

Balance Between Tourism and Environment: Measuring Tourists' Implicit and Explicit Attitudes Toward Visual Conservation Messages. The Genuine Article.

Alejandro Alvarado-Herrera*

Tecnologico de Monterrey (Mexico)

Brenda Olivares**

Grupo Xcaret (Mexico)

Irais Cabrera***

Universidad de Sonora (Mexico)

Abstract: Visual messages are widely used to positively influence in conservation attitudes of visitors in tourist destinations, these are usually persuasive or prohibitive. According to the literature, attitudes are classified as explicit (conscious) or implicit (beyond conscious control) and there may be differences between them towards the same attitude object. This paper aim to presents the analysis of said attitudes towards prohibitive and persuasive visual messages focused on the correct disposal of garbage in a tourist attraction. A structured questionnaire was used for explicit measurement and the Implicit Association Test for implicit measurement, these were applied in two sun and beach destinations in the Mexican Caribbean. After the tests carried out, it is established that both messages (persuasive and prohibitive) are effective at an explicit level; however, at an implicit level, the persuasive message produces more favorable attitudes, thus is a better opportunity to positively influence conservationist attitudes.

Keywords: Implicit attitudes; Conservation messages; Implicit association test; Conservation attitudes; Persuasive messages, Tourism, and conservation.

Equilibrio entre turismo y medio ambiente: medición de actitudes implícitas y explícitas de los turistas hacia los mensajes visuales de conservación. El artículo genuino.

Resumen: Los mensajes visuales son ampliamente utilizados para influir positivamente en las actitudes conservacionistas de los visitantes en destinos turísticos, estos suelen ser persuasivos o prohibitivos. Según la literatura las actitudes se clasifican en explícitas (conscientes) o implícitas (fuera del control consciente) y pueden existir diferencias entre ellas hacia un mismo objeto actitudinal. Este artículo tiene como objetivo presentar el análisis de dichas actitudes hacia mensajes visuales prohibitivos y persuasivos enfocados a la correcta disposición de la basura en un atractivo turístico. Se utilizó un cuestionario estructurado para medición explícita y el Test de Asociación Implícita para medición implícita, estos se aplicaron en dos destinos de sol y playa del Caribe mexicano. Tras las pruebas realizadas se establece que ambos mensajes (persuasivo y prohibitivo) son efectivos a nivel explícito; sin embargo, a nivel implícito, el mensaje persuasivo produce actitudes más favorables, por lo que es una mejor oportunidad para influir positivamente en las actitudes conservacionistas.

Palabras clave: Actitudes implícitas; Mensajes de conservación; Prueba de Asociación Implícita; Actitudes de conservación; Mensajes persuasivos, Turismo y conservación.

* Business School, Tecnologico de Monterrey, Sonora, Mexico; <https://orcid.org/0000-0002-9902-6766>; E-mail alex.alvarado.dr@tec.mx

** Grupo Xcaret (Mexico); <https://orcid.org/0000-0001-9833-0945>; E-mail bolivares@xcaret.com

*** Universidad de Sonora (Mexico); <https://orcid.org/0000-0002-0788-6559>; E-mail irais.cabrera@unison.mx

Cite: Alvarado-Herrera, A.; Olivares, B. & Cabrera, I. (2024). Balance Between Tourism and Environment: Measuring Tourists' Implicit and Explicit Attitudes Toward Visual Conservation Messages. The Genuine Article. *Pasos. Revista de Turismo y Patrimonio Cultural*, 22(2), 231-242. <https://doi.org/10.25145/j.pasos.2024.22.015>

1. Introduction

There is no doubt about the negative impacts that tourism may cause over the environment, this has been documented for decades (Dolnicar, 2020). Due to the numerous negative effects that touristic activity causes to the natural resources, touristic bodies appeal to the use of conservation messages as a tool to minimize the affectation and to achieve the conservation of the natural heritage (Jacobs and Harms 2014), as a huge portion of the touristic moves are motivated by the contact with natural resources, making them one of the most important components of the tourism phenomenon (Benseny 2006; Zhensikbayeva et al. 2016). Owing to their low costs of both implementation and maintenance, long range and higher availability, visual messages are one of the better options for locations with a high touristic demand, where face to face communication is harder. Such is the case for sun and beach destinations, where the natural resources constantly attract a huge number of visitors. Thus, visual messages are widely utilized to try to have a positive influence in the attitude, and pro-social and pro-environmental behaviours of the visitors in pursuit of the conservationist agenda (Martin 1992; Roy Ballantyne and Hughes 2003; Munro et al. 2008; Perreault et al. 2015).

One of the recurrent threats faced by this kind of destinations is the contamination caused by incorrect disposal of garbage, even increased with the amount of single-use plastics due to COVID-19 pandemic (Arduoso et al. 2021; Patrício Salva et al. 2021). It is both a social and environmental problem (Perreault et al. 2015; Román Nuñez and Cuesta Moreno 2016) that affects the ecosystem, reduce the attractiveness of the landmark (Rodríguez-Rodríguez 2012; Williams et al. 2016) and creates infection outbreaks with their consequent health and security preoccupations (Schultz et al. 2013). The conservation of the environment is not only vital for the equilibrium of the ecosystems, but also to maintain the tourism flow and assurance their continuity (Sunlu 2003; Bal and Czaczyńska-Podolska 2019; Gedik and Mugan-Ertugral, 2019). Because of this, it is common that the management of these locations make use of the persuasive and prohibitive communications in the design of visual messages (Perreault et al. 2015); the former pretends a voluntary attitude change, while the latter try to do so through prohibition or coercion (Ajzen 1992; Murray et al. 1998).

