

Measuring Visitor Experiences: Creating and Testing the Tourism Autobiographical Memory Scale

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Abstract

The purpose of this study was to test the validity of the new Tourism Autobiographical Memory Scale (TAMS) that measures visitor experience through personal memory. The TAMS uses the autobiographical memory framework to represent the degree to which a travel experience was impactful to a traveler's life. Visitors were asked to recall a memory from their visit to a national park and rate the memory of the experience based on its impact and frequency of rehearsal on a 7-point scale. Using exploratory factor analysis and reliability testing, two distinct factors emerged. Results identified a reliable measure of a memory's impact and frequency of rehearsal of tourists. The TAMS provides researchers a new scale to gather information about the impact of a visitor experience from the direct source—personal memories. Destination managers who understand the impact they can have on a traveler will be able to manage and market to those types of experiences.

Keywords

visitor experience, autobiographical memory, nature-based tourism, Yellowstone National Park

Introduction

Tourism is about creating unique experiences. It is not just a service anymore. The impact to a traveler's life is now the ideal outcome for destinations and attractions. Research on tourism experiences has been ongoing for years by exploring and identifying the influence experiences have on individuals as well as the associated outcomes (Cohen 1979; Jennings and Nickerson 2006; Tung and Ritchie 2011). Multiple modifiers have been used for the experience to indicate its worthiness including “quality,” “value,” and “satisfaction,” among others (Jennings and Nickerson 2006; J.-H. Kim, Ritchie, and McCormick 2012). Outdoor recreation and tourism scholars have measured evaluations of the visitor experience through varying frameworks such as recreation experience preferences (REP) and motivations (Borrie and Birzell 2001; Crompton and McKay 1997; S. S. Kim and Prideaux 2005; Manfredo, Driver, and Tarrant 1996). The above measures and conceptualizations of the visitor experience have propelled our knowledge about tourism experiences to a large degree but none are as direct and personal as examining the memories we form before, during, and after a travel experience. Thus, the objective of this study was to identify how advances in cognitive psychology, specifically within personal memory, can contribute to a new measure for tourism experiences.

Recently, interest has surfaced in using psychological constructs to further advance multiple tourism foci (Pearce and

Packer 2013). Within these recommendations is personal and autobiographical memory. In broad terms, autobiographical memory is a unique form of personal memory that is defined as the emotional recollections of past events or experiences (Conway and Pleydell-Pearce 2000). Personal memory use in cognitive psychology has informed researchers on the manner by which people process events throughout their lives. From childhood memories to traumatic events, past events impact the way we see our environment and the meanings associated with a place (Fitzgerald and Broadbridge 2013; Fivush 2011). Thus, examining tourism experiences through the personal memories of travelers is a logical next step.

Research has just started to integrate concepts of personal memory into tourism. For instance, Braasch (2008) identified key pieces of research that highlight the potential relationship between memory and tourism. Tung and Ritchie

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(2011) integrated autobiographical memory using a qualitative approach to identify why certain experiences were memorable for visitors. J.-H. Kim, Ritchie, and McCormick (2012) further advanced this notion by creating the “Memorable Tourism Experience Scale” based on Tung and Ritchie’s (2011) results. Most recently, Park and Santos (2017) identified the “memorable experiences” of Korean backpackers through a qualitative investigation of pretravel, during-travel, and posttravel endeavors. The above articles laid the groundwork for introducing “memorable experiences” into the tourism research lexicon, but there is still a gap that assimilates psychological frameworks to measure visitor memories. To fully grasp the structures, influences, and usefulness of memory in a tourism context, it is necessary to adopt a cognitive psychological lens to begin the conversation.

Adapted psychological models have been present within tourism research for years. Motivations, theory of reasoned action, and the elaboration likelihood model are a few of the many frameworks previously adapted that have helped explain behaviors, choices, and intentions of tourists (Ajzen 1985; Petty and Cacioppo 1986). Pearce and Packer (2013) outlined several concepts in tourism research originally derived from psychology, including destination image, motivations, and attitudes. It has become evident through time that tourism has benefitted from advances in other disciplines and continues to gain traction from influence outside the tourism field. Experiences and memory are one example.

A variety of memory typologies exist, yet one specific form, autobiographical memory, contains functions that predict changes in behaviors, provide continuity of the self, and strengthen social bonds (Conway 2005; Kuwabara and Pillemer 2010). This distinct form of memory has been shown to have a significant effect on our decision-making process (Kuwabara and Pillemer 2010) and building our life story over time (Bluck 2003). Recent studies in autobiographical memory have shifted from qualitative methods to understand what individuals recall to quantitative measures that examine the influence our memories have on concepts such as decision making (Fitzgerald and Broadbridge 2013). We argue that through personal memory, and more specifically autobiographical memory, exploring experiences at tourism destinations can be conducted at a much deeper level than ever before. Therefore, the purpose of this study was to test a quantitative autobiographical memory scale to identify the degree of impact and rehearsal a visitor experiences during a travel event.

