



Are advertising campaigns for water conservation in Latin America persuasive? A mixed-method approach

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Abstract

The United Nations 2030 Agenda for Sustainable Development calls for an urgent reduction of global water footprint. Communication is crucial to respond to this call. However, most water conservation communication campaigns use the knowledge deficit model and overlook persuasive techniques. This paper presents a mixed-method approach consisting of exploratory sequential qualitative (content) analysis followed by a quantitative (cluster) analysis. This approach was used to explore the communication strategies of 95 advertisements promoting water conservation in Latin America. Four widely used persuasion frameworks were analyzed: (1) the elaboration likelihood model (ELM), (2) prospect theory (gains vs. losses), (3) the action framework (i.e., do more vs. take less), and (4) the temporal distance frame. Regarding persuasive characteristics (ELM model), most ads excluded behavioral beneficiaries (58%) and included explicit (60%) and active (52%) messages. Virtually all ads (87%) had a denotative message. Surprisingly, only 3% and 43% of ads used social norms and an authority source, respectively. Regarding the communication strategy, 44% of ads used a loss frame, and 59% focused on the current generation. Cluster analysis was used to classify the sample of ads into homogeneous groups. This analysis leads to a better understanding of the profile of campaigns promoting water conservation. Four advertising profiles were identified: (1) Persuade to act (29%), (2) Motivate without scaring (35%), (3) Raise awareness of water problems (19%), and (4) Warn of water problems (17%). The paper offers a discussion of the implications for social marketers and directions for future research on how to design effective communication campaigns.

Keywords Persuasion · Social marketing · Water · Advertising · Content analysis · Cluster analysis

1 Introduction

Water scarcity is one of the greatest environmental problems facing the planet (Sarabia-Sanchez et al., 2021). It affects more than 40% of the world's population (United Nations, 2018). The World Health Organization (WHO) has set guidelines for domestic water consumption to ensure public health and well-being. The WHO recommends a per capita daily consumption of approximately 100 L (Thomas et al., 2020). However, the current average daily consumption in Latin America is more than double that recommendation, at 240 L per person (Berdegué & Coble, 2018). This consumption reflects the need for substantial improvements in water usage patterns. Recognizing the urgent need to address water scarcity, the United Nations included water-related goals in its 2030 Agenda for Sustainable Development (United Nations, 2022). Sustainable Development Goal (SDG) 6 aims to ensure access to water and sanitation for all through universal access to drinking water, improved water quality, sustainable water resource management, and protection of water-related ecosystems. SDG 12 promotes sustainable consumption and production patterns through efficient use of natural resources such as water and the spreading of awareness about sustainable development and nature-friendly lifestyles. These goals highlight the need to make consumption patterns more sustainable in terms of the use of water by citizens and organizations.

Although the importance of addressing water scarcity has been widely acknowledged, achieving meaningful behavioral changes among individuals and organizations remains a challenge. Social marketing can play a key role in this regard (McKenzie-Mohr et al., 2012). Social marketing applies “commercial marketing technologies to the analysis, planning, execution, and evaluation of programs designed to influence the voluntary behavior of target audiences to improve their personal welfare and that of the society of which they are a part” (Andreasen, 1994, p. 110). Communication has a crucial role in social marketing, informing, educating, and persuading populations to shape attitudes and social behaviors (Navarro & Martín, 2013). However, many environmental communication campaigns rely on the knowledge deficit model and focus on information provision (Kidd et al., 2019). Although this communication frame is effective at increasing pro-environmental attitudes, it often fails to bring about behavioral change (Jackson, 2005; Liu et al., 2020). Moreover, such campaigns frequently lack integration with behavioral change theories, resulting in inconsistent campaign effectiveness over time (Krajewski et al., 2019; Manca et al., 2020; VanDyke & Tedesco, 2016). To overcome the limitations of the knowledge deficit model, alternative communication frames and strategies that go beyond information provision must be explored. Communication campaigns can use various persuasive frames, such as prospect theory (gains vs. losses; Kahneman & Tversky, 1984) and the activity frame (taking less vs. doing more; Davis, 1995). These persuasive frames can engage and motivate individuals to adopt water conservation behaviors. Analyzing the persuasion employed in environmental communication campaigns is crucial to understand how water conservation promotion has been conveyed and to identify areas for improvement (Villarino & Font, 2015).