In respect to the attitudes and according to the Theory of Planned Behaviour (TPB), these constitute an important part of the behavioural intent, that is to say, the more favourable an attitude is towards a specific behaviour, the intention of the subjects to behave in the way required by the message is likelier (Ajzen 1992). According to the literature, the attitudes can be classified as explicit, those resulting from a conscious introspection by the individual, and implicit, in which said introspection either does not occur or it is not recognized by the subject (Greenwald and Banaji 1995; Dovidio et al. 2003; Gawronski and Bodenhausen, 2006). In this vein, the Implicit Social Cognition theory establishes that a large part of social behaviour occurs implicitly and that there might be differences between the implicit and explicit attitudes towards the same attitude object (Greenwald et al. 2002; Briño et al. 2003, Wang et al. 2020).

As Román and Cuesta (2016) state, environmental communication and conservation can be considered as a relatively young area of study, as it is only in the 1990s when research start emerging regarding this theme. Furthermore, the study of conservation messages had been centrally focused in the analysis of those handed directly or face to face, greatly outnumbering the research referred to the effectivity of visual messages. Nevertheless, this area has begun blossoming as an important element that has to be considered (v.g. Perreault et al. 2015).

Additionally, the analysis of attitudes towards visual conservation messages is useful to improve the management of touristic spaces and to develop more effective tools to the conservation objective. However, in the study in tourism contexts, the predominant analysis is towards the explicit attitudes of travellers while the effectiveness of conservation visual messages at an implicit level is unknown, which makes it necessary to research this aspect. The study of attitudes contemplates mainly two theories as a framework, the Theory of Planned Behaviour (TPB), developed by Ajzen (1991) and the Elaboration Likelihood Model (ELM) of Petty and Cacioppo (1986). Derived from them emerges the so-called mixed approach, proposed by Ham et al. (2009). According to their postulates, the integrated use of both theories can increase the effectiveness of conservation messages in the tourism field (Ham et al. 2009).

Being a nascent field, the study of communication and environmental conservation must be enhanced with research centred in this theme, especially in Latin America (Román and Cuesta, 2016). This research attends to said knowledge void and it consists in the comparative analysis of the explicit and implicit attitudes of the sun and beach destination visitors towards the two types

of conservation visual messages, prohibitive and persuasive; designed under the mixed focus and centred around the correct disposal of garbage in the touristic coastal zone of two destinations in the Mexican Caribbean; through a quantitative focus and the usage of explicit data collection tools, as well as the implementation of the Implicit Association Test (IAT) as the implicit data collection tool.

2. Literature review

The visitors of a destination inevitably leave a footprint that affects the equilibrium of the ecosystems and the relationship between these and the local population; the impacts caused are multifaceted and they depend on a large number of factors (Newsome et al. 2004; Mancini et al. 2018, Dolnicar, 2020). Nevertheless, the generation and incorrect disposal of garbage is one of the most ubiquitous and visible results in tourism internationally (Rodríguez-Rodríguez 2012). Several international bodies like the World Tourism Organization (WTO), the Worldwide Wildlife Fund (WWF) and the Global Environment Facility (GEF) have remarked this problem, particularly prevalent in natural areas.

The number of visitors in nature destinations have been always considerable, nonetheless after the COVID-19 emergency the open and wide areas were the ones idealistic for tourists eager to travel again but in safer conditions (Spalding et al. 2021; Spenceley et al. 2021). So, the sun and beach destinations become a possibility of tourism recovery, but this imply that the negative impacts such as pollution should be addressing seriously; several agencies have tried to influence tourists to promote the conservation of resources (Jacobs and Harms 2014). One way to accomplish this objective has consisted in the placement of *in situ* visual messages to communicate with the visitors and attempt to have a positive influence in their conservationist attitudes (Winter et al. 1998; Ballantyne et al. 2009; Brown et al. 2010). Thus, administrators and directors responsible of the management of the destinations make use of the persuasive and prohibitive communication to deliver their visual messages to promote positive attitudes in the visitors (Petty and Briñol 2010).

Persuasive communication, as indicated by its name, utilizes messages that try to influence the attitude and behaviour through a reasoning process (Ajzen 1992). It attempts to persuade people into the adoption of some behaviour, belief or attitude desired by the message issuer, purely with rational or emotional appeals (Reardon 1991; Castro 2009). On the counterpart, prohibitive communication is based in rules and can have either a cautious or descriptive focus. The former opts to tell the visitors what they ought to do, while the latter tells visitors what others do, trying to influence in their behaviour in that manner. Furthermore, the messages can be developed as prescriptive; that is to say, those that attempt to promote a positive behaviour, or prohibitive; those attempting to deter negative behaviour (Winter 2006). This last kind clearly indicate the rules applied to specific situations (Keizer et al. 2011) and evoke the conditions that should be prevented (Murray et al. 1998).

Thereby, through either a persuasive or prohibited premise, the conservation messages that urge the visitor to perform the desired behaviour or abstaining from a negative one, respectively, are created (Winter et al. 2000). The result of previous research in the subject, conducted in different scopes and contexts, signal to persuasive messages being more effective than their prohibitive counterparts (Winter et al. 1998; Hansmann and Steimer 2015).

