemson University and the NPS reviewed and approved the web survey instrument and procedures for NPS interpreters.

Summary

This chapter discussed the methods used to address the research questions of this dissertation. First, the study sites, interpretive talks, and time frame for visitors' data collection were described. The participants were introduced, and the research questions and associated hypotheses were presented. Development and implementation of the CATI survey for visitors and the web survey for interpreters was described. The approach to data analysis was followed by a discussion of validity, reliability, values, potential bias, and ethical issues.

The remaining chapters are organized as follows. Chapter IV contains the

results of the visitors' CATI survey. Chapter V reports the results of the

interpreters' web survey. In chapter VI, the visitors' and interpreters' results are

compared. Chapter VII contains the summary and conclusions.

CHAPTER FOUR

DESCRIPTIVE FINDINGS AND HYPOTHESIS TESTING: VISITORS

The first section of this chapter describes the response rate and basic demographic characteristics of the sample, including gender, age, and ethnicity. The composition of the social groups with whom visitors attended the interpretive talks is discussed. The next section reports findings for the dimensions of visitors' perceptions of the interpretive talk. Themes reflecting what visitors report as memorable are presented. Behaviors visitors report having done as a result of attending the interpretive talk are described followed by differences in responses based on the composition of the social group. The next section examines whether visitors' reporting of a memorable experience can be reliably predicted by the weighted factor scores representing the dimensions of visitor response to an interpretive talk. Results reported in this chapter are based on a sample of visitors who participated in a telephone interview approximately eight months after attending an interpretive talk.

Visitor Characteristics

From an initial sample of 375 visitors who had previously completed an intercept survey and who had agreed to participate in a follow-up telephone interview, 327 working numbers were identified (wrong numbers: n = 27, 7.2%; disconnected numbers: n = 21, 5.6%). Thus, results are based on 283

respondents, reflecting an adjusted response rate of 86.5%. Thirteen visitors declined to participate when contacted (4.0%). Reasons for refusal included: medical (n = 4), not interested/no time (n = 4), spouse or other family member completed survey (n = 2), and other (n = 3). Twenty-nine (29) numbers did not result in contact after 20 attempts (8.9%). Of the visitors who were reached (i.e. telephone contact was made and the survey was completed), the cooperation rate was 95.0% (American Association for Public Opinion Research, 2006).

The basic demographic characteristics of the sample are as follows. Females composed 52.7% of the sample (n = 149) and males 47.3% (n = 134). Respondents' ages ranged from a minimum of 21 to a maximum of 82 (Table 4.1). The largest age group was 45-49 (n = 51, 18%); more than two-thirds of the respondents ranged in age from 40 to 64 (n = 198, 69.9%). Average age was 50.59; the median age was 51.5. The sample was predominantly white, not Hispanic or Latino (n = 245, 86%) (Table 4.2). The majority of respondents (72.8%) attended the interpretive talk with family members (Table 4.3). Almost half of the visitors reported visiting a national park once a year (45.2%), an additional 18.4% visited a national park two times per year, and 11.4% made six or more visits to a national park per year (Table 4.4).

Table 4.1

Age of respondents at interpretive talks at eight National Parks

Category (years)	Number	Percent
18-24	7	2.5
25-29	14	5.0
30-34	10	3.5
35-39	17	6.0
40-44	32	11.3
45-49	51	18.0
50-54	38	13.4
55-59	44	15.5
60-64	33	11.7
65-69	14	5.0
70-74	13	4.6
75-79	5	1.8
80-84	2	0.7
Prefer not to answer	3	1.0
Total	283	100.00

Mean = 50.59, SD = 12.62, Median 51.5

Table 4.2

Race/ethnicity of respondents at interpretive talks at eight National Parks

	Frequency	Percent
American Indian or Alaska Native	2	0.7
Asian	2	0.7
Black or African American	25	8.8
Native Hawaiian or Other Pacific Islander	0	0
White	245	86.6
Other	7	2.5
Prefer not to answer	3	1.1
Total	284*	100.4*

*More than one option could be chosen by an individual.

Table 4.3

Composition of social group at the interpretive talk

	Frequency	Percent
Alone	19	6.7
With family members	206	72.8
With friends	22	7.8
With family and friends	24	8.5
With an organized group	12	4.2
Don't know/ Don't remember	0	0
Total	283	100.0

Table 4.4

Number of times per year that respondents visit a National Park

Yearly visits to a national park	Number of visitors	Percent
1	128	45.2
2	52	18.4
3	33	11.7
4	22	7.8
5	17	6.0
6	9	3.2
7	3	1.1
8	4	1.4
9	1	.4
10	5	1.8
12	3	1.1
15	1	.4
20	2	.7
25 or more	1	.4
Don't know/Don't remember	2	.7
Total	283	100.0

Research Questions 1 through 5

Research Question 1

Assessment of skewness and kurtosis revealed acceptable values for all

variables to be included in the exploratory factor analysis (EFA). Two items,

"The interpreter used a variety of interpretation techniques" and "Adjusted the

presentation based on audience response" had more than 5% of responses coded

as missing values to reflect the 'don't know' and 'don't remember' response

options. These two items were removed from the analysis. No multivariate

outliers were detected through calculation of Mahalanobis' distance with $p <$

0.001 (Tabachnick & Fidell, 2001; Mertler & Vannatta, 2005). Preliminary

analysis was conducted on the 39 items using maximum likelihood (ML)

extraction with promax rotation. The ML method for estimating the parameters

of the factor model has a more formal statistical foundation than principle factors

or principle components analysis (PCA), and an oblique promax rotation provides

a more accurate and realistic representation of the relationships between

potentially related constructs than available through orthogonal rotation (Fabrigar,

Wegener, MacCallum, & Strahan, 1999; Preacher & MacCallum, 2003).

The initial analysis suggested seven items that were not appropriate for

inclusion in the EFA, as communalities for these items were all less than 0.1.

According to Garson (2006), this indicates little common variance and these items

should not be included in the analysis. Thus, 'related only to adults,' 'related only

to children,' 'you were familiar with the topic,' 'you knew what to expect,' 'you

were interested in the topic,' 'you related the talk to issues or situations outside

the park,' and 'you related the talk to something you already knew' were

removed.

Next, a ML with promax analysis showed a Kaiser-Meyers-Olkin (KMO)

measure of sampling adequacy value of .916, an acceptable value for proceeding

with factor analysis. This comparison of the sum of squared correlation

coefficients should be a value greater than 0.6 for confidence that it is appropriate

to conduct factor analysis (Tabachnick & Fidell, 2001). Cronbach's alpha for the

group of 32 items was .924. A series of parallel analyses was then performed to

determine the number of factors to retain (Garson, 2006; Preacher & MacCallum,

2003).

Parallel analysis, in conjunction with scree plots, eigenvalues, and amount of

variance explained is recommended as the best method to determine the number

of factors to retain (Garson, 2006; Preacher & MacCallum, 2003). This method

derives a scree plot from random data based on the parameters of the collected

data. The point at which the eigenvalues on each possible factor from the

collected data drop below the eigenvalues generated by the parallel analysis

indicates the number of factors to retain. Integrating the results of this analysis

with consideration of the scree plot, eigenvalues, and variance explained provides

guidance for determining the number of factors, subject to the interpretability of

the resulting solutions (Preacher & MacCallum).

The analysis suggested four factors as the best solution, although the

possibility that five or even six factors were more useful in understanding this

data was considered. A series of ML with promax analyses were run, with KMO,

factor structure, variance, eigenvalues, scree plots, individual item loadings, reliability, and interpretability was examined for each possible solution. Individual items that loaded poorly (and/or loaded across multiple factors) were considered for deletion (Tabachnick & Fidell, 2001). The order of the items deleted was based on the factor loadings; items with the lowest top loading were deleted first and the analysis was re-run after each deletion. Deleted items are presented in Table 4.5 with corresponding factor loadings and order of deletion.

Norman and Streiner's (1994) formula[5] for calculating minimum loadings when N>100 was used to determine the cutoff score for items loading on a factor (as opposed to simply using common conventions of .4, for example). For this analysis, the cutoff calculated at .306. Calculating this cutoff point and reporting all factor loadings shows the factor structure more clearly and allows readers to make judgments for themselves (Garson, 2006; Preacher & MacCallum, 2003).

Final Factor Structure and Reliability Coefficients

Table 4.6 exhibits the final structure of the four factors operationalized as the visitors' responses to an interpretive talk approximately eight months after the experience. Cronbach's alpha for the 28 items retained in the four factors was .917. Nunally and Bernstien (1994) suggest that a Cronbach's Alpha of .70 demonstrates acceptable reliability. For the four factors, weighted factor scores were computed for use in further analyses.

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[5] Minimum Factor Loading = 5.152/[SQRT(N-20)]

Table 4.5

Items deleted from the final factor solution

Item	Factor (loadings)				Order of deletion
	1	2	3	4	
The interpretive talk promoted critical thinking[6]	.245	-.110	.200	.110	1
The interpretive talk told a story	.277	-.146	.150	.274	2
The interpretive talk provoked you to think differently[6]	.291	.207	<.10	.108	3
The interpretive talk provoked your curiosity[6]	<.10	.283	.294	.181	4

The first factor had five items and explained 33.0% of the variance. It had an eigenvalue of 9.24 and a Cronbach's alpha of .878. Items in this factor reflected the interaction between the interpreter and the audience. Specifically, the five items describe actions taken by the interpreter that facilitate visitor engagement.

[6] These items were designed to address the concept of provocation, discussed in the literature as an important component of interpretation. Although they did not prove useful in this analysis, this may be due to improper operationalization or problems with study design, specifically, the failure to specifically include elements of provocation within the interpretive talk.

The second factor explained 8.5% of the variance. It had an eigenvalue of 2.38 and a Cronbach's alpha of .820. This factor consisted of eight items that reflect visitors' learning, understanding, and sense of connection to the resource.

Seven items explaining 6.46% of the variance formed the third factor. Items in this factor reflect visitors' expectations for the environment and the experience. Cronbach's alpha was .848, and this factor's eigenvalue was 1.81.

The fourth factor describes visitors' perceptions of relevance and the degree to which the interpretive talk was memorable. This factor had an eigenvalue of 1.5 and explained 5.33 % of the variance. Cronbach's alpha was .804.