Literature Review

Visitor Experiences

The tourism experience has its roots throughout academic literature dating back to seminal studies, such as Cohen (1979), Urry (1990), and Csikszentmihalyi (1996). Tourism

experience research has increased in popularity as a result of advances in methodological approaches, shifts in global economies (Pine and Gilmore 1999), and advancement in theory. Authors such as Jennings and Nickerson (2006) and Ritchie and Hudson (2009) have compiled various meta-analyses on the variety of tourism experience research throughout the years, which indicate a continual evolution of methods, definitions, and conceptualizations. Cohen’s (1979) phenomenology of the tourism experience identified “modes” of experience that began in earnest the discussion of varying experiential typologies of travel. Each mode relates to a different mindset and expectation individuals possess while traveling. Since Cohen’s (1979) study, scholars began exploring and identifying the attributes and evaluations of the visitor experience. In the past decade, Ritchie and Hudson (2009) identified six primary streams of experience research to date: (1) essence of the experience, (2) choice and behavior, (3) methodologies for experience research, (4) specific kinds of tourism experiences, (5) managerial concerns, and (6) evolutionary focus of experience research. Within each stream is a set of past research that has advanced the measurement, conceptualization, and framework of the tourism experience. However, there is no singular consensus as to the most important aspects of experience or its true definition.

Empirical scales and measurement tools have emerged, including Otto and Ritchie’s (1996) examination of the dimensionality of the experience, Ryan and Glendon’s (1998) application of the Leisure Motivation Scale and J.-H. Kim and Ritchie’s (2014) “Memorable Tourism Experience Scale.” Such tools allow for deeper investigation into the place characteristics that enhance the experience, our emotional states, and methods to improve the product. Most survey instruments are multidimensional, yet are widely different in content. This then places difficulty in accurately defining all aspects of the tourism experience.

Our understanding of how people “experience” life dates back well beyond tourism. The human condition of simply experiencing events can be understood through a variety of contexts, but most directly through our own perspectives. As humans, the way we process our experiences is funneled through our minds. As LeDoux (2003, p. 3) states, “we all walk upright, speak through our mouths, laugh, cry, and *learn from experiences*.” In terms of relevance to this study, the experience is then stored within our memories for use at a later time or discarded among a stream of new events (Staresina and Davachi 2009). With the advancement of memory research in cognitive psychology, there is an added importance to explore our memories where these experiences are stored. Tung and Ritchie (2011) began this exploration by qualitatively identifying memorable tourism experiences. Their study advanced tourism’s understanding of the visitor experience, but there is still much room to grow using the foundational structures of experience recall found within psychology.

The Origin/Foundation of Autobiographical Memory Research

Human memory is described as the “process of maintaining information over time” (Matlin 2005, p. 3). Throughout recent history, memory is discussed in popular media and is well funded in the medical field to understand Alzheimer’s disease, autism, and post-traumatic stress disorder. Memory is siloed through two base classifications: personal and social memory (Hallbwachs 1992; Shah 2012). Social memory refers to the collective memories (e.g., storytelling and traditions) shared between cultures; however, personal memory is essentially what is described in casual conversations. For example, when someone states a phrase such as “I remember when . . .” our personal memory is responsible for retrieval of that event. Personal memory is central to the way life is conceptualized by individuals.

Personal memory stretches temporal limits from information stored for merely seconds (sensory memory) to information storage that is said to have no known limit (long-term/very long-term) (Craik and Lockhart 1972). Conceptual frameworks revolving around personal memory are split between two approaches: (1) structured and hierarchical (Atkinson and Shiffrin 1968) and (2) unstructured and fluid (Craik and Lockhart 1972). Atkinson and Shiffrin’s (1968) structured model continues to be the most accepted conceptualization of personal memory. Their model hypothesizes that personal memory follows an organizational structure where the sensory register, short-term memory, and long-term memory are distinct forms of information recall and storage (Norman 1969). The sensory register is defined as very short-term information obtained through subconscious stimuli that may transfer into short-term memory through attention by the individual (Atkinson and Shiffrin 1968). Short-term memory is immediate information that can be used on demand to make decisions or evaluate situations. However, to evaluate specific events in a person’s life, long-term memory is where such information is stored. Within long-term memory are multiple subdimensions that even further differentiate the form of information recall (Figure 1).

Implicit and Explicit Memory

The subdimensions of long-term memory are divided into two realms: implicit and explicit memory (Tulving 1972). These two primary typologies represent the main subdimensions of long-term information recall. Within the memory literature, alternative names have also been given to each subdimension: implicit (nondeclarative) and explicit (declarative). Implicit memory is unconsciously stored information such as procedures and habits (Tulving 1972). Although implicit information is beneficial to conceptualizing memory, it is generally difficult to research because of its difficulty in accessing when this memory was developed by the individual (Tulving 1972, 2002). Although there may be a

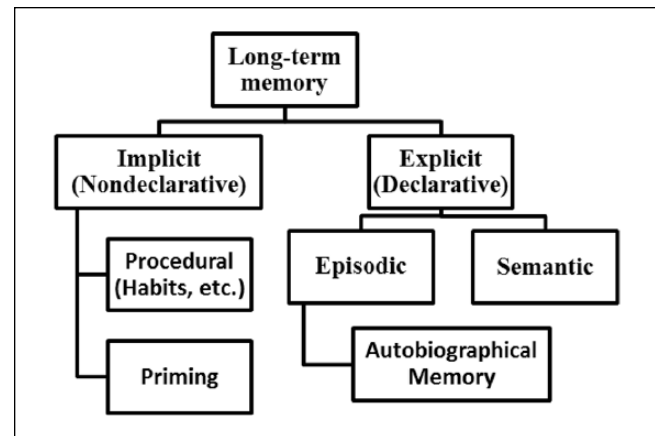


Figure 1. Structure of long-term memory (Fivush 2011; Tulving 1972).

place for implicit memory to be explored in tourism literature (such as marketing or experimental designs), this study does not seek to investigate such forms of recall.