The conservation visual messages require the fulfilment of certain characteristics so that their effectivity may be considered, firstly it must be seen, read, and understood by its audience (Winter et al. 1998). They also have to clearly state the threat or negative impact that it attempts to minimize, and the necessary behaviour to offset the problem (Ballantyne and Hughes 2006). The effectivity of visual messages is determined by different variables such as: the place, the extent of the message, the importance attributed to it by the visitor, the presentation of the information or the language (Ajzen 1992; Winter 2006). A message is effective if it manages to influence the cognitive structure (Ajzen 1992) and is able to have a positive influence in the attitude, intention or behaviour (Ballantyne and Hughes 2003; Ballantyne et al. 2007; Powell and Ham 2008; Hughes et al. 2009; Brown et al. 2010; McNamara and Prideaux 2010; Ballantyne et al. 2011; Xu et al. 2013), in this specific case the behaviour towards the environment and its conservation (Roman and Cuesta 2016). Nevertheless, to achieve the change in attitude or behaviour the essential criteria is the acceptance of the content (Greenwald 1968).

Regarding the success of the message, Ham and their collaborators (2009) establish that a way to have a positive influence in the attitudes and behaviour arises from the junction of two of the

most used theories in the tourism and conservation contexts, the TPB (Ajzen 1991), of a cognitive focus and the ELM (Petty and Cacioppo 1986) of dual processing. In this way, they establish that the simultaneous use allows the caretakers of touristic destinations not only to elucidate the contents of the conservation message, but also establish the communication strategy that has the most effective results.

The TPB indicates that it is possible to influence the behavioural intent of the individuals through three kinds of beliefs: behavioural, normative and of control (Ajzen 1991). As, in accordance to the ELM, there are characteristics of the communication that have an influence in the effectivity of the message such as the source and its credibility, that work as mental shortcuts to the acceptance of the message throughout a peripheral route of the processing, in which the communication doesn't receive an exhaustive conscious elaboration by the subjects. Thus, the biggest challenge in the conservation messages is achieving that every behavioural, normative or of control beliefs are potent and relevant to the receiver by either processing routes (Hughes et al. 2009).

The attitudes are then viewed as the sum of the evaluations made towards different objects and can be positive, neutral or negative (Petty et al. 1997). For a long time it was considered that the attitudes operated in an explicit manner, that is to say that the evaluation -attitude- towards the object is the result of an introspection process or of cognitive elaboration by the individual, that executes a mental effort to examine the significant beliefs for them in relation to the evaluated object (Gawronski and Bodenhausen 2006). However, through theories such as the Implicit Social Cognition (Greenwald and Banaji 1995) it has been established that the attitude is: an association of an object with a determined valence (Briñol et al. 2003; Greenwald et al., 2002), and it has been proved that attitudes also operate implicitly (Greenwald and Banaji 1995). In this sense, the trails of past experiences have an influence in the judgement in a manner non introspectively recognized by the actor, mediate favourably or unfavourably in the feelings, thoughts or evaluations towards social objects (Greenwald and Banaji 1995).

With what has been exposed thus far as a base, and considering that: i) in the tourism context, the existence -or nonexistence- of differences in the effectivity of conservation visual messages, regarding their kind (persuasive versus prohibitive) or the type of attitudes the receptors have towards them (explicit versus implicit), has not been explored, ii) that consequently there is no empirical evidence in this regard, and iii) that the Null Hypothesis Statistical Test can be used to evaluate "the significance of a two-variable correlation or a difference between two groups" (Hagen, 1997:22) , the following hypotheses are stated:

- H1: There are no significant statistical differences between the implicit and explicit attitudes of the visitors of coastal touristic areas regarding persuasive conservation messages.
- H2: There are no significant statistical differences between the implicit and explicit attitudes of the visitors of coastal touristic areas regarding prohibitive conservation messages.
- H3: At an explicit level, there are no statistically significant differences between the attitude of the visitors of coastal touristic areas regarding persuasive conservation messages and their attitude regarding prohibitive conservation messages.
- H4: At an implicit level, there are no statistically significant differences between the attitude of the visitors of coastal touristic areas regarding persuasive conservation messages and their attitude regarding prohibitive conservation messages.

3. Materials and methods

With the general objective of comparatively analyse the explicit and implicit attitudes of the visitors of sun and beach destinations towards two types of conservation visual messages, both persuasive and prohibitive, empirical research of quantitative and cross-sectional nature was designed with the following stages:

4. Methodological stages

The first consisted in the election of the contents of the messages and their visual design, both for prohibitive and the persuasive ones, focused in the correct disposal of garbage in sun and beach areas. To this end, the postulates of the TPB and ELM were used, along with the colour, iconography, typography and size. Thus, after an exhaustive search, messages commonly used in the conservation of beaches, not exceeding 15 words were collected from the internet and they

were classified based on the three types of belief associated with each one according to the TPB, the results are shown in Table 1.

The second stage was conducted once the messages were selected. A graphic designer was commissioned to create visual messages, which were digitally montaged in touristic beach scenarios trying to present themselves as sustainable (Cabrera et al. 2014). As the credibility of the messages source has great importance according to the literature, the acronym CECP “Beach Conservation State Committee” (from the Spanish “Comité Estatal de Conservación de Playas”) was added, signaling the source and that due to its logo it adds credibility, this elements -acronym and logo- were created *ex profeso* for the development of the research, as to not include any real organization or governmental department.