Table 4.6

Factors reflecting visitors delayed perceptions of and responses to interpretive talks

Scale Item	Factors			
	1	2	3	4
The interpreter interacted with the audience	.980			
Attempted to connect with the visitor	.791			
Actively involved the audience	.757			
The interpreter responded to questions	.716			
Made you feel welcome	.625			
Gained an understanding of the park's importance		.876		
Gained an understanding of the park's mission		.732		
Gained an understanding of the park's history		.691		
Increased your awareness of the physical resources of the park		.521		
Formed a lasting bond with the resource		.504		
Learned something new		.465		
Felt connected to the park and what it represents		.454		
Saw how the park relates to "the big picture"		.403		
Relevant to the surroundings			.893	
Held in an appropriate place			.877	
Organized			.579	
An appropriate length			.551	
The interpretive talk was enjoyable			.503	
Met your expectations			.374	
Had a clear theme			.334	
Remembered the talk until now				.819
Found the talk memorable				.698
Thought about the talk since your visit				.683
Talked to another person about what you learned				.573
An important part of your park visit/experience				.494
Wanted to attend more interpretive talks				.470
Related the talk to your life				.351
Thought about the park since your visit				.320
Eigenvalues	9.24	2.38	1.81	1.50
Percentage of variance explained	33.00	8.50	6.46	5.33

Research Question 2

The majority of telephone respondents (84.5%) were able to report one or more responses to the question "What was memorable about the topic of the talk?" An initial thematic conceptual matrix was developed by the researcher, resulting in three response categories (Table 4.7). Three individuals who had not attended or viewed the interpretive talks were then each provided with all the visitors' reported responses for this question and asked to categorize them into one of the three groups. Results showed good inter-rater reliability. Cohen's Kappa was 90.8% for the *general comments* category, 94.2%, for the *talk/topic specific comments*, and 100.0% for the *don't know/don't remember* category. From this exercise, a sub-theme emerged. The role and skills of the interpreter was described as the primary memorable experience in 21 (24%) of the *general comments* category (i.e. "the interpreter was a great speaker," "the interpreter was great and clearly knew the area").

Table 4.7

Categories of response to open ended-question "What Was Memorable?"

	Number	Percent
General comments	89	31.5
Talk/topic-specific comments	150	53
'Don't Know' or 'Don't Remember'	44	15.5
Total	283	100.0

Research Question 3

A majority of visitors reported discussing the talk with another person (85.2%), and just over three-quarters (75.6%) reported that they would attend other interpretive talks at a national park as a result of attending the talk at which they were contacted (Table 4.8). Forty percent (40.3%) of visitors reported having recommended the talk to another person. This suggests that interpretive talks can be successful at stimulating social learning from others as well as in encouraging visitors to attend other programs.

Table 4.8

Actions visitors report having done as a result of attending the interpretive talk

As a result of the talk, did you…	Yes	%	No	%	Don't Know/ Don't Remember	%
Discuss this talk with another person?	241	85.2	42	14.8	0	0
Attend other interpretive talks at a national park?	214	75.6	63	22.3	6	2.1
Recommend this talk to another person?	114	40.3	160	56.5	9	3.2
Seek more information about the topic?	80	28.3	202	71.4	1	0.4
Did you do anything else as a result of this talk?	72	25.4	206	72.8	5	1.8
Buy anything related to the topic of this talk?	66	23.3	203	71.7	14	3.2
Attend this talk more than once?	25	8.8	258	91.2	0	0

Research Question 4

To test this hypothesis, the weighted factor scores that are used as the DVs were checked for normality. Skewness and kurtosis values were within acceptable ranges. Mahalanobis' distance scores indicated no multivariate outliers. Linearity of the weighted factor scores was tested through examination of bivariate scatterplots and calculation of Pearson correlation coefficients.

Results indicated a linear relationship (all correlations were significant at p ≤ .01).

Thus, normality of the weighted factor scores was assumed (Tabachnick & Fidell,

2001).

A one-way MANOVA was conducted to determine the effect of social group

composition on dimensions of reported perceptions approximately eight months

after attending an interpretive talk. Box's test confirmed that equal variances

could be assumed. Initial results indicated that social group composition as

measured in this research did not significantly affect the combined DV (Wilks'

Λ= .930, F(16, 840.78) = 1.26, p = .219).

However, due to small numbers in the non-family groups (Table 13), the IV

was re-conceptualized to a dichotomous split of 'family' and 'other.' A one-way

MANOVA, 'with family members only' (n=206) and 'other' (n= 77) (including

mixed family/friend groups, with friends only, with an organized group, or alone)

was then conducted. Results indicate that these two categories of social groups

did not significantly affect the combined DV (Wilks' Λ= .992, F(4, 278.0) = .585,

p = .673). Finally, the IV was re-conceptualized as two groups, one including

'attended with family' and 'with family and friends,' (N= 230) and one including

'alone,' 'with friends,' and 'with an organized group' (N = 53). These two

categories of social groups also did not affect the combined DV (Wilks' Λ= .982,

F(4, 278.0) = 1.27, p = .282).

Research Question 5

The goal of testing this hypothesis is to determine if the presence or absence of a 'memorable' response can be reliably and accurately classified by the visitors' delayed responses represented by the weighted factor scores determined in R.Q. 1. A standard discriminant analysis was conducted to determine whether the weighted factor scores for the four factors determined in R.Q. 1 could predict the presence or absence of a memorable response reported by visitors. One function was generated and was significant [Wilks' $\Lambda = .898$, $\chi^2 (4, N=283) =30.12$, $p< .001$]. This indicated that the presence or absence of a memorable response was significantly differentiated by the function. However, only 10.2% of function variance was accounted for by the linear combination of weighted factor scores (canonical correlation = .320; $\eta = 10.2$). Standardized function coefficients and correlation coefficients (Table 4.9) show that factor 4 was most associated with the function.

While 95.4% of memorable responses were correctly classified in the original classification results, only 18.2% of non-memorable responses were correctly classified. For the overall sample, 85.2% of the original cases were correctly classified. Cross-validation shows correct classification for 84.1% of the total sample. The function means support these results; visitors reporting memorable responses had a function mean of .144, while visitors not reporting memorable responses had a function mean of -.784. This suggests that visitors who more strongly agreed with the items in factor four were more likely to be classified as reporting a memorable response, although the usefulness of this analysis in this

case is somewhat questionable due to the poor classification results for the non-memorable group.

Table 4.9

Correlation coefficients and standardized function coefficients

	Correlation coefficients with discriminant function	Standardized function coefficients
Weighted factor score for factor four	.985	1.162
Weighted factor score for factor two	.607	-.170
Weighted factor score for factor one	.448	.052
Weighted factor score for factor three	.442	-.146

Summary

This chapter has described selected demographic characteristics of the visitors and addressed the first six research questions and associated hypotheses. Most visitors attended the interpretive talk at which they were initially surveyed with family members and the majority visited a national park at least once a year. Results reported in this chapter revealed four underlying dimensions to visitors'

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delayed responses to interpretive talks. The majority of visitors reported a memorable experience. However, the classification of social/family groups did not prove useful in predicting differences among reported responses. The weighted factor scores representing the four underlying response dimensions were only somewhat useful in predicting the presence or absence of a memorable response eight months after the interpretive talk. Results for the interpreters' web survey are presented in the next chapter.

CHAPTER FIVE

DESCRIPTIVE FINDINGS AND HYPOTHESIS TESTING: INTERPRETERS

The first section of this chapter describes the response rate and employment-related characteristics of the sample, including job series classification, grade, park type classification, and region. Selected demographics include education level, age, and race/ethnicity. The next section reports findings for the dimensions of interpreters' expectations for visitors' perceptions of and responses to an interpretive talk. Themes describing what interpreters think makes interpretive talks memorable are presented. Employment and training-related variables are examined to determine differences among the weighted factor scores that represent the dimensions of expectations for visitors' responses.

Interpreter Characteristics

A 56% response rate (n=640) was achieved in this census survey. The initial 1243 names and email addresses provided by the NPS contained 26 individuals who responded that they were not interpreters. Seven individuals declined to participate, expressing a lack of time or interest in the study. Forty-nine (49) addresses were retuned as undeliverable, and twenty (20) emails were returned as 'out of office', for a final usable list of 1136.

The majority (546, 85.3%) of the 640 respondents were classified in the GS-0025 Park Ranger (Interpretive) series, with employment grades ranging from

5 through 13 (Tables 5.1 and 5.2). The respondents, on average, had been in their

current position for 7.95 years, had worked for the NPS for 14.93 years and been

employed by the federal government for 15.53 years. Most respondents were

permanent (n= 598, 92%), full-time (n=518, 90.8%) staff. Park and regional

classifications are presented in Tables 5.3 and 5.4. Females comprised 45.5% of

the respondents, 47.8% were male, and 6.7% chose not to respond. Tables 5.5

through 5.7 further describe the respondents, including level of education, age,

and race.

Table 5.1

Job series categories of NPS interpreters

Job series	Frequency	Percent
Park Ranger (Interpretive) GS-0025	546	85.3
Park Ranger (Other Specialty) GS-0025	56	8.8
Other series not listed	5	.8
Missing	33	5.1
Total	640	100.0

Table 5.2

Grade levels of NPS interpreters

Grade	Frequency	Percent
GS-05	5	0.8
GS-07	21	3.3
GS-09	335	52.3
GS-11	122	19.1
GS-12	114	17.8
GS-13	3	.3
Missing data	41	6.4
Total	640	100.0

Table 5.3

Park classification of NPS interpreters

Park classification	Frequency	Percent
National Battlefield	34	5.3
National Capital	6	0.9
National Historic Site	93	14.5
National Historical Park	73	11.4
National Lakeshore	6	0.9
National Memorial	17	2.7
National Monument	65	10.2
National Park	159	24.8
National Parkway	11	1.7
National Preserve	13	2.0
National Recreation Area	49	7.7
National River	11	1.7
National Seashore	21	3.3
NPS Regional Office	10	1.6
Other	32	5.0
Missing	40	6.2
Total	640	100.0

Table 5.4

Regional classification of NPS interpreters

Regional classification	Frequency	Percent
Alaska	13	2
Intermountain	114	17.8
Northeast	134	20.9
National Capital	56	8.8
Midwest	78	12.2
Pacific West	94	14.7
Southeast	111	17.3
Washington Office	2	0.3
Centers	1	0.2
Other	1	0.2
Missing	36	5.6
Total	640	100.0

Table 5.5

Education levels of NPS interpreters

Education level completed	Frequency	Percent
High school graduate	6	0.9
Some college	28	4.4
2-year college graduate	26	4.1
4-year college graduate	271	42.3
Some graduate-level college	127	19.8
Masters degree	136	21.3
PhD	7	1.1
Missing data	39	6.1
Total	640	100.0

Table 5.6

Race/ethnicity of NPS interpreters

Race/ethnicity	Frequency	Percent
American Indian or Alaskan Native	13	2.0
Asian	7	1.1
Black or African American	36	5.6
Native Hawaiian or other Pacific Islander	7	1.1
White or Caucasian	483	75.5
Other	29	4.5
Missing	65	10.2
Total	640	100.0

Table 5.7

Ages of NPS Interpreters

Age group	Frequency	Percent
20-24	3	0.5
25-29	16	2.5
30-34	52	8.1
35-39	82	12.8
40-44	100	15.6
45-49	107	16.7
50-54	110	17.2
55-59	87	13.6
60-64	32	5.0
65 and over	5	0.8
Missing data	46	7.2
Total	640	100.0

The following sections present the results of the analysis of interpreters'
responses to the web survey. Research questions 6 through 8 and associated
hypotheses are addressed.