The present study aims to advance the field of social marketing by examining the strategies used in environmental communication campaigns in Spanish-speaking Latin American countries. The first objective is to analyze several communication frames jointly to describe advertisements according to their persuasive message characteristics and message strategy. This twofold approach, coupled with the use of multiple communication frames, means that the present research offers more in-depth analysis of the message persuasion of pro-environmental advertising than previous related studies (e.g., VanDyke & Tedesco, 2016; Villarino & Font, 2015). For the sake of completeness, the second objective is to classify the sample of advertising campaigns into homogeneous groups to understand the profile of campaigns promoting water conservation behavior. This study contributes to knowledge of social marketing by examining various communication frames and persuasive message characteristics, offering a deeper understanding than previous studies. The study also focuses on Spanish-language advertising campaigns. This linguistic focus addresses a gap in the literature given that it primarily focuses on English-language ads. The research was conducted in Latin American countries. This feature is valuable because previous studies have mainly focused on developed countries. Furthermore, the use of a mixed-method approach, combining content analysis and quantitative cluster analysis, means that this study provides more comprehensive insights into environmental communication and persuasion. This approach enhances the qualitative findings and complements the research methods found in the literature. Finally, the paper offers recommendations on how to make social marketing environmental communication campaigns in Latin America more effective and compelling. Social marketers can adapt their campaigns to engage the target audience by strategically using persuasion tactics. They can also enhance the impact of their communications by using these recommendations. Therefore, this study provides a road map for social marketers to improve their communication strategies, helping them create deeper connections with the audience and achieve better results in environmental communication campaigns in Latin America.

2 Theoretical framework

According to Bolderdijk et al. (2013, p. 413), “the way pro-environmental behavior is advertised in environmental campaigns may influence how people feel about compliance.” Hence, advertising should promote pro-environmental attitudes and behaviors using persuasion strategies (Pol et al., 2001). Persuasive communication is defined as a form of communication capable of influencing other people by modifying their beliefs, values, or attitudes (Villarino & Font, 2015). Most environmental communication campaigns use the knowledge deficit model. Under this model, it is assumed that people will change their behavior simply by receiving information about the problem (Lindenfeld et al., 2012). However, there are questions over the persuasive power of this model (Kidd et al., 2019) compared to other communication frameworks (*frames*) that have proven more effective. Message framing means highlighting certain aspects of the message to make them more prominent in the communication process (Amatulli et al., 2019). This paper focuses on four widely

used frameworks in the consumer behavior change communication literature. The first is the elaboration likelihood model (ELM; Petty & Cacioppo, 1986), which analyzes the persuasion process of an advertisement. The other three frames analyze aspects (or message strategies) associated with the increase of advertising persuasion. Prospect theory places the focus on gains versus losses (Kahneman & Tversky, 1984), whereas activity framing emphasizes taking less versus doing more (Davis, 1995). The fourth frame is the temporal distance frame (Trope & Liberman, 2010). These strategies have been shown to be effective in motivating environmentally sustainable behavior change (Ahern et al., 2013; Santa & Drews, 2023).

2.1 The elaboration likelihood model (ELM)

The ELM framework explains the mechanism of persuasion. It is useful for understanding attitude formation and behavioral change (Manca et al., 2020). Persuasion occurs through a mental process of elaboration. It involves two processing routes: central and peripheral. Through central processing, receivers process information rationally and critically. This process is more likely to occur when the audience is informed and interested in the subject (Bator & Cialdini, 2000). In contrast, the peripheral route entails superficial processing, with receivers processing peripheral elements of the message. It occurs when the audience has no interest or knowledge of the topic. Accordingly, they focus on the attractiveness of the message. The central route is more likely to generate a more permanent impact than the peripheral route because individuals make a greater cognitive effort to evaluate the message (Manca et al., 2020). Studies of environmental communication campaigns have used the ELM to promote pro-environmental behaviors such as conservation behavior by zoo visitors (e.g., MacDonald et al., 2016), low-carbon footprint product choices at restaurants (Liu et al., 2022), donations to environmental organizations (e.g., Schwartz & Loewenstein, 2017), and sustainable mobility (e.g., Manca et al., 2020). Although the ELM is considered a robust model to explain persuasion, several researchers have criticized its omission of some variables that would influence the development of persuasion (Manca et al., 2020; Meyers-Levy & Malaviya, 1999). For example, Villarino and Font (2015) proposed an integrative framework of judgment formation and persuasion based on the ELM dual-process model. This framework suggests that message persuasiveness can be divided into four dimensions: (1) the message beneficiary, (2) the message structure, (3) content, and (4) authority. This theoretical framework of persuasion is used in the current study.