Some examples of the images created for the research are presented in Figure 1

Table 1: Contents of the selected persuasive and prohibitive messages both in Spanish and English

Persuasive message	Associated type of belief	Prohibitive message
Aquí sólo puedes dejar tus huellas/ You can only leave your footprints	Control	Prohibido dejar basura/ Throwing garbage forbidden
Contaminar es un mal ejemplo para los demás/ Throwing garbage is a bad example for others	Normative	No contaminar/ Do not litter
La playa necesita tu cariño, no tu basura/ The beach needs your love not your garbage	Behavioural	Prohibido tirar basura/ Prohibited to litter
Más conciencia, menos basura/ More consciousness, less garbage	Behavioural	No tires basura/ Don't throw garbage
Tu basura no regresa sola/ Your garbage stays here forever	Control	No dejes basura en la playa/ Leave nothing in the beach
Tu basura mata vida silvestre/ Your litter kills the wildlife	Behavioural	No ensucies la playa/ Do not litter the beach

The third stage had the objective of measuring the explicit and implicit attitudes of the visitors of the selected sun and beach destinations towards the conservation visual messages, so an explicit and an implicit method of operationalization of the variables based on a non probabilistic sample.

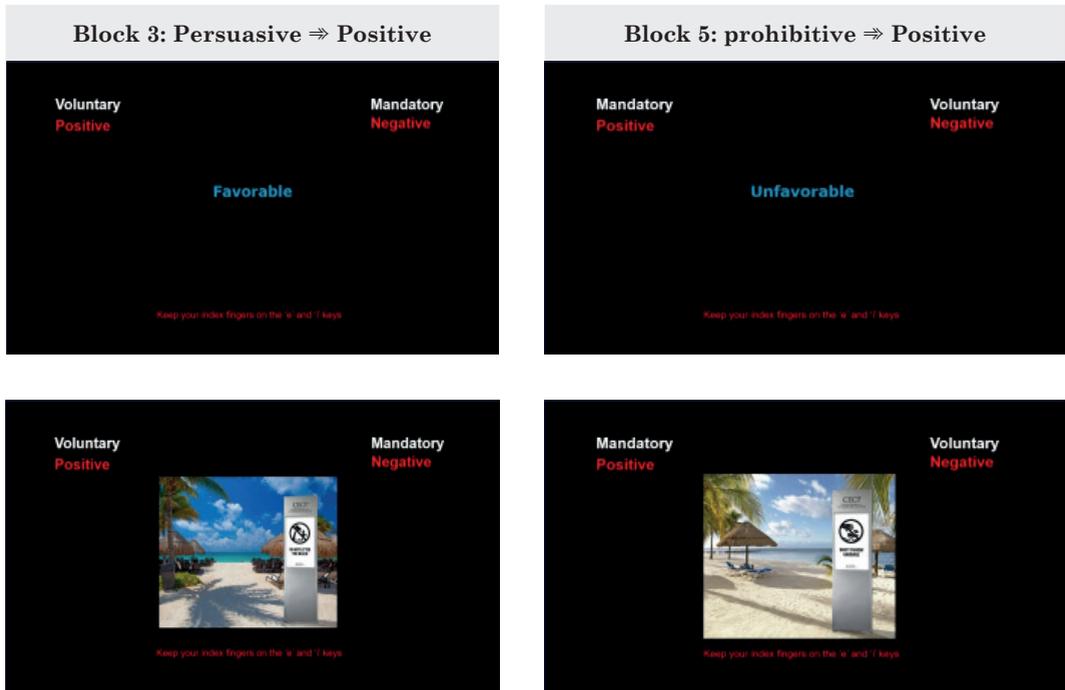
5. Information gathering tools.

The explicit measurement of the attitudes towards a persuasive and a prohibitive message was conducted with a structured questionnaire in which a differential semantic scale of 7 points of response allocation was applied regarding the following pairs of antonyms: favourable-unfavourable, positive-negative, useful-useless, important-unimportant, efficient- inefficient, strong-weak, convenient-inconvenient, all hailing from the “attitude towards the brand described by Bruner (2009), with an additional pair introduced by the authors: protector-destroyer.

Regarding implicit measuring, the IAT was applied to the same sample elements, with the freeware FreeIAT (Meade 2009), in which 12 images of persuasive and prohibitive conservation visual messages and the items used in the explicit measuring were used. The test consists of five blocks; being blocks 1,2 and 4 short training segments so that the users would become familiarized with the task at hand, while blocks 3 and 5 capture the useful data for the research as it is there where the concepts (persuasive or prohibitive) are associated with the attributes (bipolar adjectives) In block 3 positive and persuasive are associated, and in block 5 positive and prohibited. Examples of the corresponding screens in the blocks 3 and 5 of the IAT are displayed.

Figure 1: Examples of prohibitive and persuasive conservation visual messages developed for the research



Figure 2: Examples of the corresponding screens of blocks 3 and 5 of the IAT

Finally, the data was analysed through parametric tests and Student *t* for paired samples.

6. Population and sample

The geographic area of study is located in the Mexican Riviera Maya, and it consists of two sun and beach destinations with a high affluence of national and international tourists, namely, Puerto Morelos and Playa del Carmen, in the state of Quintana Roo. According to official numbers during 2022 more than 7,000,000 tourist visited the Riviera Maya (SEDETUR and Gobierno del Estado de Quintana Roo 2023). These destinations cause such displacements partly because of their natural resources and, independently of their beautiful landscapes, are of great importance for their ecosystems.