Research Questions 6 Through 8

Research Question 6

Assessment of skewness and kurtosis revealed acceptable values for all
variables to be included in the exploratory factor analysis (EFA). No multivariate
outliers were detected through the calculation of Mahalanobis' distance with p <
0.001 (Tabachnick & Fidell, 2001; Mertler & Vannatta, 2005). Preliminary
analysis was conducted for the 37 items that parallel items in the visitors' CATI
survey using maximum likelihood (ML) extraction with promax rotation (see p.
84).

The initial analysis suggested five items that were not appropriate for
inclusion in the EFA, as communalities for these items were all less than 0.1.
According to Garson (2006) this indicates little common variance and these items
should not be included in the analysis. Thus, 'focus on the physical resources of
the park,' 'relate only to adults,' 'relate only to children,' 'familiar with the topic
before attending the talk,' and 'interested in the topic' were removed.

Next, a ML with promax analysis showed a Kaiser-Meyers-Olkin (KMO)
measure of sampling adequacy value of .925, an acceptable value for proceeding
with factor analysis. Cronbach's alpha for the group of 32 items was .915. A

series of parallel analyses was then performed to determine the number of factors to retain (see p. 85 for a detailed description of this process).

The initial analysis suggested four factors as the best solution, although the possibility that five or even six factors could be useful in understanding this data was considered. A series of ML with promax analyses were run, with KMO, factor structure, variance, eigenvalues, scree plots, individual item loadings, and reliability examined for each possible solution. Individual items that loaded poorly (and/or loaded across multiple factors) were considered for deletion (Tabachnick & Fidell, 2001). The order of the items deleted was based on the factor loadings; items with the lowest top loading and most cross-loading (i.e. within .10 across factors) were deleted first and the analysis was re-run after each deletion. Deleted items are presented in Table 5.8 with corresponding factor loadings and order of deletion.

Table 5.8

Items deleted from final factor solution for NPS interpreters

Item	Factor (loadings)				Order of deletion
	1	2	3	4	
An interpretive talk should provoke visitors to think differently	.273	.253	<.10	<.10	1
An interpretive talk should have a clear theme	.220	.274	<.10	<.10	2
An interpretive talk should provoke curiosity	.312	.259	<.10	<.10	3
Visitors should feel connected to the park and what it represents	.200	.314	.270	<.10	4
An interpretive talk should be enjoyable	-.229	.111	.276	.351	5
Visitors should talk to another person about what they learned	.337	.396	<.10	-.118	6
Visitors should clearly remember the talk six months later	.282	.319	-.166	<.10	7

Norman & Streiner's (1994) formula[6] for calculating minimum loadings when

N>100 was used to determine the cutoff score for items loading on a factor (as

opposed to simply using common conventions of .4, for example). Calculating

this cutoff point and reporting all factor loadings shows the factor structure more

clearly and allows readers to make judgments for themselves (Garson, 2006;

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[6] Minimum Factor Loading = $5.152/[\text{SQRT}(N-20)]$

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Preacher & MacCallum, 2003). For this analysis, the cutoff was set at .203.

However, it is important to recognize that relatively low loadings may reflect

limited usefulness for particular items.

Final Factor Structure and Reliability Coefficients

Table 5.9 exhibits the final structure of the four factors operationalized as the

interpreters' expectations for visitors' responses. Cronbach's alpha for the 26

items retained in the four factors was .895. Nunally and Bernstien (1994) suggest

that a Cronbach's Alpha of .70 demonstrates acceptable reliability.

The first factor (Factor A) had six items and explained 30.46% of the

variance. It had an eigenvalue of 7.31 and a Cronbach's alpha of .800. Items in

this factor primarily describe the importance of visitors' relating elements of the

talk to their lives and/or to other issues.

The second factor (Factor B) explained 7.04% of the variance. It had an

eigenvalue of 1.69 and a Cronbach's alpha of .806. This factor consisted of five

items that describe actions taken by the interpreter to facilitate visitor engagement

and involvement.

Nine items loaded on the third factor (Factor C), with an eigenvalue of 1.53.

This factor was somewhat difficult to interpret as there appears to be two

interrelated themes: 1) visitor learning, and 2) visitors perceiving the talk as

memorable/important. Although further research may yet further define and

clarify the concepts that underlie this factor, together, these items had a

Cronbach's alpha of .768 and explained 6.39% of the variance.

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The fourth factor (Factor D) consisted of four items describing the structure of the talk and its relevance to the surroundings. Cronbach's alpha was .770, the factor's eigenvalues was 1.33, and it explained 5.54% of the variance.

Table 5.9

Factors reflecting interpreters expectations for visitors' responses

Scale Item	Factors			
	A	B	C	D
Be able to relate what was presented in the interpretive talk to their lives	.862			
Be able to relate what was presented in an interpretive talk to issues or situations outside the park	.853			
Relate the talk to something they already knew	.643			
An interpretive talk should promote critical thinking	.542			
Visitors should see how the park relates to the 'big picture'	.427			
An interpreter should actively involve the audience	.340			
An interpreter should… respond to questions		.848		
Make the visitor feel welcome		.790		
Attempt to connect with the visitor		.661		
Interact with the audience		.533		
Use a variety of different techniques when presenting an interpretive talk		.513		
As a result of a talk, visitors should… gain an understanding of the park's history			.767	
Gain an understanding of the park's mission			.710	
Gain an understanding of the park's importance			.505	
Learn something new			.462	
Want to attend more interpretive talks			.402	
Visitors should find the interpretive talk memorable			.354	
An important part of the visitor' park visit/experience			.340	
An interpretive talk should meet the visitors' expectations			.318	
Tell a story			279	

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Table 5.9 (Continued)

Factors reflecting interpreters' expectations for visitors' responses.

Scale Item	Factors			
	A	B	C	D
Relevant to the surroundings				.670
An appropriate length				.626
Organized				.445
Eigenvalues	7.31	1.69	1.53	1.33
Percentage of variance explained	30.46	7.04	6.39	5.54

Research Question 7

NVivo qualitative analysis software was used to determine the themes that emerged from 557 responses (87.0% of respondents) to the open-ended question: "What do you think makes an interpretive talk memorable?" Text search coding into primary nodes was followed by manual coding and review to check accuracy and reliability. Several major themes emerged from the analysis (Table 5.10). Additional minor themes that emerged, and should be considered for future analysis, included 1) novelty and unexpected events, 2) setting, 3) individual visitor characteristics, 4) enjoyment, and 5) negative elements might result in a memorable experience.

Table 5.10

Major themes of what interpreters think makes an interpretive talk memorable.

Theme	Description of and elements of the theme	N	%	Selected examples
Interpreter/Ranger skills	Knowledge, skills, and abilities Personality and enthusiasm Professionalism Technique	468	84.0%	"Content, techniques, ranger's personality" "Clear, concise, strong language; choice of the best examples, activities and anecdotes; encouraging audience to interact with Ranger via critical thinking skills; voice and inflection" "A good interpreter--one who is knowledgeable and accurate, takes an interest in the visitors, subtly communicates her/his sincere passion for park resources, helps visitors grasp new dimensions to aspects of the physical resources of the park"
Relevance	Relevance of the talk to the resource, park, or outside issues Relevance of the talk to the individual visitor Visitors able to relate to the talk and/or interpreter	182	32.7%	"How relevant the talk is to the visitor" "If at least part of the program is relevant to the visitor's life" "When it's relevant to the audience and their lives outside the place"

Table 5.10 (Continued)

Major themes of what interpreters think makes an interpretive talk memorable.

Theme	Description of and elements of the theme	N	%	Selected examples
Connections	Opportunity for visitors to form connections with/feel connected to the resource	158	28.4%	"One that connects the visitor personally and positively to the resource" "Significant emotional, intellectual, and tangible connections." "A connection between the resource and the visitor" "An 'ah hah' moment when the visitor makes a connection to the resource"
Learning	Visitor learning and understanding Visitor education Instilling desire to learn more/ share new knowledge	148	26.6%	"Interpreter sparking an interest in the subject, making visitors curious to learn more and providing new information that is meaningful" "A memorable talk is one that visitors come away with learning something new and wanting to do more for the parks" "A presentation that is educational and enjoyable"

Table 5.10 (Continued)

Major themes of what interpreters think makes an interpretive talk memorable.

Theme	Description of and elements of the theme	N	%	Selected examples
Involvement	Audience involvement	89	16.0%	"Active participation by the visitor"
	Participation			"Getting a chance to be involved and
	Interaction			participate"
				"Interaction with the audience and audience participation"

Research Question 8

The weighted factor scores that are used as the DVs were checked for

normality. Skewness and kurtosis values were within acceptable ranges.

Mahalanobis' distance scores indicated no multivariate outliers. Linearity of the

weighted factor scores was tested through examination of bivariate scatterplots

and calculation of Pearson correlation coefficients. Results indicated a linear

relationship (all correlations were significant at $p \leq .01$). Thus, normality of the

weighted factor scores was assumed (Tabachnick & Fidell, 2001).

One-way MANOVAs were conducted to determine the effect of interpreters'

employment and training background on the standardized factor scores

representing the dimensions of their expectations for visitors' responses to

interpretive talks. The IVs for this research question were as follows: 1) how

many years worked for the NPS, 2) how many years in the current position, 3) how many years worked for the federal government, and 4) type of training (if any) for preparing and presenting interpretive talks in which the interpreter had participated.

In the first analysis, the number of years worked for the NPS was recoded to reflect five categories (Table 5.11). Box's test confirmed that equal variances could be assumed. However, results indicated that number of years worked for the NPS did not significantly affect the combined DV (Wilks' Λ= .979, F(16, 1821.45) = .795, p = .692).

