Enhancing Pro Environmental Behavior at Heritage Sites: The Effect of Place Attachment

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Abstract

With growing insight into sustainability issue, the tourists' pro-environmental behavior in cultural heritage sites became a vital topic to discuss. Until now, visitors' environmental behavior at heritage sites has not been sufficiently examined. It has been assumed that individuals with higher levels of attachment to a particular place were more likely to protect this place. Therefore, the current research aims at examining the influence of place attachment on pro-environmental behavior of tourists at the district of *Old Cairo*. This study considered place attachment as a multidimensional construct including place dependence, place identity, place affect and place social bonding. A structured questionnaire has been used to collect the primary data from a sample of 400 local and foreign visitors at Old Cairo. The findings indicated that place attachment was positively correlated with the pro-environmental behavior of visitors. Practical findings proved also a positive and significant effect of all place attachment sub constructs on pro-environmental behavior at Old Cairo. Finally, this research concludes by discussing managerial implications, along with suggestions for future research.

Keywords   Pro-environmental Behaviors (PEB), General behavior, site-specific behavior, Place attachment, *Old Cairo.*

1- Introduction

Tourism industry faces various challenges associated with the environment and sustainable development, such as water consumption, waste management, greenhouse gas emissions related to travel, accommodation, and leisure activities as well as the conservation of cultural heritage (UNEP, 2011; Lee *et al.,* 2013a). Therefore, an increasing attention has been dedicated to the sustainability issue in tourism to help sustainable development of destinations (Powell & Ham, 2008; Kafyri *et al.,* 2012). The visitors' intended and unintentional behaviors have damaged the environment in several tourism destinations (Lee *et al.,* 2013b). Consequently, encouraging tourists to adopt an environmentally responsible behavior is a powerful tool for fostering sustainability in these destinations (Brown *et al.,* 2010). The pro-environmental behavior refers to behaviors that aim at minimizing the

negative impacts of individuals' actions on the natural and built world (Kollmuss & Agyeman, 2002). Enhancing pro-environmental behaviors can help preserving the natural and cultural assets for future generations (Ramkissoon *et al.,* 2012). The increasing visits to cultural and historical sites may cause several negative impacts that require a balance between visitors' number, authenticity and preservation (Alazaizeh *et al.,* 2016). Heritage sites which provide tourists with authenticity and interesting experiences are often fragile (Jiang *et al.,* 2017). Thus, the adoption of pro-environmental behaviors by individuals is also closely relevant in heritage tourism (Buonincontri *et al.,* 2017). Moreover, heritage tourists are more interested in involvement with the places rather than just enjoying the environment (Kerstetter *et al.,* 2001). They are also higher educated and tend to spend more money and stay for a longer period in the destinations than other tourists (Lin, 2011). This leads to an increasing call for encouraging environmentally responsible practices in such settings (Buonincontri *et al.,* 2017).

One of the significant factors that can influence tourists' engagement in pro-environmental behaviors is attachment to a specific place (Halpenny, 2010). It means the bonding or emotional connections that individuals share with a place (Raymond *et al.,* 2011; Ramkissoon, 2016). Place attachment has been identified as an antecedent to environmentally responsible behaviors of visitors in both natural and cultural settings (Vaske & Kobrin, 2001; Halpenny, 2010; Lee, 2011; Ramkissoon, 2016). Prior tourism and leisure studies revealed that positive attachment to a particular place was associated with the willingness of visitors to protect this place (Vaske & Kobrin, 2001; Halpenny, 2010; Ramkissoon *et al.,* 2012, 2013a). Although the importance of the relationship between people and places for promoting sustainability, to date, most studies have focused on this type of association in national parks, wetland, protected areas and different environmental settings, while, only one study has been conducted by Buonincontri et al. (2017) to discuss this relationship in heritage sites. This study developed a conceptual framework to examine the relationship among heritage visitors' experience, place attachment and their sustainable behavior. Until now no empirical studies have been conducted to examine this relationship regarding cultural contexts in Egypt. Accordingly, In an attempt to fill this void, the main purpose of this research is to examine the influence of multidimensional place attachment construct (comprising its four dimensions: place identity, place affect, place social bonding and place dependence) on pro-environmental behavior of tourists at the area of Old Cairo. Old Cairo is considered one of the most important archeological sites in Egypt because it encompasses a distinguished collection of religious monuments that represent the cultural

heritage of Jews, Copts and Muslims, so it is called a "Multi-religious Compound" (Gabra, 2013). Due to its symbolic religious and historical value, individuals can develop strong emotional bonds with that place. Hence, it is considered an ideal heritage site to examine the effect of place attachment on visitors' pro-environmental behavior.