7. Procedures

The data was collected between the months of September 2016 to January 2017 from a total of 129 actual visitors of 12 different nationalities, all of whom participated of their own will and without receiving any kind of incentive, allowing the confidence level to be 95% with a margin of error of $\mp 6.9\%$. The application of the tools was conducted in two times, in the first one every participant answered the explicit questionnaire and afterwards the implicit association test was applied to the same individual as, according to Nosek and collaborators (2005), the order of application in the explicit and implicit tests doesn't have a significant influence in the results of the research.

8. Results and discussion

The scale utilized in the explicit measurement of the sample obtained a reliability of $\alpha=0.87$, widely overcoming the critical value of reference $\alpha'=0.70$, commonly accepted in the literature as the minimum

necessary to determine the reliability of a measurement of such kind (Cronbach 1951); while the data coming from the implicit measurement were subjected to normality tests with the Kolmogorov-Smirnov tests, as it has demonstrated superiority over the χ^2 method in this sense (Massey 1951), proving the normal distribution of the collected data and, consequently, that the analysis is appropriate. The explicit-implicit comparative analyses were performed using the standardized data.

9. Descriptive statistics

In the explicit measurement of the attitudes, the persuasive message gave a mean value of 6.10 point out of seven, indicating that the explicit attitudes of the subjects towards this type of messages is very favourable. Similarly, the corresponding analysis of the prohibitive messages give a mean value of 6.05/7, establishing that the questioned visitors in the field have an explicit attitude that is positive regarding prohibitive messages as well.

That said, the results of the implicit measurement towards the persuasive message was more positive than towards the prohibitive message as the mean accumulated response time was lower for the persuasive message (81390.19 ms) than the corresponding time regarding the prohibitive message (87725.81 ms). Likewise, the results of the Greenwald-Nosek-Banaji (GNB) punctuation (Greenwald et al., 2003) show that the amount of punctuation referred by the preference of the block 3 associations ($N=77$) is larger than the amount of equivalent but relative punctuation for the associations of block 5 ($n=52$) for this type of message.

10. Hypotheses contrast

Subsequently, the Student t tests for paired samples were conducted to establish if the differences between the subjects regarding the two types of message were or not statistically significant, giving the following results.

Firstly, the t test for the explicit and implicit attitudes towards the persuasive message established that, in the case of the conservation visual message, both types of attitudes of the coastal areas visitors are equally just as H_1 establishes, as in accordance with the results ($t=1.36$, $p>0.05$) the differences are not significant from a statistical standpoint. Thus H_1 cannot be rejected and is, consequently, accepted.

Regarding the attitudes of the subjects towards the prohibitive messages the results indicate that, on a statistical level ($t=.217$, $p>0.05$), there are not significant differences between the explicit and implicit attitudes towards this kind message, just as proposed by H_2 . Then, it can be sustained that the attitudes of the individuals regarding the prohibitive visual message were equally favourable, supporting the acceptance of the hypothesis.

With the first two hypotheses contrasted, the next step was the analysis of the differences between the attitudes of the subjects between the persuasive and prohibitive conservation visual messages to determine their statistical significance, arriving at the following results.

Even if there is a small arithmetic difference between the attitudes of the sun and beach visitors on an explicit level towards the persuasive (mean=6.10) and prohibitive (mean=6.05), conservation messages, a two tailed t test for the means of two paired samples ($t=.56$, $p>0.01$) allows the confirmation that, on an explicit level, while there are statistically significant differences between the subjects towards both message types for $p<0.05$, there aren't for the more rigorous critical value $p<0.01$, which was used as a reference due to the scarcity (or inexistence) of other studies in the area and, consequently, it is considered that the explicit attitudes towards conservation messages, both persuasive and prohibitive are equally positive, leading to the acceptance of H_3 .

The fact that the effectivity of both types of message resulted equally positive corroborates what is established in the TPB in the sense that a message directed towards a specific problematic based on beliefs - whether normative, behavioural or of control-, is capable of influencing in the desired manner in the declared attitude of the subjects. Nevertheless, it also reinforces the approach of the ELM as the inclusion of referring signals also results in effective messages in the creation of attitudes.

Finally, the t test of the paired samples corresponding to H_4 was conducted to clarify if there is a significant difference at an implicit level between the effectiveness of persuasive and prohibitive messages. The results allow us to confirm that the implicit attitudes of the tourists that visit sun and

beach destinations towards persuasive messages are significantly more favourable than their implicit attitudes towards prohibitive messages ($t=4.34, p<0.01$), leading to the rejection of H4.

This finding is particularly important as it demonstrates that, when there is no conscious introspection by the visitor, they evaluate the persuasive message more positively than their prohibitive counterparts, indicating that on the implicit level they are more effective; confirming the thesis by Barg and Morsella (2010), who support the argument that the unconscious process guide human behaviour and existed before the advent of consciousness and even today they generate behavioural tendencies.

11. Conclusion

Through the conducted tests it is possible to conclude that the conservation persuasive messages proved to be effective both on explicit and implicit levels, t tests demonstrate that there is no statistically significant difference between the attitudes expressed under and without the conscious control of the individual, with both scenarios reflecting a positive favourable attitude towards conservation. Regarding the prohibitive visual messages this showed high effectiveness both on the implicit and explicit levels. Both types of messages can produce favourable attitudes in the visitor, they are accepted and thus effective. With this it is possible to sustain that the messages elaborated under the mixed model (Hughes et al. 2009) have as a result effective messages on an explicit and implicit levels.