The second subdimension of long-term memory, explicit memory, derives from humans’ conscious mind and can be tracked and measured in an easier manner. As Squire (2004, p. 173) states, “[Explicit memory] is the kind of memory that is meant when the term ‘memory’ is used in everyday language.” Facts and information from our personal lives are classified under explicit memory. Additional subdimensions exist within explicit memory based on the type of information and method of recall of these conscious events. The two subdimensions of explicit memory are semantic and episodic memory. Semantic memory is information such as facts (names, cities, etc.) for which the person generally cannot recall the event or details surrounding when they retained the information (Tulving 1972). As Klein et al. (2004, p. 262) state, “[Semantic memory] is remembered, but not re-lived.” This is not to say that semantic memory occurs in our subconscious mind, but rather we cannot place the settings and specific events when the information was processed. Episodic memory, on the other hand, is information where the event is recalled, including specific details, settings, and emotions (Tulving 2002). To put it in the current context, travelers may remember a backcountry hiking trip in a national park, including the emotions they felt, the people they were with, and the settings of the trail at the time. Tulving (1972, p. 385) further states, “Episodic memory receives and stores information about temporal-spatial relations among these events.” The primary difference between semantic and episodic memory is *autonoetic consciousness* or an awareness of the “self” having experienced an event (Fivush 2011). Autonoetic consciousness represents the primary difference between information that is stored as semantic or episodic memory. However, there is an even more specific form of episodic memory that provides the basis for our current study, which is autobiographical memory.

Autobiographical memories not only relate to specific events remembered by an individual but they are evaluated among the whole of a person's life (Conway 2005). These memories are placed in the context of an individual's life story and can be what is defined as "self-defining" (Fivush 2011).

Autobiographical Memory

Autobiographical memory is defined as memory of the "self, interacting with others in the service of both short-term and long-term goals that define our being and our purpose in the world" (Fivush 2011, p. 560). The main difference between episodic and autobiographical memory is that episodic recollections do not stress event meanings, where autobiographical memory requires the recollection to be placed in a much larger frame of reference (i.e., one's life history). Episodic memories could be simply recollections of going to a restaurant. Autobiographical memories include the meanings or importance of events such as meeting your spouse or taking your first vacation as a new family. These memories are then used to help craft the "biography" of the individual. Autobiographical memory includes a memory of the self being part of the event, links past events together into a "personal history," and "goes beyond the episodic memory function of guiding future behavior to serve social and emotional functions" (Fivush 2011, pp. 560–61).

Conway and Pleydell-Pearce (2000) highlight three types of autobiographical knowledge based on varying degrees of description: lifetime periods, general events, and event-specific knowledge (ESK). *Lifetime periods* are event timelines such as, "when I was at college . . ." or "when I lived with . . ." These periods are temporally situated and can be thematically described by the individual. *General events* are "more specific and, at the same time, more heterogeneous than lifetime periods" (Conway and Pleydell-Pearce 2000, p. 262). General events could be a single vacation in a tourism context. Upon recall of a singular memory, a second or third memory can be further cued to become an *event cluster*. Finally, *event-specific knowledge* is the most explicit type of autobiographical knowledge, where the person remembers highly detailed information about an event or time. More importantly, these memories can be profound times of a person's life that become a cornerstone in their subjective history (Fivush 2011). Overall, these categorizations of event timelines of autobiographical memories lead to a clearer definition. Autobiographical memories can be vague or intricate depending on the individual. Furthermore, these memories specifically relate to a moment that was directly experienced by the individual and typically has some form of associated meaning.

When a memory is highly impactful and even "life-changing," such events can be considered "self-defining" (Fivush et al. 2011). Self-defining moments are "typically unique, onetime events, which become personally significant and integral to an individual's understanding of who they are" (Fivush et al. 2011, p. 333). Adolescence and early

adulthood are common life periods where self-defining moments occur in an individual's life. Memory valence is not unidirectional as both positive and negative memories can have similar impacts. Self-defining moments closely resemble the "transformative experiences" that National Park System Advisory Board Science Committee (2012) stressed to provide for visitors. Difficulties lie in understanding whether these experiences can be facilitated and how to identify whether an experience is transformative. With that said, autobiographical memory contains the context for how individuals process events or experiences and the overall effect they can have on their life. Thus, the "self-defining" qualities outlined in Fivush et al. (2011) are, to date, the most applicable approach to delve into the transformative aspects of visitor experiences.

In more empirical terms, Fitzgerald and Broadbridge (2013) explored the structure of autobiographical memory using four latent constructs to measure recollections of specific experiences, including vivid memories, childhood memories, traumatic memories, and cue-word memories. The primary constructs used are autobiographical memory impact and rehearsal. Memory impact is defined as the "properties of significance, emotional intensity, and consequences," whereas rehearsal is the "frequency with which an event is recalled, either personally or interpersonally, whether voluntarily or involuntarily" (Fitzgerald and Broadbridge 2013, pp. 232–33). Essentially, autobiographical memories hold a degree of significance that differs between people. Over the four different types of memories (childhood, traumatic, cue-word, and memorable), the strength and intensity of each recollection vary.