Table 5.11

Distribution of number of years worked for NPS

Number of years worked for NPS	Number of interpreters
Up to 5	37
6 to 10	120
11 to 15	133
16 to 20	135
21 or more	179

Next, the number of years worked in their current position was recoded to reflect five categories (Table 5.12). Box's test was significant, and group sample

sizes were unqeual. Thus, Pillai's trace is reported (Tabachnick & Fidell, 2001).

However, results indicated that number of years worked in current position did

not significantly affect the combined DV (Pillai's trace = .041, $F(16, 2400.0)$ =

1.549, p = .075).

Table 5.12

Distribution of number of years worked in the interpreters' current position

Number of years in current position	Number of interpreters
Up to 5	261
6 to 10	169
11 to 15	95
16 to 20	55
21 or more	25

The number of years interpreters had worked for the federal government

was also recoded to reflect five categories (Table 5.13). Box's test confirmed that

equal variances could be assumed. However, results indicated that number of

years worked for the NPS did not significantly affect the combined DV (Wilks'

Λ = .966, $F(16, 1815.34)$ = 1.298, p = .189).

Table 5.13

Distribution of number of years worked for the federal government

Number of years worked for federal government	Number of interpreters
Up to 5	30
6 to 10	99
11 to 15	131
16 to 20	140
21 or more	202

Respondents were then asked if they had participated in any training that prepared them for preparing and presenting interpretive talks. A majority of the 612 usable responses, 89% (n = 545) had participated in one or more types of training. Box's test was significant, and group sample sizes were unqeual. Thus, Pillai's trace is reported (Tabachnick & Fidell, 2001). However, results indicated that participation in training did not affect the combined DV (Pillai's trace = .013, $F(4, 607.0) = 2.016, p = .091$).

A series of MANOVAs was then run to examine the effect of specific types of training on the combined DV (Table 5.14). Participation in in-park training by non-NPS staff, participation in a national class, participation in university or college classes, and responses classified as 'other' did not result in a significant difference for the combined DV. However, seven of the eleven categories of

training type show significant differences on the combined DV. Post hoc tests for each of these training types reveal significant differences between individual factors

Results indicated that participation in in-park training by NPS significantly affects the combined DV. However, effect sizes are very small ($\acute{\eta}^2$=.023). Univariate ANOVA and LSD post hoc tests were conducted as follow-up tests using an alpha level of .0125 to adjust for the four DVs. Results indicate that in-park training significantly differs for factors A ($F(1, 638)$=10.224, p.001), B ($F(1, 638)$=6.829, p.009), and C ($F(1, 638)$=10.222, p.001). Individuals who participated in in-park training scored significantly higher on these three factors.

Coaching/mentoring participants also significantly affects the combined DV of the four factors, although effect sizes are very small ($\acute{\eta}^2$=.015). Univariate ANOVA and LSD post hoc tests were conducted as follow-up tests using an alpha level of .0125 to adjust for the four DVs. Participation in coaching/mentoring does not significantly differ for any of the four factors.

Respondents who participated in a regional class showed a significant effect, again with very small effect sizes ($\acute{\eta}^2$=.015). As described above, univariate ANOVA and LSD post hoc tests were conducted. Participation in a regional class does not significantly differ for any of the four factors.

Results indicated that participation in a TELnet class significantly affects the combined DV of the four factors. However, effect sizes are very small ($\acute{\eta}^2$=.016). Univariate ANOVA and LSD post hoc tests were conducted as follow-up tests using an alpha level of .0125 to adjust for the four DVs. Results indicate that

TELnet training significantly differs for factor B ($F(1, 638)=8.985$, $p.003$). Individuals who participated in TELnet training scored significantly higher on this factor.

For interpreters who had completed self-study training, there was a significant effect on the combined DV, again with a small effect size ($ή^2=.040$). The results of the univariate ANOVA and post-hoc tests indicate that self-study training significantly differs for all four factors: A ($F(1, 638)=19.449$, $p\leq001$), B ($F(1, 638)=24.236$, $p\leq001$), C ($F(1, 638)=15.696$, $p\leq001$), and D ($F(1, 638)=12.482$, $p\leq001$). For all four factors, self-study was associated with a significantly higher score.

Participation in National Association for Interpretation (NAI) training showed a significant effect on the combined DV ($ή^2=.023$). Univariate ANOVA and post-hoc tests indicate significant differences between participants and non-participants for factors A ($F(1, 638)=6.918$, $p=.009$), and B ($F(1, 638)=7.725$, $p=.003$). Participation in NAI training was associated with a significantly higher score on these factors.

Finally, interpreters who had submitted to the IDP peer certification program showed a significant effect on the combined DV, with very small effect sizes ($ή^2=.026$). As described above, univariate ANOVA and LSD post hoc tests were conducted. Submission to the IDP peer certification program does not significantly differ for any of the four factors.

Table 5.14

MANOVA results for types of training

Type of training	N (%)	Box's test*	Wilks' Λ	*Pillai's trace	F	p	Factors showing sig. diff on post-hoc tests
In-park, with NPS staff	469 (86.0)	<.001	-	.023	3.719	.005	A, B, D
In-park, with non-NPS staff	110 (20.2)	.862	.997	-	.498	.738.	None
Coaching/mentoring	272 (49.9)	.049	-	.015	2.440	.046	None
Regional class	250 (45.9)	.127	.985	-	2.440	.042	None
National class	186 (34.1)	.295	.991	-	1.461	.212	None
TEL net	127 (23.3)	.000	-	.016	2.586	.036	B
Self-study	290 (53.2)	.000	-	.040	6.63	<.001	A, B, C, D
NAI training	117 (21.5)	.066	.977	-	3.689	.006	A, B
University or college	125 (22.9)	.002	-	.011	1.804	.126	None
Submission to peer certification program	58 (10.6)	.154	.974	-	4.196	.002	None
Other	59 (10.8)	.720	.998	-	.357	.839	None

*used if significant

Summary

This chapter has described selected demographic characteristics of the permanent interpreters who responded to the web survey. The majority of respondents were permanent, full-time staff who had been employed in their current position for an average of almost eight years. Grade levels ranged from GS-05 through GS-13, and respondents came from a range of park and regional classifications. Four factors resulted from the EFA, and five major themes for what interpreters think makes an interpretive talk memorable were identified. Results of the hypotheses for research question eight showed that number of years worked in the current position, for the NPS, and for the federal government did not significantly affect the weighted factor scores of the four factors representing the underlying dimensions of interpreters' expectations for visitor responses. In-park (with NPS staff), TEL net, self-study, and NAI training resulted in significantly higher scores on different factors. The next chapter addresses research questions nine and ten.

CHAPTER SIX

HYPOTHESIS TESTING OF CONGRUENCE BETWEEN VISITORS' AND
INTERPRETERS' RESPONSES

The focus of this chapter is research questions nine and ten. First, a
comparison of the rank correlation of similar items for the two factor analyses
addresses the similarities between the underlying dimensions of visitors'
responses and interpreters' expectations. A comparison of individual similar
CATI and web survey items is then presented.

Research Questions 9 and 10

Research Question 9

The factor structures presented in Tables 4.6 and 5.9 (see p. 89 and 106,
respectively) were determined through EFA of items developed for this research.
Thus, the factor structures determined should continue to evolve as items and
procedures are refined and further testing occurs in the development of a scale for
future use. As the items retained in each of the two analyses differ, it is not
possible at this point to conduct statistical testing using a matrix (as an overall
index of similarity) or vector (paired factor similarity) approach as suggested by
Wiliams, Schreyer, and Knopf (1990). To address hypothesis four, a Spearman
rank correlation was run for the 19 items that were comparable in the separate
EFAs for visitors and interpreters (Table 6.1). This analysis shows the correlation
between the rank order of these items based on the mean scores (Siegel, 1956.

Spearman's rho was .834 (p≤.001). Thus, while there are some differences in the

two rank orders, they are strongly correlated, overall.

Table 6.1

Rank correlation of comparable within-scale items across visitors' and interpreters EFAs

Item	Rank for Visitors	Rank for Interpreters
Relevant to the surroundings	1	3
Held in an appropriate place	2	8
Made you feel welcome	3	1
Organized	4	2
Learned something new	5	8
Responded to questions	5	4
An appropriate length	6	6
Gained an understanding of the park's importance	7	9
Attempted to connect with the visitor	8	5
Interacted with the audience	9	7
Actively involved the audience	10	12
An important part of your visit/experience	11	10
Wanted to attend more interpretive talks	12	13
Met your expectations	13	18
Gained an understanding of the park's history	14	17
Gained an understanding of the park's mission	15	15
Found the talk memorable	16	14
Related the talk to your life	17	16
Saw how the talk relates to the 'big picture'	18	11

Rho = .834, p≤.001

One challenge in the development and analysis of stable factor structures is underlying differences among subgroups, for both visitors and interpreters (Williams, Schreyer, & Knopf, 1990). Further, the dynamic nature of the experience and the influence of individual differences present challenges in identifying common latent constructs (Williams, Schreyer, & Knopf). Further research and analysis to refine the item pool and conduct comparative analyses on the underlying structure of reported and expected responses to interpretive talks is necessary.

Research Question 10

When the means of all 37 similar items were compared for visitors and interpreters, 27 (73%) were significantly different at an alpha level of .05 (Table 6.2). The large sample size (total N = 923), although increasing power, may increase the finding of statistically significant effects (Cohen, 1988). Thus, the effect size for all significant differences was calculated using Cohen's *d*, to determine if significant effects were a result of large sample size or reflected differences that warrant further analyis. Effect sizes are considered small at *d*=.2, medium at *d*=.5, and large at *d*=.8 (Cohen, 1988, 1992; Girish, 2006). Among the significant items, five approached medium effect size (i.e. >.4), six showed a medium effect size (>.5), and two showed a large effect size (>.8).