Nevertheless, even while they are effective in implicit and explicit levels, the prohibitive message is less effective when compared to the persuasive message on the implicit level, corroborating what was proposed by Hansmann and Steimer (2015) and, Winter et al (1998), who posit that persuasive messages are more effective than their prohibitive counterparts. In the same vein, it recognizes what was expressed by Greenwald and Banaji (1995) and Petty and Briñol (2006), who present that implicit measurement offer, mostly, information that is not always revealed by explicit means. Furthermore it is possible to conclude that a message elaborated under the mixed focus proposed by Ham et al (2009) results in a message effective on implicit and explicit levels, which is translated into a behavioural intent in pro of the conservation effort.

This is an important result that can be useful for managers and people in charge of sustainable practices in tourism destinations since creating a message following the mixed focus will result in better outcomes for the conservation's objectives.

The present research is not devoid of limitations, the main one residing in the complexity of the application of IAT to the visitors of sun and beach areas, as factors such as: high environmental brightness that made the visualization of the screen harder in some cases; the inherent distraction of conducting the tests in public areas and the time required to complete both tools (explicit and implicit). All of this makes it so that the generalization of the results should not be devoid of prudence.

This investigation points towards the establishment of future lines of research, among which the following stand out: the application of the tools in areas of study different from sun and beach destinations; the inclusion of other conservation goals such as the protection of flora and fauna species and determining the response time towards them; the utilization and comparison with other implicit methods; the comparison between visual messages with and without text and the use of colours; and finally, to analyse the effectivity of the same messages placed *in situ*.

In synthesis, the newly generated knowledge presented in this research can be exploited by those tasked with caring over the delicate equilibrium between tourism and environment to achieve a larger impact in the development of attitudes they need their tourists to exhibit, through the design and creation of persuasive, and even prohibitive, conservation visual messages capable of appealing both to the conscious and subconscious of the visitors.

References

- Ardusso, M., Forero-López, A. D., Buzzi, N. S., Spetter, C. V., & Fernández-Severini, M. D. 2021. COVID-19 pandemic repercussions on plastic and antiviral polymeric textile causing pollution on beaches and coasts of South America. *The Science of the total environment*, 763, 144365. <https://doi.org/10.1016/j.scitotenv.2020.144365>
- Ajzen, I. 1991. "The theory of planned behaviour", *Organizational Behavior and Human Decision Process*, Vol. 50 No. 2, pp. 179-211.

- Ajzen, I. 1992. "Persuasive Communication Theory in social Psychology: A Historical Perspective", in Manfredi, M. (Ed.), *Influencing Human Behavior*, Sagamore Publishing, Champaign, IL, pp. 1-27.
- Bal, W. and Czalczynska-Podolska, M. 2019. "Landscape and Cultural Aspects of the Coastal Area of Western Pomerania as Factors of Development of Maritime and Nautical Tourism. Identification and Definition of Conditions", in *IOP Conference Series: Materials Science and Engineering*, 2019.
- Ballantyne, R. and Hughes, K. 2003. "Measure Twice, Cut Once: Developing a Research-Based Interpretive Signs Checklist", *Australian Journal of Environmental Education* Vol. 19, pp. 15–25.
- Ballantyne, R. and Hughes, K. 2006. "Using front-end and formative evaluation to design and test persuasive bird feeding warning signs", *Tourism Management*, Vol. 27, pp. 35–246.
- Ballantyne, R., Packer, J. and Falk, J. 2011. "Visitors' learning for environmental sustainability: Testing short- and long-term impacts of wildlife tourism experiences using structural equation modelling", *Tourism Management*, Vol. 32, No. 6, pp. 1243–1252.
- Ballantyne, R., Packer, J. and Hughes, K. 2009. "Tourists' support for conservation messages and sustainable management practices in wildlife tourism experiences", *Tourism Management*, Vol. 30, No. 5, pp. 658–664.
- Ballantyne, R., Packer, J., Hughes, K. and Dierking, L. 2007. "Conservation learning in wildlife tourism settings: lessons from research in zoos and aquariums", *Environmental Education Research*, Vol. 13, No. 3, pp. 367–383.
- Bargh, J. and Morsella, E. 2010. "Unconscious behavioral guidance systems" in Agnew, C., Carlston, D., Graziano, W., Kelly, J. y Carlston, D. (Eds.), *Then a miracle occurs: Focusing on behavior in social psychological theory and research* Oxford University Press, USA, pp. 89–118.
- Briñol, P., Horcajo, J., Becerra, A. and Falces, C. 2003. "Equilibrio cognitivo implícito", *Psicothema*, Vol. 15, pp. 375–380.
- Briñol, P., Petty, R. and Wheeler, S. 2006. "Discrepancies between explicit and implicit self-concepts: Consequences for information processing", *Journal of Personality and Social Psychology*, Vol. 91, No.1, pp. 154–170.
- Brown, T., Ham, S. and Hughes, M. 2010. "Picking up litter: an application of theory-based communication to influence tourist behaviour in protected areas", *Journal of Sustainable Tourism*, Vol. 18, No. 7, pp. 879–900.
- Bruner, G. 2009. *A compilation of Multi-Item Measures for Consumer Behavior and Advertising Research*, GCBII Productions, Illinois.
- Cabrera, I., Alvarado-Herrera, A. and Cavazos-Arroyo, J. 2014. "Implicit and explicit attitudes toward sustainable and non-sustainable Tourism Destination Images", in Bigné, E. (Ed.), *Paradigm Shifts and Interactions*, Universitat de València, Spain.
- Castro, R. 2009. "Retos y oportunidades para una nueva educación ambiental" in Consejería de Medio Ambiente (Ed.), *VI Congreso Iberoamericano de Educación Ambiental*. Buenos Aires, Junta de Andalucía, Argentina.
- Cronbach, L. 1951. "Coefficient alpha and the internal structure of tests", *Psychometrika*, Vol. 16, No. 3, pp. 297–334.
- Dolnicar, S. 2020. Designing for more environmentally friendly tourism. *Annals of Tourism Research*, 84, 102933.
- Gawronski, B. and Bodenhausen, G. 2006. "Associative and propositional processes in evaluation: an integrative review of implicit and explicit attitude change", *Psychological Bulletin*, Vol. 132, No. 5, pp. 692–731.
- Gedik, S., & Mugan-Ertugral, S. 2019. The effects of marine tourism on water pollution. *Fresenius Environ. Bull*, 28, 863-866.
- Greenwald, A. 1968. "Cognitive learning, cognitive response to persuasion, and attitude change", *Psychological Foundations of Attitudes*, pp. 147–170.
- Greenwald, A., Banaji, M., Rudman, L., Farnham, S., Nosek, B. and Mellott, D. 2002. "A unified theory of implicit attitudes, stereotypes, self-esteem, and self-concept", *Psychological Review*, Vol. 109, No. 1, pp. 3–25.
- Greenwald, A. and Banaji, M. 1995. "Implicit social cognition: attitudes, self-esteem, and stereotypes", *Psychological Review*, Vol. 102, No. 1, pp. 4–27.
- Ham, S., Brown, T., Curtis, J., Weiler, B., Hughes, M. and Poll, M. 2009. *Promoting Persuasion in Protected Areas - A Guide For Managers Who Want To Use Strategic Communication to Influence Visitor Behaviour*, CRC for Sustainable Tourism Pty Ltd, Australia.