The message beneficiary dimension involves identifying who will benefit from the practice that is promoted. The beneficiary can be society or an individual. An individual member of a community may start forming an opinion and questioning whether conserving water might be beneficial (Abu Bakar et al., 2021). When the beneficiary is an individual, the message tends to be more persuasive (Stanford, 2014). However, the Jordan water awareness campaign emphasized community benefits rather than individual benefits to convince people that water-friendly behaviors were a national priority (Benedict & Hussein, 2019). The message structure dimension has three elements. The first element is whether the conclusions of the

messages are explicit, which would reduce the possibility of misinterpretation, or implicit, which means that the audience has to draw its own conclusions. Research has shown that explicit conclusions result in greater opinion change (Gong & Wang, 2022; Sawyer & Howard, 1991). For instance, recent research in the UK (Ajia, 2020) showed that the way information is provided (i.e., the use of explicit or implicit meanings) conditions people's water efficiency engagement. The second element is whether the message asks the audience to perform a specific action (active message) or not (passive message). Advertising with active messages tends to be more persuasive (O'Keefe, 2002). The third element is whether the message is connotative or denotative. Connotative messages are abstract messages with a contextual meaning, whereas denotative messages have a meaning that is shared by all and is easy to interpret. Because connotative messages are more abstract, they are less effective (Bettinghaus & Cody, 1994). The message content dimension involves analyzing four variables with persuasive effects: appeal, logic, social norms, and level of experience. The first variable refers to whether the message is appealing or attractive (similar to the ELM peripheral route). Second, logical messages focus on displaying information (facts or statistics) but are not persuasive enough to change behavior (Bettinghaus & Cody, 1994). Third, social norms are rules that are understood by the members of a group. These rules guide or limit social behavior according to the expectations of others (Miao & Wei, 2013). Research in social marketing suggests that social norms offer a powerful tool to change behaviors (Burchell et al., 2013; Grilli & Curtis, 2021; Tkaczynski et al., 2020). The last variable refers to the ability to experience sustainability. Experience-based messages are perceived as more personal, ensure perceived behavioral control, make actions seem achievable, and improve individual responses (Stanford, 2014). Furthermore, experience-based messages usually include explanations or examples of the desired behavior (Koop et al., 2019). If a behavior is perceived as easy to perform, then the message will be more persuasive. Finally, the last dimension is authority (Villarino & Font, 2015), which refers to the credibility of the information source. Credibility can be understood as an individual's perception of whether the content of a message is truthful, reliable, and accurate (Rodriguez-Sanchez & Sarabia-Sanchez, 2020). Therefore, appealing to authority increases the persuasiveness of a message due to its reputation or perceived credibility (Ahn et al., 2019; Metzger, 2007).

Studies of pro-environmental behaviors have examined messages' persuasiveness using the aforementioned persuasion dimensions (e.g., de Groot et al., 2021; Hanna et al., 2018; Koop et al., 2019). Several water studies have considered the beneficiary of actions (e.g., Fu et al., 2022; Parker et al., 2018). Fu et al. (2022) found that message strategies that appeal to individuals as beneficiaries are more effective at motivating people to use recycled water than messages that appeal to other beneficiaries. Parker et al. (2018) used persuasive messages about saving water that targeted a collective beneficiary. They observed no change in participants' inter-consumption behavior, even though they expressed collective beliefs. Finally, a systematic review of empirical studies of behavioral tactics for domestic water conservation (Koop et al., 2019) concluded that the use of emotions (ELM peripheral route) drives short-term behavioral changes. Moreover, when emotions are combined with a broad set of persuasion tools (e.g., providing information or feedback on water consumption,

using messages that appeal to social norms, or demonstrating the expertise of the source), changes in water consumption habits could be achieved in the long term. Finally, Ehret et al. (2021) argued that behavioral interventions may be particularly well suited to situations where demand reductions are required in the short term, such as in areas where drought conditions are rare, more expensive long-term solutions are not viable, and cost-effectiveness is an important consideration.