2- Literature Review
2-1 Pro-environmental behavior in heritage sites

Several terms are being commonly used by researchers to describe the type of individuals' behaviors that aim at conserving the environment (Sawitri *et al.,* 2015; Ajuhari *et al.,* 2016). Among them are: *environmentally responsible behavior* (Sivek & Hungerford, 1990; Lee *et al.,* 2013a; Chiu *et al.,* 2014), *environmentally significant behavior* (Stern, 2000; Hedlund-de Witt *et al.,* 2014), *environmentally concerned behavior* (Axelrod & Lehman, 1993), *sustainable behavior* (Meijers & Stapel*,* 2011; Buonincontri *et al*., 2017) and *Pro- environmental behavior* (Stern, 2000; Kollmuss & Agyeman, 2002). The various terms of responsible behaviors are defined in the following table.

Table 1 Definitions of responsible behaviors related to the environment.

Terms	Definitions	References
Environmentally Responsible Behavior	Actions, by tourists, directed to reduce environmental impacts, participate in environmental preservation and/or conservation, support a more sustainable use of natural resources, and mitigate any negative environmental impacts during their activities.	(Sivek & Hungerford, 1990; Lee *et al.,* 2013a; Chiu *et al*., 2014)
Environmentally significant behavior	The extent to which the individuals' behaviors change to improve the environment.	(Stern, 2000**;** Hedlund-de Witt *et al.,* 2014)
Environmentally concerned behavior	Actions that participate in environmental preservation.	Axelrod & Lehman,, 1993)
Sustainable behavior	Behavior by people who take into consideration future outcomes and behave in a more sustainable manner.	Meijers& Stapel., 2011;Buonincontri *et al*, 2017)
Pro-environmental behavior	Behaviors and actions offered by individuals to protect the environment and minimize the negative impacts on the natural and built world.	(Stern, 2000; Kollmuss & Agyeman, 2002)

As shown in table 1, the pro-environmental behavior refers to behavior that aims at minimizing the negative impacts of individuals' actions on the natural and built world. Such behavior includes, but is not limited to, reduction of the consumption of resources and minimization of waste production (Kollmuss

& Agyeman, 2002). Steg and Vlek (2009) defined pro-environmental behavior as behavior that not only causes as little as possible damages to the environment, but also benefits the environment. Meanwhile, Lee et al. (2013a) indicated that responsible behaviors of visitors at a specific destination should comprise appreciating the culture and life-style of the local community, protecting the natural environment and improving the well-being of residents. Visitors who adopt pro-environmental behavior aimed at encouraging the sustainable usage of natural resources, alleviating the negative environmental effects of their activities and participate in environmental conservation efforts (Sivek & Hungerford, 1990). Similarly, pro-environmental behavior at heritage sites should be related to the tourist's awareness about both historical and natural value of cultural heritage site, their obligation to participate in heritage preservation efforts, and their actual activities that are undertaken to save the cultural heritage for the present and future generations (Buonincontri *et al.,* 2017).

The most popular classification of pro-environmental behavior was developed by Smith-Sebasto and D'costa (1995), this classification includes six constructs representing civic, educational, financial, legal, physical, and persuasive actions. **Civic actions** refer to any actions undertaken by individuals to promote the conservation of the environment using political ways without depending on any donations or persuasive strategies (Smith-Sebasto & D'costa, 1995; Lee *et al.*, 2013a). Such as, the voting for candidates who have environmental policies (Lee, 2011), donate time to environmental purposes (Lee, 2011), signing petitions and sending letters to government officials concerning the environment and the heritage deterioration (Buonincontri *et al.*, 2017). **While, financial actions** refer to any actions aimed at protecting the environment and enhancing the cultural heritage sites by means of financial measures or donations, such as donating to charity organizations that concerned with protecting the environment and cultural heritage and deciding to purchase products according to their negative/positive effects on cultural heritage sites (Sebasto & D'costa, 1995; Lee *et al.*, 2013a; Buonincontri *et al.*, 2017). Unlike financial actions, **physical actions** are those actions the individuals undertake for the environment and not involving monetary contributions such as participating in the programs of cleaning community and classifying rubbish (Sebasto & D'costa, 1995; Vaske & Kobrin, 2001; Han & Hyun, 2016). **Persuasive actions** are also nonmonetary actions incurred by individuals to encourage their families and peers to protect the environment and convince other people to behave in an environmentally responsible manner (Sebasto & D'costa, 1995; Vaske & Kobrin, 2001; Lee, 2011). On the other hand, **educational actions** are those actions that mainly aimed at getting knowledge and

information about environmental matters, such as reading papers or books, watching television programs about the environment, and attending academic courses related to the sustainability (Sebasto & D'costa, 1995; Vaske & Kobrin, 2001; Lee, 2011). Finally, **Legal actions** are judiciary actions that aim to enforce the environmental legislations to conserve the environment (Sebasto & D'costa, 1995; Lee, 2011; Lee *et al.*, 2013a).