Connecting Memory Research with Tourism

Marketing literature has identified that memory mediates behavioral intentions, and is a necessary component of the customer experience (Kim et al. 2010; Lehto, O'Leary, and Morrison 2004). Hoch and Deighton (1989) claim that remembered purchase experiences are important because past experiences draw a high degree of motivation and involvement, individuals feel their remembered experiences are accurate and believable, and future behavior is influenced through remembered experiences. The "customer" experience has long been translated into the "tourist" experience. With that said, there may be deeper-level meanings that are not being captured if we only examine the tourism experience through a marketing lens. Visitor experiences can form emotional connections, or an attachment to the place through tourism (Prayag and Ryan 2012; Williams and Vaske 2003). Indeed, Prebensen, Kim, and Uysal (2016) found that cocreation or the mental and physical involvement in a tourism experience influences the experience value-satisfaction relationship for the customer.

Tourism scholars have been calling for innovation and advancement of both methods and approaches for years

(Dann, Nash, and Pearce 1988; Pearce and Black 1996; Pearce and Packer 2013). To date, a few tourism researchers have analyzed memory within their research frameworks. Braasch (2008), for example, identified memory functions, “remembering,” and “autobiographical memory as the memory of ‘self’ in a certain social and cultural environment.” This article provided an interesting history of memory concluding with the idea that souvenirs and photographs are the essence to invoking a memory but with no discussion regarding the strength or impact of the memories.

Tung and Ritchie (2011) provided a thorough literature review on tourism experiences, satisfactory experiences, memorable experiences, mindlessness–mindfulness, and memory formation and retention to conduct in-depth interviews aimed at capturing the definition and dimensions of memorable experiences (MEs). Through their grounded theory approach, they could identify four dimensions that enable memorable experiences: affect, expectations, sequentially, and recollection. They concluded with recommendations for actions that practitioners could take to increase the likelihood of tourists developing MEs, such as delivering on promises, surprises or unexpected pleasures, and promoting “memory points” to encourage “must-see,” and desire to purchase memorabilia.

Another body of research that uses memory as a form of methodology is “memory-work” (Small 1999), a social constructivist perspective where “individuals construct themselves into existing social relations” (Haug 1987, p. 33). However, it is not generalizable and cannot be tested among a large population.

Finally, J.-H. Kim, Ritchie, and McCormick (2012) developed a scale to measure memorable tourism experiences (MTE). Based on research, affective feelings such as being sociable, pleasant, happy, irritated, guilty, sad, and worried, are included in an individual’s MTE. Their final scale included seven experiential constructs, including hedonism, novelty, local culture, refreshment, meaningfulness, involvement, and knowledge. The respondent was asked to recall an MTE and on a 7-point Likert-type scale of 1 = *I have not experienced at all* to 7 = *I have experienced very much*, provide their evaluation. According to the authors, their study offered a valid and reliable instrument to measure MTE.

The MTE, used by Sthapit and Coudounaris (2017), found that “when the participants who experience thrills, enjoyment, excitement (hedonism), something meaningful or important, and learn about themselves (meaningfulness) while at the destination, are more likely to have a memorable experience. Such experiences further contribute to their sense of well-being” (p. 16).

Recent memory research within tourism has gained momentum to help further our understanding of satisfaction and memory (Kim and Fesenmaier, 2017; Prebensen, Kim, and Uysal 2016), and loyalty or return intentions (Anton, Camarero, and Laguna-Garcia 2017; Chen and Rahman 2017). In contrast, some studies look at the impact of

emotion on visitor satisfaction and loyalty (Hosany et al. 2017; Prayag et al. 2017), others have taken a slightly different and personal approach and analyzed how experience and emotion create well-being to the individual (Knobloch, Robertson, Aitken 2017).

All these aforementioned studies show the importance of a memorable experience but vary in their methodological approaches (qualitative and quantitative), conceptualizations, and study sites. Nevertheless, what is being studied differs dramatically from our current study. Even though it is called memorable tourism experiences, previous research looks more toward the emotion or feeling surrounding the experience. J.-H. Kim, Ritchie, and McCormick’s (2012) scale captures new details of the visitor experience, but resembles motivations more than memories. In our current study and measurement development, we are looking at the strength of the memory and its impact on a traveler’s life. Autobiographical memory and the memories of travelers could be the key to truly understanding visitor experiences.

This study adds to the theoretical foundation of memory research by adapting a framework utilizing cognitive psychology theory on autobiographical memory. The added benefits of measuring the visitor experience such as the self-defining qualities and the sheer notion that personal memory can drive decision making, social bonding, and building of the self through impact and rehearsal is a new and exciting way to look at visitor experiences. With this fresh lens using autobiographical memory to study the visitor experience, the effect an experience can have on an individual’s life is examined.

Purpose

Autobiographical memory’s surge in cognitive psychology literature and the lack of inclusion in tourism research served as the basis for this study. The purpose of this study was to introduce a base-level scale for measuring the strength of a memory from a tourism experience. This scale utilized two hypothesized dimensions based on Fitzgerald and Broadbridge’s (2013) original study on the strength of autobiographical memories, namely the impact of a memory and frequency of rehearsal. Such constructs would allow for researchers to test the predictability these qualities of a tourism memory can have toward decision-making processes.

Developing the Tourism Autobiographical Memory Scale

On completion of the literature review on personal memory, tourism experiences, and the integration of memory in the tourism field, we deemed it necessary to develop and test a measure for exploring experiences at destinations through the memories of visitors. Multiple pertinent past research was identified to create the Tourism

Table 1. Autobiographical Memory Survey Questions.