- Hansmann, R. and Steimer, N. 2015. "Linking an Integrative Behavior Model to Elements of Environmental Campaigns: An Analysis of Face-to-Face Communication and Posters against Littering", *Sustainability*, Vol. 7, No. 6, pp. 6937–6956.
- Hagen, R. L. 1997. "In Praise of the Null Hypothesis Statistical Test", *American Psychologist*, Vol. 52, No. 1, pp 15-24.
- Hughes, M., Ham, S. and Brown, T. 2009. "Influencing Park Visitor Behavior: A Belief-based Approach", *Journal of Park and Recreation Administration*, Vol. 27, No. 4, pp. 38–53.
- Jacobs, M. and Harms, M. 2014. "Influence of interpretation on conservation intentions of whale tourists", *Tourism Management*, Vol. 42, pp. 123–131.
- Keizer, K., Lindenberg, S. and Steg, L. 2011. "The reversal effect of prohibition signs", *Group Processes and Intergroup Relations*, Vol.14, No. 5, pp. 681–688.
- Mancini, M., Evans, M., Iha, K., Danelutti, C. and Galli, A. 2018. "Assessing the ecological footprint of ecotourism packages: A methodological proposition" *Resources*, Vol. 7, No. 2, pp.38.
- Massey, F. 1951. "The Kolmogorov-Smirnov Test for Goodness of Fit" *American Statistical Association*, Vol. 46, No. 253, pp. 68–78.
- McNamara, K. and Prideaux, B. 2010. "Reading, learning and enacting: interpretation at visitor sites in the Wet Tropics rainforest of Australia", *Environmental Education Research*, Vol.16, No. 2, pp. 173–188.
- Meade, A. 2009. "FreeIAT: An Open-Source Program to Administer the Implicit Association Test", *Applied Psychological Measurement*, Vol. 33, No. 8, pp. 643–643.
- Murray, L., Magurno, A., Glover, B. and Wogalter, M. 1998. "Prohibitive pictorials: Evaluations of different circle-slash negation symbols", *International Journal of Industrial Ergonomics*, Vol. 22, No. 6, pp. 473–482.
- Newsome, D., Moore, S. and Dowling, R. 2004. *Natural Area Tourism Ecology, Impacts and Management*, Channel View Publications, Toronto.
- Nosek, B., Greenwald, A. and Banaji, M. 2005. "Understanding and using the Implicit Association Test: II. Method variables and construct validity", *Personality and Social Psychology Bulletin*, Vol. 31, No.2, pp. 166–180.
- Patrício Silva, A. L., Prata, J. C., Walker, T. R., Duarte, A. C., Ouyang, W., Barcelò, D., & Rocha-Santos, T. 2021. Increased plastic pollution due to COVID-19 pandemic: Challenges and recommendations. *Chemical engineering journal* (Lausanne, Switzerland : 1996), 405, 126683. <https://doi.org/10.1016/j.cej.2020.126683>
- Perrault, E., Silk, K., Sheff, S., Ahn, J., Hoffman, A. and Totzkay, D. 2015. "Testing the Identifiable Victim Effect With Both Animal and Human Victims in Anti-Littering Messages", *Communication Research Reports*, Vol. 32, No. 4, pp. 294–303.
- Petty, R. and Briñol. P. 2010. "Attitude change", in *Advanced social psychology: The state of the science*, Baumeister, R. and Finkel, E. (Eds.), Oxford University Press, pp. 217–259.
- Petty, R., Wegener, D. and Fabrigar, L. (1997), "Attitude and Attitude Change", *Annual Review of Psychology*, Vol. 48, pp. 609–647.
- Petty, R. and Cacioppo, J. 1986. "The elaboration likelihood model of persuasion" in *Advances in experimental social psychology*, Berkowitz, L. (Ed.), Academic Press, New York.
- Powell, R. and Ham, S. 2008. "Can Ecotourism Interpretation Really Lead to Pro-Conservation Knowledge, Attitudes and Behaviour? Evidence from the Galapagos Islands", *Journal of Sustainable Tourism*, Vol. 16, No. 4, pp. 467.
- Readon, K. 1991. *Persuasion in practice*, Sage Publications, London.
- Rodríguez-Rodríguez, D. 2012. "Littering in protected areas: a conservation and management challenge – a case study from the Autonomous Region of Madrid, Spain", *Journal of Sustainable Tourism*, Vol. 20, No. 7, pp. 1011–1024.
- Román-Nuñez, Y. and Cuesta-Moreno, O. 2016. "Comunicación y conservación ambiental : avances y retos en Hispanoamérica", *Revista Latina de Comunicación Social*, Vol. 71, pp. 15–39.
- Schultz, P., Bator, R., Large, L., Bruni, C. and Tabanico, J. 2013. "Littering in Context: Personal and Environmental Predictors of Littering Behavior", *Environment and Behavior*, Vol. 45, No. 1, pp. 35–59.
- Spalding, M., Burke, L., & Fyall, A. 2021. Covid-19: Implications for nature and tourism. *Anatolia*, 32(1), 126-127.
- Spenceley, A., McCool, S., Newsome, D., Báez, A., Barborak, J. R., Blye, C. J., ... & Zschiegner, A. K. 2021. Tourism in protected and conserved areas amid the COVID-19 pandemic. *Parks*, (27), 103-118.
- SEDETUR (Secretaría de Turismo) 2023. *Indicadores Turísticos Enero-Abril 2022 en Quintana Roo*.