Table 6.2

Significant differences between similar items for visitors and interpreters

Stem/ Item (visitors) Stem/Item (interpreters)	Mean	t	p	d
The interpretive talk was …enjoyable *I believe an interpretive talk should be…enjoyable*	4.51 *4.66*	-3.49	.001	.260
an important part of your park visit/experience *an important part of the visitors' park visit/experience*	4.24 *4.29*	-.878	.380	n/a
organized *organized*	4.40 *4.68*	-6.54	<.001	.483
held in an appropriate place *appropriate for the physical environment*	4.59 *4.38*	4.89	<.001	.336
relevant to the surroundings *relevant to the surroundings*	4.66 *4.67*	-.225	.822	n/a
an appropriate length *an appropriate length*	4.35 *4.57*	-4.55	<.001	.348
The interpretive talk ... provoked you to think differently *I believe an interpretive talk should... provoke a visitor to think differently*	3.71 *3.77*	-.926	.355	n/a
promoted critical thinking *promote critical thinking*	3.81 *4.13*	-5.43	<.001	.394
told a story *tell a story*	4.22 *4.06*	3.18	.002	.218
provoked your curiosity *provoke curiosity*	4.26 *4.4*	-2.96	.003	213
increased your awareness of physical resources of the park *focus on the physical resources of the park*	4.19 *3.57*	10.17	<.001	.712
related only to adults *relate only to adults*	2.13 *1.80*	5.83	<.001	.423
related only to children *relate only to children*	1.88 *1.79*	2.22	.027	.140

Table 6.2 (Continued)

Significant differences between similar items for visitors and interpreters.

Stem/ Item (visitors) *Stem/Item (interpreters)*	Mean	t	p	*d*
met your expectations *meet the visitor's expectations*	4.16 *3.73*	7.78	<.001	.541
Before attending the talk… you were familiar with the topic *I believe visitors are…* *familiar with the topic before attending the talk*	3.22 2.82	5.25	<.001	.378
you were interested in the topic *interested in the topic*	3.95 *3.62*	6.10	<.001	.435
you knew what to expect *An interpreter should…* *Let the audience know what to expect*	2.71 *4.2*	-23.67	<.001	1.81
As a result of the talk, you… gained an understanding of the park's mission *As a result of the talk, I believe visitors should… gain* *an understanding of the park's mission*	4.08 *4.10*	-.299	.774	n/a
gained an understanding of the park's history *gain an understanding of the park's history*	4.11 *3.87*	4.58	<.001	.318
gained an understanding of the park's importance *gain an understanding of the park's importance*	4.33 *4.37*	-.875	.386	n/a
you…learned something new *I believe visitors should… learn something new*	4.38 *4.38*	-.098	.922	n/a
found the talk memorable *find the talk memorable*	4.05 *4.12*	-1.40	.162	n/a
related the talk to your life *be able to relate what was presented in the interpretive* *talk to their lives*	3.39 *4.07*	-10.28	<.001	.776
related the talk to issues or situations outside the park *be able to relate what was presented in an interpretive* *talk to issues or situations outside the park*	3.58 *3.91*	-5.06	<.001	.379

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Table 6.2 (Continued)

Significant differences between similar items for visitors and interpreters.

Stem/ Item (visitors) *Stem/Item (interpreters)*	Mean	t	p	*d*
remembered the talk until now *clearly remember the talk six months later*	3.70 3.28	7.11	<.001	.511
saw how the park relates to the "big picture" *see how the park relates to the "big picture"*	4.04 4.28	-5.32	<.001	.373
related the talk to something you already knew *be able to relate the talk to something they already knew*	3.86 3.97	-2.03	.043	.151
talked to another person about what you learned *talk to another person about what they learned*	3.90 3.82	1.37	.170	n/a
wanted to attend more interpretive talks *wanted to attend more interpretive talks*	4.22 4.13	1.78	.075	n/a
felt connected to the park and what it represents *feel connected to the park and what it represents*	4.15 4.47	-7.17	<.001	.523
The interpreter… interacted with the audience *I believe an interpreter should...* *interact with the audience*	4.30 4.47	-4.01	<.001	.125
used a variety of presentation techniques *use a variety of different techniques when presenting an interpretive talk*	3.77 4.42	-10.28	<.001	.812
attempted to connect with the visitor *attempt to connect with the visitor*	4.32 4.59	-6.93	<.001	.493
responded to questions *respond to questions*	4.38 4.65	-7.18	<.001	.496
made you feel welcome *make the visitor feel welcome*	4.50 4.79	-7.91	<.001	.583
actively involved the audience *actively involve the audience*	4.25 4.16	1.83	.067	n/a

Summary

This chapter has presented a correlation for items in the EFA results for both visitors and interpreters. The results of testing hypothesis five, the differences between means of individual items across visitors and interpreters, revealed that eight items showed a medium or large effect size, suggesting that further investigation into their usefulness in understanding the relationship between visitors' delayed responses to interpretation and interpreters' expectations for visitors responses could prove useful. A summary of objectives and major findings for all chapters is presented in Chapter 7.

CHAPTER SEVEN

DISCUSSION, IMPLICATIONS, AND CONCLUSIONS

Ten objectives guided the research. These are summarized in Table 7.1 along

with the findings associated with each. Theoretical and managerial implications

are discussed in relation to: 1) engaging visitors, 2) visitors' formation of

semantic and episodic memories, and 3) interpreters' training. The chapter

concludes with recommendations for future research.

The findings for these research questions demonstrate that interpretive talks

can result in longer-term memorable experiences for visitors. Further, specific

elements and actions were identified as important components of a memorable

interpretive talk. These major findings and their implications are discussed in the

following sections.

Table 7.1

Summary of research objectives and findings

Objective	Findings
1. To determine the underlying dimensions of visitors' delayed perceptions of an interpretive talk.	Visitors delayed perceptions of an interpretive talk can be understood as four distinct factors: 1) actions taken by the interpreter that facilitate engagement and learning (skills and techniques), 2) learning/awareness/ understanding, 3) environment and experience expectations, and 4) relevant and memorable elements.
2. To determine if visitors report memorable experiences over time.	The majority of visitors (84.5%) were able to report a memorable element of the talk eight months after the experience. More than half (53%) of visitors described a specific aspect of the talk, while an additional 31.5% described memorable aspects of a general nature.
3. To determine what actions visitors report having done as a result of the interpretive talk during the eight months following the talk.	Visitors predominantly reported speaking to others about the talk (85.2%), attending other interpretive talks (75.6%), recommending the talk to others (40.3%), and seeking more information about the topic (28.3%).
4. To examine differences in visitor perceptions of the interpretive talk relative to the social/family group with whom they attend.	No significant differences in the underlying dimensions of visitors' delayed responses to the interpretive talk were found among different social/family groups.
5. To examine the relationship between the underlying dimensions of visitors' responses with reported memorable experiences.	Visitors who reported higher scores on the fourth factor (relevant and memorable elements) were more likely to report a memorable element of the talk.

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Table 7.1 (Continued)

Summary of research objectives and findings.

Objective	Findings
6. To determine the underlying dimensions of visitors' perceptions/responses that practicing interpreters expected visitors to report.	The underlying dimensions of what interpreters expect to be visitors' perceptions of/responses to an interpretive talk can be understood as four factors. These are: 1) the importance of visitors' relating elements of the talk to their lives and/or to other issues, 2) actions taken by the interpreter to facilitate visitor engagement and involvement, 3) two interrelated themes: a) visitor learning, and b) visitors perceiving the talk as memorable/important, and 4) the structure of the talk and its relevance to the surroundings
7. To determine themes of what practicing interpreters think makes an interpretive talk memorable.	Five major themes were identified: 1) interpreter skills, 2) visitors' perceptions of relevance, 3) formation of connections, 4) visitor learning, and 5) visitor involvement and participation.
8. To examine differences in what practicing interpreters with different employment-related variables expected visitors to perceive.	Number of years worked for the federal government, for the NPS, and in their current position were not significantly different for the four factors of expected visitor perceptions/responses. Among the 10 different types of training in which interpreters could participate, four showed a significant difference on the four factors of underlying dimensions. These are: 1) Self-study, 2) In-park with NPS staff, 3) TEL net, and 4) NAI training.

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Table 7.1 (Continued)

Summary of research objectives and findings

Objective	Findings
9. To determine the degree of congruency between the underlying dimensions of visitors' reported perceptions and what practicing interpreters expected visitors to perceive.	A lack of direct item comparability precluded statistical testing of factor similarity. Descriptive comparisons suggest two similar factors: 1) actions taken by the interpreter to facilitate visitor engagement, and 2) expectations for structure and surroundings. Spearman's rho was .834 ($p \le .001$) for the 19 items that appeared in both initial scales; the rank orders of these items are strongly correlated.
10. To determine the similarities between individual items for visitors' reported responses/perceptions and what practicing interpreters expected responses/perceptions to be for comparable items	Although the means for 27 of the comparable items were significantly different, only six showed a medium effect size and two showed a large effect size (Cohen's $d > .8$).

Findings and Implications

First, both visitors and interpreters identified the need to engage visitors in the experience at an interpretive talk. Second, visitors' semantic and episodic memories revealed the delayed results of an interpretive talk. Third, different types of training may be more influential than others in the development of interpreters' perceptions of interpretive talks. A discussion of these three findings are presented, followed by theoretical and managerial implications

Engaging Visitors

The role of interpreters is to engage visitors, not simply to provide information. Involvement in an experience facilitates attention and learning and promotes the development of memorable experiences. When asked "What do you think makes an interpretive talk memorable?" a major theme described by interpreters was the need for audience involvement, participation, and interaction (Table 7.1, objective 7).

The facilitation of visitor engagement/involvement can be divided into two factors: 1) actions taken by the interpreter, and 2) visitor perceptions of those actions. Visitors and interpreters generally agreed that actions such as *interacting with the audience, responding to questions, making the visitor feel welcome,* and *attempting to connect with the visitor* were important elements of a memorable interpretive talk. However, there were significant differences between interpreters' perceptions of the importance of these actions and visitors' perceptions of these actions taking place at the interpretive talk. For all four action items, interpreters' scores describing the importance of the actions were higher than visitors' perceptions of those actions.

Visitors' Semantic and Episodic Memories

Visitors' delayed responses to an interpretive talk can be used to determine the effectiveness of a talk in conveying information and resulting in a memorable experience. Specifically, determining the presence of semantic and episodic

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memories, the two branches of declarative knowledge, enhances our understanding of visitor learning and the lasting results of interpretation.

The majority of visitors were able to describe a memorable response to an interpretive talk approximately eight months after the experience. More than half described a content-specific aspect of the talk, suggesting the development of semantic and episodic memories (e.g. "…the justice who rounded up the people around the river to save the canal…") (see Table 7.1, objective two). However, other visitors reported general responses that suggested episodic memories and did not appear to reflect topical/thematic elements or content learning (e.g. "…it was very moving and I felt I learned a lot at the time…"). The majority of these episodic memories were positive, and a primary theme was the skill, ability, and personality of the interpreter (e.g. "…the interpreter knew so much and expressed it so well…").