Based on Smith-Sebasto and D'costa (1995), Lee et al. (2013a; 2013b) developed a new classification of environmental behavior to measure the individual's environmental behavior at home, in work, and at tourism destinations. Lee et al. (2013a) classified pro-environmental behavior (PEB) into two categories: general environmental responsible behavior and site-specific environmental responsible behavior. General environmental behavior consists of civic, financial, physical, and persuasive actions, while, site-specific environmental behavior encompasses three dimensions: sustainable behaviors of tourists for specific destinations, pro-environmental behavior, and environmentally friendly behavior.

With regard to pro-environmental behavior of tourists at a particular destination, it includes various responsible actions that aimed at respecting the culture and environment at a certain destination or heritage site, such as respecting the customs and traditions of host communities, improving the well-being of local community, preserving the local environment and reduce or prevent visits to specific areas during recovering from environmental degradation (Halpenny, 2010; Ramkissoon *et al.,* 2013a). Moreover, visitors at a specific heritage sites may also decide to protect this site through donating time or money to maintain this site, participate in voluntary tasks in a particular heritage site (e.g. cleaning, light maintenance) or adopt a work of art in a museum (Buonincontri *et al.*, 2017).

2-2 Place attachment

Place attachment has been discussed in diverse disciplines including tourism, natural resource management, environmental psychology as well as environmental education (e.g., Vaske & Kobrin, 2001; Hou *et al.*, 2005; Kyle *et al.,* 2005; Halpenny, 2010; Ramkissoon *et al.*, 2012; Ramkissoon *et al.,* 2013a). Attachment to place relates to "*The process whereby an individual's experiences with both the physical and social aspects of an environment results in the development of strong emotional bonds with that place*" (Chen *et al.*, 2016: 604). It means that some people may feel connected to a certain place because it provides them with social relations or any social factors, while for others they attached to a place because of its physical aspects (Lewicka, 2010; Tonge *et al.*, 2015). Therefore, places do not only include physical settings, but also historical, psychological, spiritual and social aspects (Tonge *et al.*, 2015). In other words, place attachment points to the

bonding or emotional connections that individuals share with places (Raymond *et al*., 2011; Ramkissoon, 2016). Literature used several terms to describe the relation between people and places such as *sense of place* (Jorgensen & Stedman, 2001; Hawke, 2011), *neighborhood attachment* (Lewicka, 2010), *place attachment* (Guiliani & Feldman, 1993), and *connectedness to nature* (Gosling & Williams, 2010). The recent literature agreed on place attachment as the most widespread term used (Ramkissoon *et al.,* 2013a). In tourism, attachment to places is also often termed as "destination attachment" (Hou *et al.*, 2005; Yuksel *et al*., 2010).

Tourism literature described place attachment as a multidimensional construct, that is comprised two or more sub-constructs (Hammitt *et al.*, 2009; Halpenny, 2010; Ramkissoon *et al.*, 2012; Chen *et al*., 2016; Buonincontri *et al*., 2017). These dimensions include place identity, place affect, place social bonding and place dependence (Ramkissoon *et al.*, 2012; Ramkissoon *et al.,* 2013a; Buonincontri *et al*., 2017; Ramkissoon &Mavondo, 2017). Place identity and place dependence are the most cited dimensions that have been traditionally used to assess place attachment (Vaske & Kobrin, 2001; Hou *et al.*, 2005; Gross & Brown, 2008; Prayag & Ryan, 2012). Scholars continue to develop other dimensions to better illustrate the social and emotional settings of place attachment (Kyle *et al.*, 2005; Ramkissoon *et al.*, 2012). This includes social bonding (Kyle *et al.*, 2005; Hammitt *et al.*, 2009) and place affect (Halpenny 2010; Ramkissoon *et al.*, 2012).

2-2-1 Place Dependence

This dimension represents the functional attachment to the place (Vaske & Kobrin, 2001; Ramkissoon, 2016). It related to the ability of a certain place to satisfy the recreational or psychological goals of tourists (Williams *et al.* 1992; Ramkissoon *et al.*, 2012). This functional aspect affirmed the importance of physical resources to meet the desired needs and activities of visitors (Williams *et al.*1992; Ramkissoon, 2016). The ability to achieve the visitors' visit goals significantly depends on the uniqueness of the place compared with other places (Williams *et al.,* 1992; Williams & Vaske, 2003; Kwenye & Phiri, 2016). Individuals with high levels of place dependence are more careful about the resource development and conservation and less willing to alter this place to another (Scannell & Gifford, 2010a; Ramkissoon *et al.*2013b).