Variable Name	Question	Scale
Mem1	Since it happened, I have talked about this event.	1 = <i>very infrequently</i> to 7 = <i>very frequently</i>
Mem2	Since it happened, I have thought about this event.	1 = <i>very infrequently</i> to 7 = <i>very frequently</i>
Mem3	Since it happened, I have written about this event to others (e.g., email, Facebook, blog, letter, text).	1 = <i>very infrequently</i> to 7 = <i>very frequently</i>
Mem4	As I remember the event, I can feel now the emotions I felt then.	1 = <i>strongly disagree</i> to 7 = <i>strongly agree</i>
Mem5	As I remember the event, it comes to me in words or in pictures as a coherent story or episode and not as an isolated fact, observation, or scene.	1 = <i>very infrequently</i> to 7 = <i>very frequently</i>
Mem6	This memory is significant in my life because it imparts an important message for me or represents an anchor, critical juncture, or turning point.	1 = <i>strongly disagree</i> to 7 = <i>strongly agree</i>
Mem7	This memory has consequences for my life because it influenced my behavior, thoughts, or feelings in noticeable ways.	1 = <i>strongly disagree</i> to 7 = <i>strongly agree</i>
Mem8	As I recall them now, I would rate the emotions I experienced during the event as . . .	0 = <i>neutral</i> to 3 = <i>extremely positive or negative</i>

Autobiographical Memory Scale (TAMS). Bluck (2003) and Fitzgerald and Broadbridge (2013) were highly influential in developing the primary constructs to measure autobiographical memory in a tourism context. Most influential was Fitzgerald and Broadbridge's (2013) classifications of memory impact and memory rehearsal that provided the best approach toward exploring visitor experiences and the variety of dimensions utilized within the study. Therefore, the TAMS contains eight individual items that share similarities to two constructs found in Fitzgerald and Broadbridge's (2013) Autobiographical Memory Questionnaire. The variety of items contained were not hypothesized to be within two primary dimensions because of the exploratory nature of the study, adaptations to item structure, and additions to the original conceptualization. Therefore, Fitzgerald and Broadbridge's (2013) study served more as a framework for developing the TAMS rather than a direct translation.

Testing the TAMS

From the previously reviewed literature, eight autobiographical memory questions were both developed and adapted to measure the tourism experiences. The variables were coded on a 7-point scale with varying value labels. One variable (Mem8) was coded on a 4-point intensity scale, where 0 = *neutral*, 1 = *mildly positive or negative*, 2 = *positive or negative*, and 3 = *extremely positive or negative* to capture the strength of the emotion but not the direction. Some items were adapted from Fitzgerald and Broadbridge's (2013) study, whereas new variables were added based on review of additional scales. Table 1 displays the eight items that were used to measure visitors' autobiographical memories. The study site for testing the TAMS was Yellowstone National Park, one of the most iconic nature-based tourism destinations in the United States.

Pilot Survey of the TAMS

The original version of the TAMS was developed and tested on past Yellowstone National Park visitors. Nearly 10,000 e-mails were sent to past visitors affiliated with one of four organizations: (1) Yellowstone Association, (2) Yellowstone Foundation, (3) Xanterra Parks and Resorts reservation listings, and (4) the Institute for Tourism and Recreation Research's nonresident travel panel. This sample was chosen based on the likelihood of capturing visitors who had previously visited Yellowstone as a measure to validate whether the eight items were reliable for use in an on-site data collection procedure. Results from the pilot study identified areas to improve reliability and dimensionality of scales that were used to test on-site. Overall, the pilot test identified potential issues of transferring the question context found in previous psychology literature, which is generally conducted in an experimental laboratory structure of an on-site field data collection sample. The original TAMS included 14 variables, but was narrowed to 8 after an examination of the results. Cross-loadings between hypothesized constructs were apparent, yet a structure emerged that contained two factors with fewer items included. Therefore, the on-site data collection took an exploratory approach to validate a new scale to capture the essence of memory within a tourism context.

Methods

Study Site and Sample

The target population for this study was Yellowstone National Park visitors. Yellowstone National Park, mostly situated in northwest Wyoming, was designated in 1872 as the world's first national park. In 2016, a peak record of more than four million people visited the park (National Park Service 2016). The park is known for its unique geological features, abundant wildlife, scenic vistas, and historical relevance. Visitors

partake in a variety of outdoor recreational activities, including wildlife watching, hiking, fishing, scenic driving, and viewing geysers and geothermal areas. Because of the historical relevance of being the first national park and the unique geological features, the park is widely recognized across the globe, and thus has a diverse demographic distribution.

Park visitors were intercepted during the summer season with a stratified sampling schedule at the park exits using an on-site and mail-back survey methodological approach. Thirty sampling days took place from May through September. To capture a representative sample of summer season visitors, the sampling schedule contained equal representation of weekend/weekday distribution and of visitor counts at each exit gate. For example, the West entrance receives nearly 40% of traffic during the summer season, thus 40% of sampling days were allocated to this entrance. As visitors exited the park during daytime hours, researchers flagged every vehicle to the side of the road to answer approximately 10 questions. This method ensured capture of a random sample of all possible visitors leaving the park during daylight hours. The on-site survey questions contained demographics, length of stay, overnight locations, and prior visits. On completion of the on-site questions, a mail-back survey was handed out to willing respondents. A postage-paid envelope was included with the mail-back survey to increase the likelihood of response. The mail-back questionnaire asked the visitor to write down the first memory that came to mind about Yellowstone and then to respond to the memory questions. The memory could have been from the current trip (especially for first-time visitors) or any prior trip (repeat visitors). The idea was for them to respond to the first thing their mind recalled.