Semantic memory, the first branch of declarative knowledge, contains organized knowledge of words, concepts, and associations. Episodic memory is the second branch of declarative knowledge, and incorporates 'personal tags,' where memories are associated with personally dated, autobiographical experiences (Bruning et al., 2004). A broad knowledge base is necessary for effective thinking and reasoning; episodic memories further indicate the development of personal, memorable experiences.

Interpreters' Training

The effect of specific types of training on interpreters' expectations for visitor responses to interpretive talks was examined. Interpreters who participated in self-study scored higher (than interpreters who did not participate in self-study) in their agreement with items describing: 1) the importance of visitors' relating elements of the talk to their lives (and other issues), 2) actions taken by the interpreter to facilitate engagement and involvement, 3) visitor learning and perceptions of the talk as memorable, and 4) the structure of the talk and its relevance to the surroundings.

Theoretical Implications

An interpretive talk is most memorable when individuals are actively involved or engaged in an experience. Engagement may be conceptualized as the pleasurable fascination or interest associated with *involuntary attention* (Kaplan & Kaplan, 1982). When involvement is effectively facilitated, interpreters can capture visitors' involuntary attention and provoke the mental engagement that results in memorable experiences.

Visitors' delayed responses to interpretive talks show that engagement results in memorable experiences. Specifically, this research: 1) shows that visitors and interpreters value experiences where interpreters actively seek to engage audience members; 2) confirms the development of memorable experiences when visitors were engaged; and 3) demonstrates that, although interpreters acknowledge the need to actively engage visitors, they may not fully realize opportunities to do so.

The challenge for interpreters is to engage their audience. However, engagement does not necessarily require physical participation; it can equally involve mental participation. In both personal and non-personal interpretation, techniques that capture involuntary attention, provoke critical thinking, offer alternative perspectives, or elicit emotional responses are all useful in facilitating engagement and involvement.

Elements that capture involuntary attention are provocative; novel, strange, and fascinating things are useful in promoting engagement, although care must be taken not to overwhelm the visitor. By capitalizing on visitors' tendency to attend to unique or fascinating information, interpreters could use novel information to provoke the development of new (or the expansion of existing) schemas. A balance between provocation and relevance to prior experiences or knowledge may be most effective in encouraging visitor engagement.

Findings support informal learning theory and constructivist learning theory; learning and memorable responses occur as a result of interaction between the interpreter and the audience. Further, results support Kaplan and Kaplan's work on engagement. Visitors who perceived that the interpreter had engaged the audience reported a range of semantic and episodic memories, suggesting that specific actions designed to engage visitors are effective in encouraging the development of long-term (memorable) responses from this type of informal learning experience. In addition, integrating novel and/or provocative information, when possible, may contribute to memorable responses.

In an informal learning context, such as at an interpretive talk, the development of individual memories reflects prior knowledge, perceived relevance, familiarity or novelty of information, and the context of the experience. As seen in the results for objective two (Table 7.1), visitors may report episodic, semantic, or both types of memories. The development of one, both, or neither type of memory can be understood in relation to schema theory, attention, and informal learning theory.

Visitors who reported only episodic memories may not have had relevant prior knowledge or schemas, making the assimilation of new information more challenging. At an interpretive talk, visitors are not required to learn new information, and may have preferred not to put forth the effort required to develop new or enhance existing schemas. In addition, for some visitors who reported only episodic memories, the most memorable aspect of the experience was the role or skills of the interpreter. If a visitors' involuntary attention was captured by the enjoyable performance of the interpreter, there may be no deeper processing of the content of the interpretive talk.

Two elements explain visitors' finding the interpreter most memorable. First, interpreters may be talented and charismatic presenters, passionate about their topic and skilled at presenting to audiences. These individuals can draw a visitors' involuntary attention and perhaps overshadow topic-specific information, should the actual information presented require more effortful attention than simply 'enjoying the show.' Second, interpretive talks do not place demands on the visitor; there are no requirements for learning or attention. Should visitors

find the interpreter more interesting than the material, it is likely that they will report aspects of the interpreter as the most memorable elements of the experience. Kaplan and Kaplan's (1982) suggestion that people pay attention to what is most interesting to them is supported; visitors may not have been engaged with the content of the interpretive talk, but fascinated by the interpreter.

Visitors who discussed the talk with others or sought out more information about the topic were more likely to develop both semantic and episodic memories. Eraut's (2004) contention that deliberative learning from a past episode requires discussion and/or review of past actions, communications, events, and experiences is supported. Therefore, informal learning theory is useful in understanding the development of visitors' memorable experiences.

The differences between interpreters who had participated in self-study and those who had not can be also examined from a learning theory perspective. Individuals who participated in self-study may have had a personal interest in developing their skills at preparing and presenting an interpretive talk, leading to participation in this type of training. In addition, the self-study process may have afforded opportunities for immersion in materials without the distractions that may be present during other forms of training. A combination of individual motivation to learn and reduction of distractions (such as a highly novel format, examples perceived as irrelevant, or off-topic discussion) may have resulted in increased internalization of the necessary elements of interpretive talks.

However, findings for research objective eight (Table 7.1) must be interpreted with caution, as individuals in this group of interpreters also had opportunities for

additional types of training. Results support informal learning theory; individual

agency and engagement are necessary components of individual learning and the

effectiveness of self study depends on the needs and interests of the learner (e.g.,

Bruning et al., 2004; Packer & Ballantyne, 2002).

Managerial and Practical Implications

Engagement and interaction are integral to the formation of memorable

experiences. Engaging visitors requires a variety of techniques informed by

theory, practice, and agency/organization needs. Interpreters recognize the need

for and value of engaging visitors, however, this knowledge may not always

translate into practice.

Training and practice should emphasize creative methods for visitor

involvement, recognize visitors' past experiences and support interactive,

participatory programs wherever possible. In practice, interpreters could: 1)

encourage audience members to talk with others about the topic, 2) invite the

audience to suggest or think of applications in alternate contexts, 3) ask audience

members to apply concepts to their personal lives, and 4) integrate questions such

as "How is …. relevant to you? What would it be like if you were in this

position? What would you do in this situation? Can you think of an example in

your life that relates to …?"

Encouraging the development of semantic and episodic memories as a result

of an interpretive talk requires implementation of specific techniques, as well as

the integration of provocative and relevant material. Explicitly recognizing the

expectations visitors might have for interpretive talks and providing information such as advance organizers, follow-up sources, activities, or suggestions for action is recommended.   For example, a list of visitor questions that will be addressed in an interpretive talk could be posted, along with additional sources of information. Interpreters should also explicitly suggest possible connections or parallels to the visitors' personal experience when presenting factual data. Specific techniques, such as mnemonics, stories, keywords, and pegs, have been shown to improve encoding processes and recall (e.g., Bruning et al., 2004). Encouraging interpreters to use techniques such as analogies, comparisons, and contrasts is also recommended (e.g. Lewis, 1980; Scherbaum, 2006; Sharpe, 1982; Tilden, 1957).

To encourage self-study, specific support might include consistent access to a variety of training tools, including web-based training, books, videos, and self-paced coursework, as well as dedicated study time. Budget and time constraints for individual parks may preclude large-scale training, making self-study an accessible, practical option. However, reflecting individual differences in learning ability and style, continuing to provide a range of training opportunities is most likely to result in effective interpretation. In addition, the findings for research objective eight (Table 7.1) do not reflect the experiences of seasonal or volunteer employees; responses to training for these interpreters was not assessed.

Summary and Conclusions

A major purpose of this dissertation was to determine visitors' delayed responses to an interpretive talk. Findings confirmed the importance of visitor engagement and effective interpreter training in the development of memorable experiences. Advancing the theoretical understanding of these responses requires integration of theories from various disciplines. Specific managerial/practical actions can enhance visitor engagement and provoke memorable experiences.

Integrating theories from various disciplines provides a complementary perspective from which to examine the results of interpretation. Informal learning theory, CLT, and schema theory proved useful in suggesting elements that enhance our understanding of visitors' delayed responses to an interpretive talk. Informal learning theory effectively describes the process of interpretation and highlights the need for visitor engagement. The principles of CLT are useful in their emphasis on the construction of meaning as part of learning and as a way to understand the visitor's role in the long-term result of an interpretive talk. The concept of schema activation helps us understand how individuals encode information through the elaboration and expansion of their current understanding; schema theory is useful in understanding why visitors learn and form meaning from an experience.

Training and practice should emphasize interaction between interpreters and visitors; interpreters must engage visitors in the experience. Communications that address visitors' expectations should be integrated into interpretive programming. The use of multiple methods to integrate the experience of an interpretive talk into

the larger park experience could encourage visitor learning and the formation of memorable experiences. An explicit goal of balancing immediate and longer-term outcomes should be articulated along with techniques that reveal parallels between the interpretive talk and the visitors' personal experience.

Thus, the major conclusions of this dissertation are:

1. Interpretive talks can have a measurable impact on visitors' long-term memories;

2. Integration of informal learning theory, constructivist learning theory, and schema theory is useful in furthering our understanding of these long-term memories; and

3. Effective interpreter training that emphasizes visitor engagement at multiple levels is essential for memorable interpretive talks.

Recommendations for Future Research

Three recommendations for future research are presented. First, based on the dearth of longitudinal research on interpretation, the exploration of visitors' delayed responses to interpretation at different points in time for varied programs should be emphasized. Second, the conceptual framework should be refined, possibly leading to the development of a scale to measure visitors' delayed responses to interpretation. Third, an understanding of non-permanent (i.e. seasonal, volunteer, and intern) interpreters' perceptions of training and expectations for visitor responses to interpretation should be pursued.

Exploring visitors' delayed responses to interpretation could include other forms of interpretation, and should include an assessment of actions taken to facilitate visitor engagement in interpretive programs. The conceptual framework that was developed for this dissertation (see Figure 3) incorporated key elements

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of informal learning theory, schema theory, and constructivist learning theory. Specifically, provocation, relevance, attention, visitors' prior knowledge/experience, and the social and physical contexts were determined to be important in understanding visitors' delayed responses to interpretation. However, not all of these constructs appeared in the results, which may be an artifact of the specific talks examined in this dissertation. Future research should focus on developing a useful scale and research design to measure visitors' responses at different points in time.

Finally, future research should examine seasonal, volunteer, and intern interpreters' training and expectations for visitors' responses to interpretation. An assessment of training opportunities could further understanding of the role of training and experience in successful interpretation by non-permanent interpreters, who form a large part of the interpretive workforce. These recommendations build on the findings of this dissertation; supporting the overall objective of determining visitors' responses to interpretive talks and discovering the relationship between the interpretive talk and the formation of memorable experiences.