2-2-2 Place Identity

Describes the profound connection between the place and the individual's personal identity (Buonincontri *et al.*, 2017). It means that the spatial settings provide visitors with the chance to express, affirm and reflect their identities (Prayag & Ryan 2012; Kwenye & Phiri, 2016). Hou et al. (2005) indicated that the cultural destination can play a significant role in enhancing the cultural identity or self-image of visitors. Place identity is also described as the symbolically important bond between the person and the place (Halpenny, 2010), that can lead to the feeling of belonging and identity to a particular place (Vaske & Kobrin, 2001; Ramkissoon, 2016). People develop a strong identity with a particular site when it provides a feeling of uniqueness or facilitates distinctiveness rather than other places (Ramkissoon, 2012). For example, the place may be linked to the visitor's family, origin place, spiritual site, or provide a pilgrimage or celebratory event which implies special meanings for visitors (Tonge *et al.*, 2015). Extensive visits to a particular place because of place dependence might lead to place identity (Moore & Graefe, 1994). Place identity has been predicted to directly affect pro-environmental behavior at a particular place (Vaske & Kobrin, 2001). In other words, for individuals who have a strong feeling of place identity, they are more likely to maintain and care for the place primitive settings (Ramkissoon *et al.*, 2013b; Tonge *et al.*, 2015).

2-2-3 Place Affect

Affective attachment, describes the strong emotions that visitors feel towards a certain place (Halpenny, 2010). This, in turn, creates a sense of psychological comfort for visitors (Korpela *et al.,* 2009). Tuan (1977) defined this emotional bond as "*love of place*". Researches confirmed that place affect was considered an important predictor for enhancing environmental attitude and behaviors of visitors (Pooley & O'Conner, 2000; Ramkissoon *et al.*2012).

2-2-4 Social Bonding

Describes the social relations that a certain place enhances (Buonincontri *et al.*, 2017), whether these relationships resulted from interactions with family and friends or other individuals in these places (Kyle *et al.*, 2005). Scholars stated that individuals became attached to places that facilitate personal relationships (Scannell & Gifford, 2010a, 2010b) and enhance the sense of group belonging (Hammitt *et al.*, 2009). Although the importance of social bonding, the majority of studies in leisure context discussed the dimensions of place identity, dependence and affect while place social bonding remains poorly discussed (Ramkissoon *et al.*, 2012). Kyle *et al.* (2005) illustrated that

the social bonding between people can support and foster pro-environmental intentions and behaviors. Nye and Hargreaves (2009) advocated that the meanings of pro-environmental behaviors were constructed through the social interaction of individuals and may reinforce environmental actions.

2-3 Pro-environmental behavior and place attachment at heritage sites

Recently, pro-environmental behavior has acquired a great interest from researchers trying to explore the motivations of individuals to behave in an environmentally responsible pattern (Greaves *et al.*, 2013; Ramkissoon & Mavondo, 2014). Among those motivations is the place attachment which has been identified as an antecedent to environmentally responsible behaviors of visitors in both natural and cultural settings (Vaske & Kobrin, 2001; Halpenny, 2010; Lee, 2011; Ramkissoon, 2016). Previous studies have demonstrated that the existence of emotional bonds between people and places could lead to protective environmental behaviors (Vaske & Kobrin, 2001; Gosling & Williams, 2010; Halpenny, 2010; Scannell & Gifford 2010b; Lee, 2011; Raymond *et al.*, 2011; Cheng *et al.*, 2013; Ramkissoon *et al.*, 2012; 2013a). For instance, Vaske and Kobrin (2001) examined the effects of only two sub dimensions of place attachment (place dependence and place identity) on general pro-environmental behavior. They reported that people who are more attached to the place were correlated with higher pro-environmental behaviors than those who are less attached. Similar findings were concluded by Halpenny (2010) and Scannell & Gifford (2010a) who reported that place attachment was significantly associated with pro-environmental behaviors of park visitors. The research by Cheng *et al* (2013) also found a positive correlation among place attachment and pro-environmental behaviors of visitors to the Penghu Island in Taiwan. Similarly, the findings of Lee (2011) argued that as visitor's place attachment increases, the likelihood his pro-environmental behavior also increases. Regarding place attachment as a multidimensional concept comprised place identity, place dependence, place affect and place social bonding, the results of Ramkissoon et al. (2012; 2013a) revealed that each of place attachment dimensions affected pro-environmental behavioral intentions of national park's visitors.