2.2 Message strategies

Message strategies focus on what to say in communication campaigns (Felton, 1994). In social marketing, message strategy has been conceptualized as “the essential belief(s) that a message will be designed to impart. (...). The development of the strategy is the intervening step between choosing a focus behavior and message creation” (Hornik & Woolf, 1999, p. 35). The analysis of message strategies in this research is based on three widely used conceptual frameworks in the environmental communication literature that have proven useful to increase persuasion: (1) prospect theory, which focuses on gains versus losses (Kahneman & Tversky, 1984), (2) activity framing, which focuses on taking less versus doing more (Davis, 1995), and (3) the temporal distance frame (Trope & Liberman, 2010).

The gains versus losses framework is based on prospect theory (Kahneman & Tversky, 1979). According to this theory, people make decisions based on whether they will result in gains or losses (Holland et al., 2019). Loss aversion is a negative bias that explains why individuals are more motivated to avoid the negative effects of certain actions than to achieve positive effects (Carfora & Catellani, 2021). Specifically, “when people consider potential gains, they tend to be risk-averse in their preferences but are risk-seeking in their preference when they consider potential losses” (Rothman et al., 2020, p. 4). Hence, receiving negative information has a greater psychological impact than receiving equally positive information (Grazziani et al., 2018). A recent systematic review by Homar and Cvelbar (2021) concluded that loss framing is more effective than gain framing in most of the environmental decisions analyzed in their study. In another systematic review of message framing in social marketing programs, Florence et al. (2022) found that the effectiveness of a single frame (gains or losses) in promoting sustainable behavior is inconsistent. However, when the two frames are combined (e.g., loss-gain frame with abstract-concrete frame), the results are more consistent in persuading people to act. Scholars have also used psychological constructs such as personal values, environmental concern, and emotions, which act as mediator or moderator variables, to explain the effectiveness of the positive (or negative) frame in promoting sustainable behavior (Florence et al., 2022). In the case of water conservation, studies based on the gain versus loss framework are scarce (Koop et al., 2019). For example, Baek and Yoon (2017) studied the gain versus loss framework combined with messages that employ negative emotions (guilt and shame). They found that guilt (or shame) combined with a gain message (losses) is more persuasive at changing people’s attitudes and intention to conserve water. In contrast, Holland et al. (2019) found no evidence of the influence of the gain frame on the intention to conserve water. However, they

showed that messages that refer to a benefit of conserving water generate greater credibility and concern about water scarcity.

Activity framing was introduced by Davis (1995). Under this frame, it is considered that a communication strategy can encourage two actions: taking less or doing more. Taking less refers to reducing non-environmentally friendly behaviors such as leaving the tap on and using plastics. In contrast, doing more refers to adopting pro-environmental behaviors and to making an active contribution by, for example, separating waste (Davis, 1995). The activity frame emphasizes the importance of message content in promoting behavior change. This idea is aligned with the principles of community-based social marketing (McKenzie-Mohr, 2011). According to this approach, messages that provide clear and direct steps for action are more likely to be understood and followed. However, there is no conclusive evidence regarding which of these two strategies (doing more or taking less) is more persuasive (Ahern et al., 2013). Bhatnagar and McKay-Nesbitt (2016) suggested that the doing-more frame would be more persuasive because such messages influence areas such as environmental concern, attitudes, and behavioral intention. Bortree et al. (2013) analyzed advertising in magazines and observed that the doing-more frame was used more frequently. Similar results were observed by Shin and Ki (2022) in a content analysis of environmental tweets. Ahern et al. (2013) conducted a longitudinal research, finding that green advertising focused on doing more has become more dominant than ads focused on taking less. However, these studies have only identified which of the two strategies has been used the most. They have not evaluated their effectiveness. There is a lack of research in this area. Academicians have called for content analysis to understand the current use of these communication frames (Shin & Ki, 2022).

Finally, the temporal distance frame is based on construal level theory (Trope & Liberman, 2010). According to this theory, the impact of communication messages may depend on the perceived psychological distance from the problem (Trope & Liberman, 2010). People, objects, or events can be perceived as psychologically close or distant. This subjective distance determines attitudes, emotions, and actions (Wang et al., 2021). People can cross distances (i.e., experience the past or future) through mental processes where they form abstract interpretations of distant objects (Trope & Liberman, 2010). Abstract information has a greater impact when the object is perceived to be far away, whereas specific messages attract more attention when the object is perceived to be near (Gong & Chu, 2022). Therefore, it is argued that perceived distance will influence people's perceptions and evaluations of the object. This distance can be social, temporal, or spatial. Social distance refers to whether the consequences of events would fall on *us*, meaning the current generation, or *them*, meaning future generations (Chang et al., 2015). Evidence suggests that communication campaigns in which the consequences fall on future generations are less persuasive because the problem and the solution seem distant and abstract (Ahern et al., 2013). By contrast, if a problem is perceived as close, facts are perceived as more real. Thus, the message will be more persuasive (Pristl et al., 2021). For instance, Zhuang et al. (2018) found that present-framed messages elicit a stronger attitude toward conserving water at home than future-framed messages. Likewise, Fu et al. (2022) reported that people will make a greater cognitive effort