During the sample period, 2,373 visitors were intercepted and 93% agreed to take a mail-back survey on completion of the on-site questionnaire. A total of 802 completed questionnaires (with 704 useable because of missing data) were returned to the researchers for a mail-back response rate of 36%. Response rates above 30% have been considered acceptable for surveys with similar methodologies (Látková and Vogt 2012). No follow-up techniques were used as the researchers did not collect personal contact information to maintain anonymity.

Data Analysis

Exploratory factor analysis. Data from TAMS were analyzed using Stata, version 13.1. Descriptive statistics were conducted first to identify inconsistencies in the data as well as potential outliers. The primary method of analysis was exploratory factor analysis (EFA) of the eight memory variables in addition to reliability and validity testing. The initial stage consisted of using the EFA to identify the structure of the eight memory variables contained within the scale. Because of the exploratory nature of examining visitor memories using a psychological framework formerly only used in

Table 2. Descriptive Statistics of Yellowstone National Park Visitors.

Variable	Result
Age, years, mean	55
Education, %	
Some high school	0.6
High school diploma or equivalent	9.1
Some college	16.9
Associate's degree	9.2
Bachelor's degree	31.9
Master's degree	22.1
PhD, MD, JD, or equivalent	10.2
Income, %	
<\$25k	4.8
\$25k to <\$50k	13.3
\$50k to <\$75k	20.3
\$75k to <\$100k	19.6
\$100k to <\$150k	21.4
\$150k to <\$200k	10.5
>\$200k	10.1
Citizenship, %	
US citizen	87.9
Other	12.1
Prior visits to Yellowstone National Park, %	
0	41.1
1–5	32.1
6–10	5.7
11–20	5.7
>20 visits	14.1

a lab setting, EFA was deemed to be the most appropriate measure for testing. Eigenvalues of 1.0 or higher were considered for construct development, with factor loadings of 0.4 or greater to be included within the factor.

On completion of the EFA, a Cronbach's alpha reliability test was conducted to determine the stability of the scale. Using previously perceived thresholds, an alpha reliability of 0.7 was deemed to be acceptable. Content and face validity was previously assessed by the researchers using the theoretical conceptualizations from cognitive psychology literature, previous memory studies, and tourism articles.

Results

Descriptive Statistics

Descriptive statistics are presented and displayed in Table 2 for Yellowstone National Park's summer visitors. Visitors had a mean age of 55 years and were well educated, with 32% of visitors possessing a bachelor's degree and 32.3% holding a graduate degree. Average household income had a wide range, with \$100k to less than \$150k representing the largest share of respondents (21.4%), indicating a rather wealthy demographic of travelers. Nearly 88% of all visitors

Table 3. Mean Values of the Tourism Autobiographical Memory Scale.

Variable Items	Mean	SD
Talk about the memory (Mem1)	5.36	0.0528
Think about the memory (Mem2)	5.52	0.0483
Write about the memory (Mem3)	3.63	0.0782
Comes to me in words/pictures (Mem5)	5.30	0.0625
Emotional imagery (Mem4)	5.52	0.0438
Significance (Mem6)	4.54	0.0654
Consequences (Mem7)	4.07	0.0341
Emotional intensity (Mem8)	2.14 ^a	0.0522

Note: SD = standard deviation.

a. Based on a 4-point scale.

Table 4. Exploratory Factor Analysis Component Structure.

Component	Number of Items	Initial Eigenvalue	% of Variance	Rotated % of Variance ^a
Rehearsal	5	4.181	52.3	33.8
Impact	3	1.087	13.6	32.0

^aVarimax rotation with Kaiser normalization conducted.

were US citizens, with 12% residing outside the United States. Additionally, Yellowstone National Park appears to have a large base of first-time visitors, with 41.1% experiencing their first trip to the park during this survey period. Some visitors are very frequent travelers to Yellowstone National Park, with 14.1% stating prior visits of at least 20 or more times.

Table 3 displays the mean and standard deviation for each of the eight autobiographical memory items included in the questionnaire. The highest individual item mean is represented by “Since it happened, I have thought about this event . . .” (5.52) and “As I remember the event I can feel emotions now that I felt then” (5.52). Overall, mean values for all memory items were above the midpoint, with the exception of Mem3 (writing about the event; 3.63). This represents an overall moderately strong perception of the memory respondents’ hold of their Yellowstone experience.

Exploratory Factor Analysis

To determine the structure of the constructs, an exploratory factor analysis was conducted with a Varimax rotation and Kaiser normalization (Table 4). An eigenvalue threshold of 1.0 was used to define the acceptability of construct loadings with a threshold of 0.5 to decide whether the variable loaded well onto the respective construct. In Table 2, two constructs exceeded an eigenvalue of 1.0 with five and three variables respectively. Initial eigenvalue for component 1 displayed a 4.181 eigenvalue where component 2 showed an eigenvalue of 1.087. With the Varimax rotation,

the two constructs comprised nearly 66% of the variation within the data. All other components were under the threshold of 1.0 eigenvalue.

Table 5 displays the rotated component matrix of the eight variables contained within the TAMS. Factor one contains five variables. Mem1 and Mem2 (“Since it happened, I have talked/thought about this event . . .”) have the highest factor loading scores with 0.846 and 0.853, respectively. Mem3 (“Since it happened, I have written about this event to others (e.g., email, Facebook, blog, letter, text) . . .”) contains the third highest loading with 0.853. Mem4 and Mem8 are the lowest factor loadings (0.595 and 0.472), but still above the 0.4 accepted threshold for inclusion into the component.