Although these studies that have been conducted to understand the association between place attachment and pro-environmental behaviors, the findings of this relationship are still contradictory and not conclusive (Halpenny 2010; Scannell & Gifford 2010b). This inconsistency may be due to the different dimensions of place attachment, for example, Vaske and

Kobrin (2001) used place dependence and place identity, while Halpenny (2010) utilized place identity, place dependence, and place affect. This contradiction may be also related to the different types of environmental behaviors measured, some researchers examined the general pro-environmental behaviors (i.e., Vaske & Kobrin, 2001; Halpenny 2010; Scannell & Gifford 2010b), while others focused on site specific behaviors (i.e., kyle et al., 2005; Gosling & Williams, 2010; Raymond et al., 2011). However, in spite of previous studies that examined the relationship between pro-environmental behaviors and place attachment, the vast majority of these studies was focused on national parks, wetland and different environmental settings. However, there is a scarcity in the studies conducted to examine this relationship regarding cultural contexts, particularly, in Egypt. Accordingly, the following hypotheses were proposed:

Hypothesis 1. The visitors' place attachment positively influences the pro-environmental behavior of heritage visitors at Old Cairo district.
H1a. The visitors' place dependence has a positive effect on the PEB of heritage visitors at Old Cairo.
H1b. The visitors' place identity has a positive effect on the PEB of heritage visitors at Old Cairo.
H1c. The visitors' place affect has a positive effect on the PEB of heritage visitors at Old Cairo.
H1d. The visitors' place social bonding has a positive effect on the PEB of heritage visitors at Old Cairo.

3- Methodology
3-1 Site Description
The area of Old Cairo "*Masr al-Qadima* in Arabic" - commonly known as Coptic Cairo or Fustat- is located to the south of modern Cairo, just opposite of Rhoda Island (Williams, 2008). The area grew up in and around the Roman fortress of Babylon, and is considered nowadays one of the most famous Cultural Heritage Sites in Egypt because it has a great historical, archaeological and religious value (Gabra, 2013). It gained its importance and fame because it includes a unique collection of tourist attractions symbolizing the cultural heritage of the three religions (Judaism, Christianity and Islam) (Gabra, 2013). The Jewish monuments are represented in Ben Ezra Synagogue, which considered the oldest Jewish temple in Cairo (Stiefel, 2015). The Synagogue still holds a great importance in the contemporary history of Judaism because the famed Geniza Documents were discovered in it (Glickman, 2011; Hoffman & Cole, 2016), so it's also known as The Geniza Synagogue (Stiefel, 2015). The Coptic monuments are represented in a number of interesting churches, such as: the Hanging Church (the nickname for the Metropolitan Church of St Mary the Virgin), Church of Saint

Mercurius (Abu Sayfayn), Monastery and Church of St. George, Church of St. Sergius (Abu Serga), Church of St. Barbara and Church of the Holy Virgin (Babylon El-Darag) (Capuani *et al.*, 2002; Gabra & van Loon, 2007; Williams, 2008). Furthermore, the area of Old Cairo houses the Coptic Museum, which offers a unique collection of art and artifacts from the history of Coptic Egypt and an exhibit about the history of Christianity in Egypt (Beattie, 2005; Gabra & Eaton-Krauss, 2006). The Islamic archaeological sites are represented in Mosque of 'Amr ibn al-'As – the oldest mosque in Egypt and Africa- (Williams, 2008), as well as, the ruins of Fustat that became prominent in the 19th and early 20th centuries when there was a growing interest in Islamic art (Petersen, 1999). Fustat was an ancient centre for the pottery industry and a new Pottery Centre is built there with the aims of preserving the traditional art (Mason, 1995).

3-2 Site Significance

As a result of the existence of this exceptional diversity of religious monuments in one location, Old Cairo sometimes called the 'Multi-religious Compound' (Gabra, 2013). It is also still considered a sacred area by both Jews and Copts because the local folklore of Jews states that here is the spot where baby Moses was found, and that was later become the site of Ben Ezra Synagogue (Glickman, 2011). For Copts, it's believed in Christian tradition that the Holy Family visited this area when they came to Egypt, and rested in a cave where the Church of St. Sergius was built upon (Beattie, 2005; Gabra & van Loon, 2007). Moreover, the area has a historical significance for Muslims as the site of the first Muslim settlement in Egypt and the first mosque in Africa (Lapidus, 1988). This religious value of Old Cairo leads to the development of strong emotional bonds with that place.

3-3 Data Collection

Using a structured questionnaire, data for this study were collected from a randomly selected sample of 400 both local and foreign visitors who had visited Old Cairo. The questionnaires were distributed to visitors from November 2017 to January 2018. There have been 389 responses were obtained with a response rate 97.2% of the total sample. However, only 377 of the questionnaires were usable for the final analysis.

3-4 Measurement

Data was processed using the Statistical Package of the Social Science (SPSS V. 16). The questionnaire was divided into three parts. Part A included 5 questions about socio-demographic characteristics of respondents such as:

age, gender, education, nationality and visit frequency. While, part B included 43 items to assess the pro-environmental behavior of the respondents, and finally part C included 15 questions that measured place attachment.