to process information that refers to *us* (the present generation) rather than *them* (the future generation) in messages promoting recycled water consumption. Florence et al. (2022) concluded that a combination frame more consistently influences sustainable behavior than a single frame. For instance, Chang et al. (2015) showed that the combination of a loss frame and a present-generation message drives stronger attitudes toward pro-environmental behavior than either framework in isolation. Analogous evidence was found for the combination of the gain framework and references to future generations. However, Ngo et al. (2022) found that combining references to future generations and loss frames does not influence behavioral intentions toward climate change. This mixed evidence suggests that more research is needed to resolve these inconsistencies arising in empirical studies.

In summary, this study is based on a working framework of 12 dimensions that research in environmental communication has shown to be useful in explaining an individual's likelihood to behave pro-environmentally.

3 Method

In this study, the communication strategies of advertising campaigns were analyzed using a sequential mixed method. First, content analysis was performed. Content analysis is a “detailed and systematic examination of the contents of a particular body of material for the purpose of identifying patterns, themes, or biases” (Leedy & Ormrod, 2015, p. 102). This categorical and descriptive method is still one of the most widely used techniques in advertising research (Stafford et al., 2022). It has been used to study persuasive messages to promote pro-environmental behaviors (e.g., Krajewski et al., 2019; Segev et al., 2016; Shin & Ki, 2022). Second, cluster analysis was performed to classify the campaigns into homogeneous groups and thus enrich the previous qualitative findings.

3.1 Sample

This study examined advertising campaigns in Latin American countries where Spanish is the native language. A YouTube search was performed. YouTube was used because it has remained the most popular online video-sharing platform since its launch in 2005. It offers an extensive selection of online audiovisual material (Krajewski et al., 2019). YouTube is often used by different types of organizations to disseminate their messages (Kononova & Yuan, 2015). It offers wide reach and coverage at a relatively low cost (Meek, 2012).

The selection of advertising campaigns was systematic. The initial search on YouTube used the following keywords in Spanish: saving water (*ahorro agua*) OR taking care with water (*cuidar agua*) OR water crisis (*crisis agua*) OR water conservation (*conservar agua*) OR water scarcity (*escasez de agua*) OR water pollution (*contaminación de agua*) OR water quality (*calidad del agua*). The search terms were similar to those used in previous studies of water conservation (Addo et al., 2019; Koop et al., 2019; Krajewski et al., 2019). The initial search returned 643

campaigns. The primary inclusion criteria were (1) videos published in the last five years (2018–2022), (2) videos in Spanish (excluding those from Spain), (3) videos with a duration of less than 4 min, and (4) videos made by public, private, or civil organizations (Krajewski et al., 2019). This stage of selection returned 124 campaigns. The exclusion criteria were (1) duplicated and non-available videos, (2) videos with poor production quality, (3) school and individual projects, (4) educational videos, (5) extracts from reports and press interviews, (6) commercials for television programs, (7) content referring to other environmental problems, and (8) bottled water brand advertisements. The final sample consisted of 95 campaigns. This sample size is similar to or larger than those in previous studies based on YouTube videos (e.g., İnci et al., 2017; Krajewski et al., 2019; Waters & Jones, 2011). Figure 1 provides details on the selection process. The average duration of the ads was 1 min and 18 s (minimum of 15 s; maximum of 3 min and 55 s). The distribution of campaigns by country was as follows: Argentina 22.1%, Mexico 17.9%, Chile 13.7%, Peru 13.7%, Colombia 10.5%, no specific country 6.3%, Panama 6.3%, Uruguay 3.2%, El Salvador 2.1%, Guatemala 2.1%, Cuba 1.1%, and Ecuador 1.1%.