- Wang, S., Tong, Z., Li, Y., Yu, X., & Sun, Y. 2020. Implicit attitudes toward wildlife products. *Global Ecology and Conservation*, 24, e01358.
- Williams, A., Rangel-Buitrago, N., Anfuso, G., Cervantes, O. and Botero, C. 2016. "Litter impacts on scenery and tourism on the Colombian north Caribbean coast", *Tourism Management*, Vol. 55, pp. 209-224.
- Wilson, L. 2021. Personal communication, June 23, 2021). RE: Emerald Complaint of Plagiarism.
- Winter, P. 2006. "The impact of normative message types on off-trail hiking", *Journal of Interpretation Research*, Vol. 11, pp. 35–52.
- Winter, P., Sagarin, B., Rhoads, K., Barrett, D. and Cialdini, R. 2000. "Choosing to encourage or discourage: Perceived effectiveness of prescriptive versus proscriptive messages", *Environmental Management*, Vol. 26, No. 6, pp. 589–594.
- Winter, P., Cialdini, R., Bator, R., Rhoads, K. and Sagarin, B. 1998. "An analysis of normative messages in signs at recreation settings", *Journal of Interpretation Research*, Vol. 3, No. 1, pp. 39–47.
- Xu, H., Cui, Q., Ballantyne, R. and Packer, J. 2013. "Effective environmental interpretation at Chinese natural attractions: the need for an aesthetic approach", *Journal of Sustainable Tourism*, Vol. 21, No. 1, pp. 117–133.
- Zhensikbayeva, N., Saparov, K., Chlachula, J., Yegorina, A., Uruzbayeva, N. and Wendt, J. 2018. "Natural potential for tourism development in Southern Altai (Kazakhstan)", *GeoJournal of Tourism and Geosites*, Vol. 21, No. 1, pp. 200-212.

Note on Retraction of Earlier Pre-published Version by Emerald Group.

This article is published in PASOS Journal of Tourism and Cultural Heritage by its original authors: Alejandro Alvarado-Herrera, Brenda Olivares, and Irais Cabrera. It is brought to the reader's attention that an earlier version was pre-published, wrongfully attributed to a third person not associated with the original research in any way, by the International Journal of Sociology and Social Policy (Scopus Q1) from Emerald Group in May 2021. After the formal complaint by the original authors, Emerald Group investigated in accordance with the principles of the Committee on Publication Ethics (COPE). This investigation resulted in a public apology to the original authors, a disapproval statement directed towards the implicated third party, the formal retraction of the document (available at: <https://doi.org/10.1108/IJSSP-01-2020-0008>), and its release for submission to another journal of our choice. It is noteworthy that we informed the Editor-in-Chief of PASOS about the situation in advance of submitting the manuscript for their consideration. Additionally, the Head of Integrity, Rights, and Research Policies at Emerald Group expressed "we are more than happy to provide a letter explaining the situation for the authors to use when submitting the article elsewhere. The letter would confirm that there are no flaws to the research and that Emerald would obviously relinquish any copyright claim over the article" (L. Wilson, personnel communication, June 23rd, 2021).

Recibido: 12/07/2023
Reenviado: 17/12/2023
Aceptado: 30/12/2023
Sometido a evaluación por pares anónimos