This study was considered place attachment as a multidimensional construct, composed of place dependence, identity, affect and social bonding. Place dependence (measured by four items), place identity (with four items). These items were adapted from Vaske and Kobrin (2001). While, measures of social bonding and place affect adapted from Kyle et al. (2004), and Ramkissoon et al. (2013a). Place affect (measured by three items), and place social bonding (measured by four items). pro-environmental behavior was measured based on (43 items) that derived from Buonincontri et al. (2017). The statistical analysis used in this research is (1) Cronbach alpha to assess the reliability, (2) the descriptive analyses to compute the frequencies, standard of deviation and means; (3) correlation analysis was used to test the relationship between the research variables and finally (4) linear regression test has been conducted to estimate the significance effect of the independent variable (place attachment) on the dependent variable (pro-environmental behavior).

3-5 Data Analysis
3-5-1 Reliability

This research calculated the Cronbach's alpha coefficient for all variables and it exceeded 0.70 which means that results are reliable (Hall, 2008). Table 2 shows the reliability statistics for each variable.

Table 2 Constructs' Reliability

Constructs	Cronbach's Alpha
Pro-environmental behaviors of heritage visitors	**.85**
Place attachment	**.90**
▪ Place dependence	.86
▪ Place identity	.91
▪ Place affect	.87
▪ Place social bonding	.81

3-5-2 Visitors' Profile

The results showed that more than half of visitors 55.5% were female and 44.5% were male. The majority of visitors 86.1% had completed the university education. Around 36% of visitors were between 20 and 34 years while 48 % were between 35 and 49 years and 16% were over 50 years. Regarding the nationality of visitors, 59% were local visitors and 41% were foreign. In relation to the visit frequency, the majority of respondents were repeat visitors to Old Cairo with a percentage of 76.3% while only 23.7%

were first-time visitors. This may reflect the visitors' attachment to Old Cairo which enables them to provide valuable information for this research.

3-5-3 Pro-environmental behaviors of heritage visitors

The visitors to Old Cairo were asked to indicate their pro-environmental behaviors by using a Likert-type scale from 1"rarely" to 5"usually" to examine the level of their commitment to protect Old Cairo. The pro-environmental behaviors were grouped into two categories: general environmental behaviors and site specific environmental behaviors. The findings revealed that the total mean value for pro-environmental behaviors of visitors to Old Cairo was 3.97 (SD=,33). A mean score of 3.9 has been achieved for general environmental behaviors, while, the specific environmental behaviors related to Old Cairo achieved a mean score of 4.0. The previous results highlighted a higher level of visitors' participation in environmental behaviors at Old Cairo. This result came in favor with the findings of Kerstetter et al. *(*2001) which indicated that heritage tourists are more interested in involvement with the places rather than just enjoying the environment.

The results indicate that the following ***general environmental activities*** were achieved the same and the highest mean value 4.7 *(talking usually with others about the protection of cultural heritage, try to convince friends to act responsibly when visiting cultural heritage* sites*, convince someone to visit less crowded heritage sites to protect cultural heritage and buy products from firms that are careful to the history, traditions and identity of communities)*, while the lowest values achieved were respectively for *(membership in organizations that concerned with the support and the protection of heritage (M=2.8, SD=1.2), Write letters to government officials in support of this heritage site (M=2.1, SD=1.07), signed petitions to support cultural heritage protection in the last year (M=1.9, SD=.99), and voting for elected officials that support cultural heritage protection (M=1.4, SD=.71).*

For Old Cairo specific environmental behaviors, the most common behaviors among respondents were respectively *(e.g. increasing the scientific monitoring of the status of Old Cairo to ensure its protection (M=4.8, SD=.40), developing a stricter mandatory regulations for visitors to minimize their negative impacts (M=4.7, SD=.43), limiting the number of visitors (M=4.5, SD=.50) and joined in voluntary actions that help the protection of Old Cairo (M=4.4, SD=.70)), while adopting a work of art at Old Cairo and donate money to support it* were the least common behaviors with a mean value 3.2.

3-5-4 Place Attachment

The respondents have been asked to indicate the level of their attachment to Old Cairo heritage site by choosing a number from 1 indicating not attached to 5 indicating that they were "Very attached."

Table 3. Means and Standard Deviations results for Place Attachment (*n=377*).