APPENDICES

Appendix A: Visitor Postcard

Dear <name>:

Thank you for volunteering to help with the National Park Service Interpretive Development Program Evaluation Study. Within a week or so we will be calling you from Clemson University as part of a research study to ask you about your experience at an interpretive talk when you visited a national park area last summer.

We are writing in advance of our telephone call because we have found that many people appreciate being advised that a research study is in progress, and that they will be called.

The interview should only take about 15 minutes. If by chance we call at an inconvenient time, please tell the interviewer and he or she will be happy to call back later.

If you have any questions, please don't hesitate to ask our interviewer. Or, you may contact me toll-free at 1-800-849-5079.

We look forward to talking with you!

Lisa Machnik
Doctoral Graduate Assistant
Parks, Recreation and Tourism Management, Clemson University, 137 Lehotsky Hall, 29634

Appendix B: Visitor Interview Script

TELEPHONE INTERVIEW SCRIPT

"Hello, may I please speak to _____(name)? My name is _____
and I am calling from Clemson University regarding your trip to _____(park)
this past summer, in _____(month) where you attended a talk about
_____ (topic/name). You filled out a short survey and volunteered to
help us with this study.
I only need about 15 minutes of your time. Would you be able to help me out with
this?"

(SUPPLEMENTAL INTRO, if respondent hesitates: "Your responses will help the
National Park Service improve its programs across the country. The U.S. Office of
Management and Budget has approved this research under the Paperwork Reduction Act.
All of your answers are completely voluntary. Responses to this study will be used only
for statistical purposes. The reports prepared will summarize findings across the sample
and will not associate responses with a specific individual. We will not provide
information that identifies you to anyone outside the study team, except as required by
law.")

(IF NEEDED: No action may be taken against you for refusing to supply the
information requested. No personal data will be recorded that will identify you.
Your name, address, and phone number will be separated from your answers, so
the final data will be anonymous. U.S. Code 16-1a-7 authorizes collection of this
information. The OMB approval number is #1024-0224 (NPS #06-005) with an
expiration date of 09/30/2006. You may direct comments on any aspect of this
survey toll-free to Clemson University at 1-800-849-5079.)

(IF NO) "Is there another time that I could call back that would be more
convenient?'
(IF YES) Record callback time
(IF NO) "So that we can improve how we collect information for the National
        Park Service, would you mind telling me why you'd prefer not to be
        interviewed?" (enter response):

_____
(IF SOFT REFUSAL)   → End interview; code as soft refusal
(IF IRATE REFUSAL)   → End interview; code as irate refusal

(IF YES) Thank you for participating!

 "Please think about the _____(name of talk) you attended at _____
(park)."

1. Who attended the talk with you? Were you:
    Topic Area 1- Individual characteristics

___ Alone
___ With family members
___ With friends
___ With family and friends
___ With an organized group
___ Don't know/Don't remember

2. Please tell me what the talk was about.
    Topic Area 6- Individual perceptions of their park experiences
    Suggested prompts: (If they say they attended more than one talk) This is the talk which you filled out a survey about.
    What do you remember hearing the ranger talk about?
    Did the talk have a particular theme, major idea, or focus?

Interviewer: enter response or ___ Don't know/Don't remember

3. What was memorable about the topic of the talk?
    Topic Area 6- Individual perceptions of their park experiences
    Suggested prompts: Did something you heard have a lasting impression?
    What made that memorable to you?
    Why was that memorable?

Interviewer: enter response or ___ Don't know/Don't remember

4. Why did you choose to go to that specific talk?
    Topic Area 6- Individual perceptions of their park experiences
    Suggested prompts: What made you go to that talk?
    Was there something that made that specific talk appealing?

Interviewer: enter response or ___ Don't know/Don't remember

_____

"Thank you. Now I'm going to ask you some yes/no questions. There is no right or wrong answer. If you do not remember, please say 'don't remember.'"

"After the talk, did you . . ."

5.   Discuss this talk with another person?
Topic Area 6- Individual perceptions of their park experiences
___ Yes
___ No
___ Don't know/Don't remember

6.   Did you recommend this talk to another person?
Topic Area 6- Individual perceptions of their park experiences

___ Yes
___ No
___ Don't know/Don't remember

7.   At the park, did you buy anything related to the topic of the talk?
Topic Area 3-Individual Activities and Uses of Park Resources
Suggested prompt: For example, did you buy anything at the gift shop
related to the talk.

___ Yes
___ No
___ Don't know/Don't remember

8.   Have you sought more information about the topic?
Topic Area 6- Individual Perceptions of their park experiences

___ Yes
___ No
___ Don't know/Don't remember

9.   Have you attended this talk more than once?
Topic Area 3-Individual Activities and Uses of Park Resources

___ Yes
___ No
___ Don't know/Don't remember

10.   Have you attended other interpretive talks at a national park?
Topic Area 3-Individual Activities and Uses of Park Resources

___ Yes
___ No
___ Don't know/Don't remember

11.   Did you do anything else as a result of this talk? _____
Topic Area 3-Individual Activities and Uses of Park Resources

___ Yes
___ No (Skip to question 12)
___ Don't know/Don't remember (Skip to question 12)

      11a.   What did you do?
Interviewer: enter response or ___ Don't know/Don't remember

12.   Had you decided to attend the talk before you arrived?
Topic Area 3-Individual Activities and Uses of Park Resources

___ Yes
___ No
___ Don't know/Don't remember

"Thank you. For the third set of questions please answer using the following responses: 'strongly disagree,' 'disagree,' 'neither agree nor disagree,' 'agree,' or 'strongly agree.' Please choose the option that best fits how you feel. If you don't remember, please say 'don't remember.'"

"How much do you agree or disagree with the following statements? The interpretive talk was… *(stem statement repeated every 3-4 items)*
All Topic Area 6- Individual perceptions of their park experiences

13.	enjoyable	___ Don't remember
14.	an important part of your park visit/experience	___ Don't remember
15.	organized	___ Don't remember
16.	held in an appropriate place	___ Don't remember
17.	relevant to the surroundings	___ Don't remember
18.	an appropriate length	___ Don't remember

"How much do you agree or disagree with these statements. The interpretive talk…" *(stem statement repeated every 3-4 items)*
** All Topic Area 6- Individual perceptions of their park experiences

19.	provoked you to think differently	___ Don't remember
20.	promoted critical thinking	___ Don't remember
21.	told a story	___ Don't remember
22.	had a clear theme	___ Don't remember
23.	provoked your curiosity	___ Don't remember
24.	increased your awareness of physical resources of the park	___ Don't remember
25.	related only to adults	___ Don't remember

26.   related only to children   ___ Don't remember
27.   met your expectations   ___ Don't remember

"How much do you agree or disagree with the following? Before attending the talk…"
** **All Topic Area 6- Individual perceptions of their park experiences**

28.   you were familiar with the topic   ___ Don't remember
29.   you knew what to expect   ___ Don't remember
20.   you were interested in the topic   ___ Don't remember

"How much do you agree or disagree with the following? As a result of the interpretive talk, you…"*(stem statement repeated every 3-4 items)*
** **All Topic Area 6- Individual perceptions of their park experiences**

31.   gained an understanding of the park's mission   ___ Don't remember
32.   gained an understanding of the park's history   ___ Don't remember
33.   gained an understanding of the park's importance   ___ Don't remember
34.   learned something new   ___ Don't remember
35.   found the talk memorable   ___ Don't remember
36.   formed a lasting bond with the resource   ___ Don't remember
37.   related the talk to your life   ___ Don't remember
38.   related the talk to issues or situations outside the park

                                                          ___ Don't remember
39.   remembered the talk until now   ___ Don't remember
40.   saw how the park relates to the "big picture"   ___ Don't remember
41.   related the talk to something you already knew   ___ Don't remember
42.   talked to another person about what you learned ___ Don't remember
43.   wanted to attend more interpretive talks   ___ Don't remember
44.   felt connected to the park and what it represents ___ Don't remember
45.   thought about the park since your visit   ___ Don't remember
46.   thought about the talk since your visit   ___ Don't remember

"How much do you agree or disagree with the following? The interpreter…"
(stem statement repeated every 3-4 items)
** **All Topic Area 6- Individual perceptions of their park experiences**

47.   interacted with the audience   ___ Don't remember
48.   used a variety of presentation techniques   ___ Don't remember
49.   attempted to connect with the visitor   ___ Don't remember
50.   adjusted the presentation based on audience response___ Don't remember
51.   responded to questions   ___ Don't remember
52.   made you feel welcome   ___ Don't remember
53.   actively involved the audience   ___ Don't remember

"Thank you. Just four more questions before we finish."

54.   "First, approximately how many times per year do you visit a national park?"
Topic Area 3-Individual Activities and Uses of Park Resources

Interviewer: enter response or ___ Don't know/Don't remember

55.   "What is your year of birth?" Interviewer: enter year

_____
Topic Area 1- Individual characteristics

56.   "Are you Hispanic or Latino?"
Topic Area 1- Individual characteristics

____Yes, Hispanic or Latino
____No, not Hispanic or Latino

57.   Which of these categories best indicates your race? Please select one or more.
Topic Area 1- Individual characteristics

____American Indian or Alaska Native
____Asian
____Black or African American
____Native Hawaiian or other Pacific Islander
____White

58.   "Thank you. That is all the questions I have for you. Is there anything else that you would like the National Park Service to know about your experience with the interpretive talk? **Topic Area 6- Individual perceptions of their park experiences**

Interviewer: enter response or ____ Nothing else.

 "Thank you very much for your participation. Have a great day/evening."

59. Interviewer: enter gender of respondent ____Male ____ Female ____ Don't know

Appendix C: Visitor Letter and Questionnaire for Pre-Test

January 6, 2006

Dear Visitor:

We wish to know your response to today's interpretive talk at the Botanical Gardens. For this research study, conducted by Clemson University, you are being asked to complete a brief set of questions at the end of this interpretive talk. These questions ask about your experience at this interpretive talk. This survey will take about 10 minutes to complete.

No personally identifiable information will be collected as part of this study. Results will be reported anonymously and in aggregate form.

Your participation is voluntary. You can refuse to answer any questions at any time and can withdraw without any penalty. You are one of 30 people invited to participate in this study. Return of the questionnaire is deemed consent to participate in the research study. There are no risks involved.

Results of this study will be used to better serve visitors through better understanding how visitors respond to interpretive programs.