Component 2, named “impact,” is composed of three individual items. Mem6 and Mem7, which are related to the consequences due to the event and representation of a critical juncture in life, are the highest loading items in the factor, with a loading of 0.888 and 0.882, respectively. Mem5 (“As I remember the event, it comes to me in words or in pictures as a coherent story or episode and not as an isolated fact, observation, or scene”) is the lowest loading with 0.551. Overall, the variables in each factor were above the acceptable threshold and theoretically fit within the conceptualization of previous psychological models.

Table 6 displays the Cronbach’s alpha reliability values for both components. When examining the reliability results, a threshold of 0.7 was used as a common threshold for an acceptable fit. Autobiographical memory rehearsal, which includes five variable items, displayed an alpha reliability of 0.782, which is deemed suitable for this scale. Furthermore, the autobiographical memory impact reliability was strong, with a 0.814 alpha result. Overall, both constructs are reliable and represent distinct constructs for future use in examining autobiographical memories from tourism experiences.

Discussion

Practitioners who understand the depth of the impact (what an experience can do for a traveler’s life) and strength of rehearsal (how often the person recalls and shares the experience with others) are able to manage and market their destination for these specific experiences. For example, in the case of Yellowstone National Park, a wildlife sighting can create an impact of such awe, that the visitor finally recognizes the need to protect an entire ecosystem. This is the ultimate management goal for the park . . . to make sure that when the visitor returns someday, that wildlife is still alive and well in the park. The visitor who shares stories with others (rehearsal), has two outcomes: (1) the visitor is likely to return, and (2) those who hear the experience have a desire to have the same experience by visiting the destination as well. While it is hard to measure word-of-mouth and social media exposure, every marketer knows the need to be able to provide the experience that people will talk about (in a positive way, the marketer would hope). Using the TAMS will inform

Table 5. Rotated Component Matrix.

Variable	Factor Loading 1 (Rehearsal)	Factor Loading 2 (Impact)
Since it happened, I have talked about this event . . .	0.846	–
Since it happened, I have thought about this event . . .	0.853	–
Since it happened, I have written about this event to others (e.g., email, Facebook, blog, letter, text) . . .	0.654	–
As I remember the event, I can feel now the emotions I felt then.	0.595	–
As I remember the event, it comes to me in words or in pictures as a coherent story or episode and not as an isolated fact, observation, or scene.	–	0.551
This memory is significant in my life because it imparts an important message for me or represents an anchor, critical juncture, or turning point.	–	0.888
This memory has consequences for my life because it influenced my behavior, thoughts, or feelings in noticeable ways.	–	0.882
As I recall them now, I would rate the emotions I experienced during the event as . . .	0.472	–

Table 6. Cronbach's Alpha for TAMS Constructs.

Component	Cronbach's Alpha
Rehearsal (five items)	0.782
Impact (three items)	0.8135

Note: TAMS = Tourism Autobiographical Memory Scale.

practitioners of the type of experience that is impactful. Marketing professionals can then design their messages to elicit and ignite experiences that are likely to lead to strong recollection and reaction from the visitor.

For the practitioner, the TAMS is a short survey of eight questions plus a written description of the memory the visitor is thinking about. Any destination manager could administer this questionnaire, easily look at the respondents who had a high impact score, and then read the memory/event described by the visitor. Those are the types of events, then, that provide the sort of experience a destination should attempt to emulate. Marketing those experiences and being able to provide for them on site should create memorable moments that shape even more visitor's life experiences. It is about knowing what types of experiences lead to high impact memories and then delivering it again and again.

"Memory requires more than mere dating in the past. It must be dated in *my* past" (William James 1890, p. 650). This quote highlights the depth and breadth of how imbedded the concept of memory is within the human condition. Memories permeate our daily lives, influencing our behaviors and interactions both consciously and subconsciously. For tourism research, the memories of an experience may be the most direct source of information we can measure to assess a traveler's perception of the experience at a destination. In addition, autobiographical memories are malleable and meanings may shift over time; therefore, gaining an initial understanding of certain life events for travelers may allow for a longitudinal examination of a single travel experience (Conway and Pleydell-Pearce 2005). Over time, the functions of

autobiographical memory (directing behavior, strengthening of self, social bonding) may become relevant in our depiction of travel behavior and the meaning of travel experiences (Bluck 2003). Tourism experience research gains the ability to dive deep into the meanings and effects of a single travel experience through utilizing autobiographical memory. A strong potential emerged for long-term memory and its inherent subsets to be integrated into existing frameworks. The inherent functions of autobiographical memory give rise to several potential conceptual connections within the tourism field (Bluck 2003). From motivations to place attachment and satisfaction, our memories of a visitor experience may influence and be influenced by previous evaluations of travel experiences. Using the plethora of research conducted on autobiographical memory in cognitive psychology, it is now possible to integrate the memories of travel experiences as an antecedent. It is critical to integrate the groundwork laid over the years in tourism experience research with the entire discipline of cognitive psychology to help us fully understand and explain the impact of tourism on the individual traveler's life.

The results from the EFA highlight the dual dimensionality that comprises the TAMS. Despite the variety of differences in the scale items and in study context, the results share many similarities with two of Fitzgerald and Broadbridge's (2013) constructs of autobiographical memory. These similarities indicated the naming of both structures to mirror those found in the above study; impact and rehearsal. While there are differences in the structure and items, the variables contained in this study appear to define the level of importance (impact) a memory has in a person's life and the frequency in which individuals recall the event in various mediums (rehearsal). Furthermore, the results of the EFA indicate two reliable constructs with room for additional testing.