Place attachment items	Mean	SD
Place dependence	**4.2**	**.44**
The area of Old Cairo is the best place for what I like to do.	4.0	.35
I get more satisfaction from visiting Old Cairo than any other place.	4.3	.61
I wouldn't substitute any other area for the type of experience I get from visiting Old Cairo.	4.2	.64
I enjoy visiting Old Cairo than any other place.	4.0	.56
Place identity	**4.1**	**.41**
I think often about coming to Old Cairo	3.9	.40
I am very attached to Old Cairo.	4.3	.63
I identify strongly with Old Cairo.	4.3	.69
I feel like Old Cairo is a part of me.	3.8	.33
Place affect	**4.3**	**.35**
I feel attachment to Old Cairo	3.8	.33
I feel a strong sense of belonging to Old Cairo and its settings/facilities	4.4	.57
Old Cairo means a lot to me.	4.7	.40
Place social bonding	**4.3**	**.26**
Many of my friends/family prefer the area Old Cairo over many other heritage sites.	4.1	.33
If I were to stop visiting Old Cairo, I would lose contact with a number of friends.	4.4	.50
My friends/family would be disappointed if I were to start visiting other heritage sites.	3.7	.40
The friendships and associations I have with other people here at Old Cairo mean a lot to me.	4.8	.37
Total mean of Place Attachment	**4.2**	**.29**

As shown in table 3, the total mean value specified by participants for place attachment was 4.2 (SD=.29). A mean score of 4.3 was achieved for both place affect (SD=.35) and place social bonding (SD=.26), while, the total mean value for both place dependence was 4.2 (SD=.44) and place identity was 4.1 (SD=.41). The highest mean was recorded for the place social bonding item *"the friendships and associations I have with other people here at Old Cairo mean a lot to me"* with 4.8(SD=.37), followed by the place affect item *"Old Cairo means a lot to me"* with 4.7 (SD=.40), while the lowest mean value was for the item *"my friends/family would be disappointed*

if I were to start visiting other heritage sites" with 3.7. These results mean that respondents are very attached to Old Cairo.

4- Hypotheses Tests
4-1 Correlation Analysis

To find out the relationship between place attachment and pro-environmental behaviors of tourists at Old Cairo further correlation analysis has been conducted between these two main variables. The results of the correlation were shown in table 4

Table 4 The correlation of place attachment and pro-environmental behaviors

			pro-environmental behaviors	place attachment
Spearman's rho	**pro-environmental behaviors**	Correlation Coefficient	1.000	.861**
		Sig. (2-tailed)	.	.000
		N	377	377
	place attachment	Correlation Coefficient	.861**	1.000
		Sig. (2-tailed)	.000	.
		N	377	377

** Correlation is significant at the 0.01 level (2-tailed).

As shown in table 4, the correlation was statistically significant at the 0.01 level. The place attachment has a significant positive relationship with PEB (r = .861, p < .05).

Simple linear regression analyses

To achieve the aim of this research, a simple linear regression analysis has been used to test the significance impact of multidimensional place attachment construct on pro-environmental behavior**.**

H1. Visitors' place attachment positively influences the pro-environmental behavior of heritage visitors in Old Cairo district.

Table 5 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.618[a]	.382	.380	.26032

a. Predictors: (Constant), place attachment

The model summary shows that adjusted $R2$ was .380, indicating this model accounted for 38% of the variation in pro-environmental behavior.

Table 6 ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	15.686	1	15.686	231.457	.000[a]
	Residual	25.413	375	.068		
	Total	41.099	376			

a. Predictor:(Constant), place attachment

b. Dependent Variable: PEB

The ANOVA table illustrated whether the model significantly predicted the outcome. The results in table 7 proved that the model fit was significant as (f = 231.457 and p<0.05).

Table 7 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.970	.197		4.935	.000
	place attachment	.704	.046	.618	15.214	.000

a. Dependent Variable: PEB

As expected, the coefficients table confirmed that place attachment positively affected pro-environmental behaviors of visitors at Old Cairo heritage site.

Regression analysis for place attachment dimensions
- **H1a. Visitors' place dependence has a positive effect on the PEB.**
- **H1b. Visitors' place identity has a positive effect on the PEB.**
- **H1c. Visitors' place affect has a positive effect on the PEB.**
- **H1d. Visitors' place social bonding has a positive effect on the PEB.**

Table 8 linear regression analysis for place attachment dimensions

Variables	Adjusted R Square	F	Sig.	Results
Impact of place dependence on PEB	.401	252.382	.000	**Accepted**
Impact of place identity on PEB	.508	389.843	.000	**Accepted**
Impact of place affect on PEB	.230	113.104	.000	**Accepted**
Impact of place social bonding on PEB	.262	134.312	.000	**Accepted**

Predictors: (constant) (place dependence, identity, affect and social bonding).

Dependent variable: pro-environmental behavior.

The results in table (8) revealed that place dependence, place identity, place affect, and place social bonding have a positive influence on pro-environmental behaviors of visitors at Old Cairo (Adj R square= 40.1%; sig. =.000; Adj *R* square= 50.8%, sig. =.000; Adj R square= 23%, sig. =.000; Adj R square= 26.2%, sig. =.000). Based on the above discussion, the research hypotheses will be accepted.