The Principal Investigator from Clemson University for this study is Dr. Brett Wright, who may be contacted at (864) 656-3036, and the doctoral graduate student is Lisa Machnik, who may be contacted at (864) 656-6124 for more information on this study. If you have any questions regarding your rights as a research participant, please contact the Clemson University Office of Research Compliance at 864-656-6460.

Thank you for your participation in this study. We appreciate your help.

Sincerely,

Lisa Machnik

Dear Visitor: Please complete the following questions about the interpretive talk you have just attended. Thank you very much for your assistance!

1.   Who attended this talk with you? Were you:

___ Alone
___ With family members
___ With friends
___ With family and friends
___ With an organized group
___ Don't know/Don't remember

2.   What was this talk about?

_____

3.   What was memorable about the topic of the talk?

_____

4.   Why did you choose to go to this specific talk?

_____

The next section asks about things you might do as a result of this interpretive talk. Please check the one best response.

After you attended the talk, do you think you will..

5. Discuss this talk with another person?

___ Yes
___ No
___ Don't know

6. Recommend this talk to another person?

___ Yes
___ No
___ Don't know

7. Buy anything related to the topic of the talk?

___ Yes
___ No
___ Don't know

8. Seek more information about the topic?

___ Yes
___ No
___ Don't know

9. Attend this talk again?

___ Yes
___ No
___ Don't know

10. Attend other interpretive talks?
___ Yes
___ No
___ Don't know

11. Is there anything else you might do as a result of this talk?

___ Yes (if yes, what would that
be?_____)
___ No
___ Don't know

13.   Had you decided to attend the talk before you arrived at the garden today?

___ Yes
___ No
___ Don't know

For the next section, please circle the number that best reflects your response to each item.

How much do you agree or disagree with the following statements?

The interpretive talk was…

	Don't know	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Enjoyable	DN	1	2	3	4	5
Educational	DN	1	2	3	4	5
An important part of your visit/experience	DN	1	2	3	4	5
Organized	DN	1	2	3	4	5
Personally relevant	DN	1	2	3	4	5
Held in an appropriate place	DN	1	2	3	4	5
Relevant to the surroundings	DN	1	2	3	4	5
An appropriate length	DN	1	2	3	4	5

How much do you agree or disagree with the following statements?

The interpretive talk…

	Don't know	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Provoked you to think differently	DN	1	2	3	4	5
Encouraged public support for this area	DN	1	2	3	4	5
Promoted critical thinking	DN	1	2	3	4	5

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Told a story	DN	1	2	3	4	5
Had a clear theme	DN	1	2	3	4	5
Provoked your curiosity	DN	1	2	3	4	5
Increased your awareness of the physical resources of this area	DN	1	2	3	4	5
Related only to adults	DN	1	2	3	4	5
Related only to children	DN	1	2	3	4	5
Met your expectations	DN	1	2	3	4	5

The interpreter…

	Don't know	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Interacted with the audience	DN	1	2	3	4	5
Used a variety of presentation techniques	DN	1	2	3	4	5
Attempted to connect with the visitor	DN	1	2	3	4	5
Adjusted the presentation based on audience response	DN	1	2	3	4	5
Responded to questions	DN	1	2	3	4	5
Made you feel welcome	DN	1	2	3	4	5
Actively involved the audience	DN	1	2	3	4	5

How much do you agree or disagree with the following statements?

Before attending the talk…

	Don't know	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
You were familiar with the topic	DN	1	2	3	4	5
You knew what to expect	DN	1	2	3	4	5
You were interested in the topic	DN	1	2	3	4	5

From the interpretive talk, you…

	Don't know	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Gained an understanding of the gardens' mission	DN	1	2	3	4	5
Gained an understanding of the gardens' history	DN	1	2	3	4	5
Gained an understanding of the gardens' importance	DN	1	2	3	4	5
Learned something new	DN	1	2	3	4	5
Found the talk memorable	DN	1	2	3	4	5
Formed a lasting bond with the resource	DN	1	2	3	4	5
Related the talk to your life	DN	1	2	3	4	5
Related the talk to issues or situations outside the garden	DN	1	2	3	4	5

Felt you had a choice to attend	DN	1	2	3	4	5
Saw how this area relates to the "big picture"	DN	1	2	3	4	5
Related the talk to something you already know	DN	1	2	3	4	5
Wanted to talk to another person about what you learned	DN	1	2	3	4	5
Wanted to attend more interpretive talks	DN	1	2	3	4	5
Felt connected to this area and what it represents	DN	2	3	4	5	6

Thank you. Just five more questions!

First, approximately how many times did you attend an interpretive talk in 2005?

_____

 What is your year of birth?

_____

Are you Hispanic or Latino?

____Yes, Hispanic or Latino
____No, not Hispanic or Latino

Which of these categories best indicates your race? Please check all that apply.

____American Indian or Alaska Native
____Asian
____Black or African American
____Native Hawaiian or other Pacific Islander
____White

You are?

____Male
____Female

"Thank you very much for your help!. Is there anything else that you would like to share about your experience with this interpretive talk, or do you have any comments about this survey that you would like to share?"

Appendix D: Interpreters' Letter and Elements of Questionnaire for Web Survey

Dear Interpreter:

You have been selected to participate in the Results of Interpretation research study conducted by Clemson University for the National Park Service. Results of this study will be used to improve training for interpreters and to better serve park visitors through understanding what interpreters expect as the results of interpretation, how interpreters define professional standards, and how interpreters perceive and use the training they have received.

Your answers will remain confidential and your identity will remain anonymous. Your participation is voluntary and you may quit the survey at anytime. However, your participation is vital to the success of this research study. Your participation will also contribute to scholarly research about interpretation. Thank you very much for participating!

Sincerely,

Brett Wright, PhD
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Clemson, SC 29634
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"What are the potential results of interpretive talks?"

The following questions ask about the potential results and the potential outcomes of interpretive talks. Please choose the answer that best describes your responses to the following statements.

Response Options: Don't Know, Strongly Disagree, Disagre, Neither Agree nor Disagree, Agree, Strongly Agree

I believe an interpretive talk should be...

Enjoyable
Educational
Relevant to the surroundings
Organized
Relevant to the visitors' interests
Appropriate for the physical environment
An appropriate length
An important part of the visitor's park visit/experience

I believe an interpretive talk is...

Something the visitor plans to attend before they arrive at the park

I believe an interpretive talk should ...

Provoke a visitor to think differently
Actively involve the audience
Encourage public support for the park
Promote critical thinking
Tell a story
Have a clear theme
Provoke curiosity
Focus on the physical resources of the park
Relate only to adults
Relate only to children
Meet the visitor's expectations

I believe an interpreter should...
Interact with the audience
Let the audience know what to expect
Use a variety of different techniques when presenting an interpretive talk
Attempt to connect with the visitor
Respond to questions
Make the visitor feel welcome

I believe visitors are...

Familiar with the topic before attending the talk
Interested in the topic

As a result of the talk, I believe visitors should...

Gain an understanding of the park's mission
Gain an understanding of the park's history
Learn something new
Find the interpretive talk memorable
Be able to relate what was presented in the interpretive talk to their lives
Clearly remember the talk six months later
Talk to another person about what they learned
Be able to relate what was presented in an interpretive talk to issues or situations outside the park
Gain an understanding of the park's importance
Relate the talk to something they already know
Want to attend more interpretive talks
Feel connected to the park and what it represents
Feel that they had a choice to attend
See how the park relates to the "big picture"

Open-ended response questions:

What makes an interpretive talk memorable?

What do you think helps visitors get the most out of interpretive talks?

Are interpretive talks an important part of the visitors experience?
(Yes/No/Don't Know)

Why?

Preparing and Presenting an Interpretive Talk

Have you participated in any training (NPS and other) that prepared you for Preparing and Presenting an Interpretive Talk?

     Yes/No

What type of training did you have? (please choose all that apply).

    ☐ In-park, by NPS staff
    ☐ In-park, by non-NPS staff (contractor)
    ☐ Coaching/mentoring
    ☐ Regional class
    ☐ National class
    ☐ TELnet broadcast
    ☐ Self-study (i.e. books, internet, video)
    ☐ NAI training
    ☐ University/college course
    ☐ Submitted to peer certification program
    ☐ Other

How was the training helpful/not helpful? (open-ended response)

Demographic Questions

Please tell us a little about yourself

What is your current job series?

    ☐ GS-0025 Park Ranger (Interpretive)
    ☐ GS-0025 Park Ranger (Other Specialty)
    ☐ Other Series Not Listed

What is your current grade?

    ☐ GS-05   ☐ GS-12
    ☐ GS-07   ☐ GS-13
    ☐ GS-09   ☐ GS-14
    ☐ GS-11   ☐ GS-15

Number of years you have worked for the federal government?

☐ 1	☐ 12
☐ 2	☐ 13
☐ 3	☐ 14
☐ 4	☐ 15
☐ 5	☐ 16
☐ 6	☐ 17
☐ 7	☐ 18
☐ 8	☐ 19
☐ 9	☐ 20
☐ 10	☐ 21 or more
☐ 11	

Number of years you have worked for the NPS?

☐ 1	☐ 12
☐ 2	☐ 13
☐ 3	☐ 14
☐ 4	☐ 15
☐ 5	☐ 16
☐ 6	☐ 17
☐ 7	☐ 18
☐ 8	☐ 19
☐ 9	☐ 20
☐ 10	☐ 21 or more
☐ 11	

Number of years you have been in your current position?

☐ 1	☐ 12
☐ 2	☐ 13
☐ 3	☐ 14
☐ 4	☐ 15
☐ 5	☐ 16
☐ 6	☐ 17
☐ 7	☐ 18
☐ 8	☐ 19
☐ 9	☐ 20
☐ 10	☐ 21 or more
☐ 11	

From the list below, indicate the NPS Region or Program Center for which you currently work:

☐ Alaska
☐ Intermountain
☐ Northeast
☐ National Capital
☐ Midwest
☐ Pacific West
☐ Southeast
☐ Washington Office
☐ Centers
☐ Other

From the list below, please indicate the classification of the Park or Office for which you currently work:

☐ National Battlefield
☐ National Capital
☐ National Historic Site
☐ National Historical Park
☐ National Lakeshore
☐ National Memorial
☐ National Monument
☐ National Park
☐ National Parkway
☐ National Preserve
☐ National Recreation Area
☐ National River
☐ National Seashore
☐ NPS Regional Office
☐ Other

What is your gender?

☐ Female
☐ Male

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