Based on the desire to provide experiences over services (Pine and Gilmore 1999), the future of tourism experiences may be the lifeline toward understanding the root of the

product being provided at a destination. Not only does the TAMS and autobiographical memory allow for a unique measure of the experience, it also allows for a deeper examination of the “self-defining qualities” that are imbedded within certain experiences (Fivush et al. 2011). These extremely unique and important experiences are even stressed by tourism providers today. For instance, “transformative experiences” are highlighted as a critical strategy in *Revisiting Leopold*, a guiding document for the future of park management (National Park System Advisory Board Science Committee 2012). Park managers have discussed the difficulty in understanding what makes an experience transformative and how to measure such a concept. In a nature-based tourism context, Ewert et al. (2011) define “transformative wilderness experiences” as “those events, either planned or unplanned, that lead to a change in an individual, either behaviorally, psychologically, or emotionally” (p. 140). However, the TAMS lends itself to allowing for such an exploration by utilizing high-impact, high-rehearsal memories to identify which experiences are most important to visitors. The TAMS does not explicitly measure transformation, but high-impact, high-rehearsal memories contain experiences that represent consequences in behavior, life juncture, and a need to rehearse the event. Conceptually, this fits the ideal of providing experiences to visitors in hopes of a transformation.

The visitor experience is multifaceted and multidimensional; therefore, no single number can quantify the experience. Rather a variety of approaches to measure experiences is needed to adequately describe the wide ranges of experiences in places like national parks, attractions, and urban destinations. The TAMS offers a useful measure of the tourist experience. Further, rigorous testing is necessary to determine if the structure holds across destinations, time, and demographics. Additionally, there is an opportunity to advance the study of visitor experiences and behavioral outcomes by testing the effect personal memories have on the outcome of traveling. Academic and practical benefits exist through this framework by (1) having a deeper understanding of the tourism experience, and (2) identifying the best approaches toward providing transformative experiences. With these thoughts in mind, we believe the integration of memory and tourism research will advance the field of experience research and provide useable data for marketers.

Conclusions and Limitations

Overall, the framework developed throughout this article is promising. Pearce and Packer's (2013) call for action presents a new direction for tourism research in which the Tourism Autobiographical Memory Scale contributes. In addition to the other memorable experience scales, the TAMS now allows for researchers to provide new information to stakeholders and industry partners who wish to optimize their experiences at the destination. For example, when

the park service called for the experiences at parks to transform lives, park managers had a practical question that required serious innovation. Known approaches within tourism or outdoor recreation research did not capture the essence of transformative experiences. Autobiographical memory's conceptual framework revealed itself as possessing the necessary components needed to advance tourism experience research. The expanse of work conducted on autobiographical memory in psychology is large and continually growing; however, the small set of existing studies (J.-H. Kim and Ritchie 2014; Kim et al. 2010; Knobloch, Robertson, Aitken 2017; Park and Santos 2017; Tung and Ritchie 2011) has been a great step forward for tourism. The gap has been narrowed even more through this study. The framework built here is just the beginning.

Future research should look toward the relationships that traditional tourism concepts such as satisfaction, place attachment, and destination loyalty have with autobiographical memory. The above, well-established concepts may see a significant connection built through our subjective, but direct, memories of previous events. For example, the directive function of autobiographical memory may have a potential relationship with whether a visitor will revisit the destination, while social bonding may influence the level of place attachment. The potential for future use of autobiographical memory is vast and represents a novel approach toward further delineating visitor experience influences.

This study contains some limitations that need to be addressed. First, memory as a concept is bound and affected by time (Reese, Haden, and Fivush 1993). Memory forms and can change throughout time as the individual processes new events and information. Therefore, autobiographical memories may change or evolve over time, which the TAMS did not account for. During the pretesting phase of this study, memory age was included and found to be insignificant, but previous psychological memory research conducted in a laboratory setting has found differences. Additional studies could include event timelines that assess how an event would influence an individual at childhood, early adulthood, later adulthood, etc.

A second limitation is the possible differentiation between first-time and repeat visitor experiences. Demographic results showed a nearly 60/40 split between repeat and first-time visitors at Yellowstone in this study. Contextual differences in experiences between first-time and repeat visitors may exist, but were not captured through this study (e.g., many first-time visitors go to Old Faithful for the first time, whereas repeat visitors may travel to less popular areas). This limitation, however, suggests another wave of future research that has also been suggested by Sthapit and Coudounaris (2017), who propose possible differences in first-time versus repeat visitors' MTEs and that relationship to impact. Typologies could be built based on the actual experiences people have and then tested with the TAMS to

see if different types of experiences produce similar or diverging autobiographical ratings. For example, does the wildlife watching experience produce a higher/lower rating than the hiking experience? If so, those results could be customized for promotional campaigns.

The final limitation revolves around the study site. Yellowstone is an iconic destination and produces experiences unique to many other places in the world. Using memories from this location may lead to more positive experiences based on the novelty of the location; however, this cannot be verified until future research is conducted at different sites. Comparison of memory structure between visitors at new locales and the TAMS is needed for further validation.

The nexus of memory and tourism is at the beginning stages of our understanding. This study verifies, yet challenges, what we currently know about cognitive psychology and tourism. It contributes to the theoretical basis of how a visitor experience can impact one's life and, further, why rehearsal of that event occurs. The stronger the impact, the more likely the individual is changed for life. The TAMS is a usable instrument, now verified, that can be the basis for understanding what it is within a destination that provides a life-changing impact on the individual.

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