5- Results and Discussion

The prime aim of this research was to examine the influence of place attachment on pro-environmental behavior of visitors at the area of Old Cairo. This research considered place attachment as a multidimensional construct, comprised of place dependence, identity, affect, and place social bonding. The respondents of this study expressed high levels of both pro-environmental behaviors and place attachment to Old Cairo. This might be due to the religious and historical significance of such Multi-religious Compound. Spearman correlation and simple linear regression have been conducted to explore the relationship between research variables and estimate the influence of the independent variable (place attachment) on the dependent variable (pro-environmental behavior). The main hypothesis of the research has been verified as a positive significant correlation was found between pro-environmental behavior and place attachment. This result came to agree with the findings of Vaske & Kobrin (2001); Halpenny (2010); Scannell & Gifford (2010b) and Cheng et al. (2013) which have concluded that the place attachment is positively associated with PEB. The empirical findings of this research also proved that place attachment has a strong positive effect on both general and site specific pro-environmental behaviors of individuals at Old Cairo. All place attachment dimensions had a positive influence on pro-environmental behaviors of visitors. Comparing these four dimensions, the place identity was leading with the highest influence %50.8, this result came to agree with the studies of Kyle et al. (2005); Halpenny (2010); Tong et al. (2015) which have concluded that place identity had a significant positive effect on both site and general environmental behaviors. Individuals who have a strong feeling of place identity are more likely to maintain and care for the place settings (Tong *et al.*, 2015). Vaske and Kobrin (2001) also proved the same result; as place identity increased, so too did the intention to adopt the pro-environmental behaviors.

Place dependence had a statistically significant effect on pro-environmental behaviors (Adj R2=.401). This result matched with the findings of Kyle et al. (2005); Raymond et al. (2011) and Ramkissoon et al. (2013a) which reported that visitors who are highly place-dependent, are more likely to act in an environmentally responsible way. Place social bonding had a lesser effect

26.2% on pro-environmental behaviors in comparison with identity and dependence. This result came in favor with the findings of Kyle et al. (2005) and Nye and Hargreaves (2009) which supported that the social bonding between people can support and foster pro-environmental intentions and behaviors. For place affect, the regression analysis proved that Adjusted R Square was (.230), indicating that this dimension affected on visitors' pro-environmental behaviors with (23%). This result corroborates the findings of Halpenny (2010) and Ramkissoon et al. (2013a, 2013b) which proved that individuals' place affect had a significant impact on their pro-environmental behaviors. Pooley and O'Conner (2000) also indicated that Place affect was considered a significant predictor of environmental attitudes.

Based on the previous findings, the place attachment is an antecedent for pro-environmental behaviors. It explained 38% of visitors' pro-environmental behaviors at Old Cairo. This result corroborates the findings of several studies (Vaske & Kobrin, 2001; kyle *et al.*, 2005; Halpenny, 2010; Scannell & Gifford 2010b; Lee, 2011; Raymond *et al.,* 2011; Cheng *et al.*, 2013; Ramkissoon *et al.*, 2013a, 2013b; Tong *et al.*, 2015; Kwenye & Phiri, 2016) which argued that place attachment was considered an important predictor of environmental behaviors. Accordingly, as place attachment increases, the likelihood of pro-environmental behaviors among visitors also increases.

6- Conclusion and Management Implications

To date, no empirical studies, to the authors' knowledge, have studied pro-environmental behaviors and place attachment at heritage sites in Egypt. To accomplish this, the research provides a theoretical contribution to the literature on both place attachment and pro-environmental behavior at heritage sites. A literature review demonstrated that the investigation of this relationship in cultural context would achieve more contribution to knowledge in this field. The findings of this research suggested that place attachment construct with its four dimensions has positively influenced the environmental behavior of heritage visitors at Old Cairo. This paper also provides some helpful practical implications for heritage sites managers striving to encourage sustainability based on visitors' environmental behaviors. It will also help in the planning and marketing of environmental behaviors at heritage sites. Analytical results proved that pro-environmental behaviors are significantly influenced by place attachment. Thus, to enhance pro-environmental behaviors, managers of heritage sites and planners can enhance the efficiency of their management plan including interpretation programs and develop new mechanisms that foster visitors' attachment. Moreover, it is highly suggested that heritage site management should maintain and protect heritage sites to assure environmental quality and promote place attachment among visitors. Heritage sites' management can

also support pro-environmental behavior by actively participating visitors, suitable message posting, and, where possible, carefully training visitors on the environmental practices.

7- Area of Further Research

Firstly, this study emphasized on the role of place attachment as a predictor of environmental behavior at heritage sites, further research is required to examine the impact of other predictive variables such as involvement. Secondly, the current research was conducted at Old Cairo heritage site. Thus, to generalize the study findings in other sites, future research can investigate the influence of place attachment on pro-environmental behavior at other heritage sites like museums. Lastly, further research is also required to determine whether there are differences in pro-environmental behaviors and place attachment between natural and cultural settings.

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