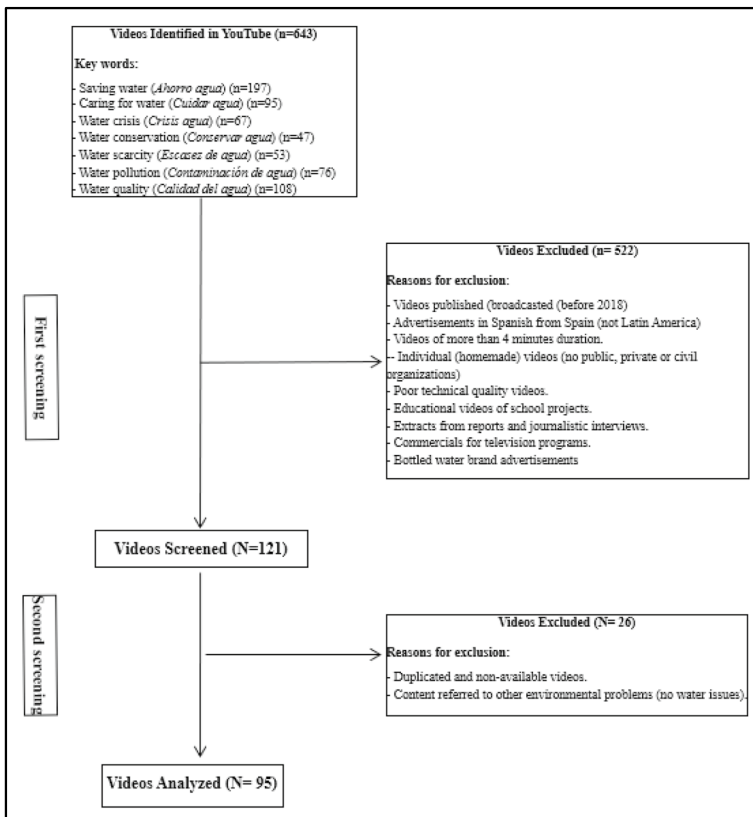


Fig. 1 Flowchart of the data collection process

3.2 Data preparation and transcription process

All campaigns were viewed, transcribed, and coded using the qualitative research software ATLAS.ti version 7 (ATLAS.ti, 2015). Two trained independent researchers viewed the 95 ads and transcribed them in ATLAS.ti. Then, both researchers worked together to clarify differences in the transcription process. The researchers independently coded the 95 transcripts based on the coding framework explained in the following section. Next, intercoder reliability was assessed to ensure high consistency between researchers because it is a key step in qualitative text analysis (O'Connor & Joffe, 2020). Initially, there were some discrepancies between the coders. Hence, the interpretation of the codebook was revised to achieve a greater degree of consensus when coding the campaigns. Once the independent coders had revised their coding and the level of agreement between the researchers, the inter-rater reliability (IRR) was around 93% (calculated with IBM-SPSS version 26).

3.3 Coding process and codebook

The coding approach was predominantly deductive because several conceptual frameworks were defined in advance of the coding activity under a concept-driven approach (Schreier, 2012). For the purposes of this study, the coding frame included several dimensions related to persuasion and communication strategies. Four concepts regarding *persuasion strategies* were included in the coding frame. (1) The beneficiary of the action of the campaign was coded as individual, society, or no beneficiary (Villarino & Font, 2015). (2) The message structure had three sub-dimensions: (2.1) message statement, differentiating between explicit and implicit, (2.2) message action, differentiating between active, passive, and no action (O'Keefe, 2002), and (2.3) message meaning, differentiating between connotative and denotative (Villarino & Font, 2015). (3) Message content, as per the ELM, was coded as an emotional message if it appealed to emotions, a logical message if it appealed to objective information, a social norm message if it appealed to social norms, or an experiential message if it appealed to perceived control. (4) Authority was coded as present if the campaign included elements that highlighted the reputation, experience, and credibility of the source.

Four concepts concerning the *communication strategy of the message* were included in the coding frame. (1) In the gain versus loss frame, positive aspects regarding behavior were coded as the gain frame, whereas negative effects of behavior were coded as the loss frame (Chang et al., 2015). (2) Temporal distance was coded as the current generation, future generations, or no reference, depending on whether the impact of the behavior was current or future (Chang et al., 2015). (3) Depending on the required action, the ad was coded as doing more when it required the audience to perform further actions and as taking less when it required the audience to, for example, use less water (Ahern et al., 2013). The final codebook was based on the previously described framework and concepts. The codes were dummy variables taking the values 1 in the presence of the attribute and 0 in its absence.

4 Results

Several analyses were performed to meet the study aims. First, univariate descriptive analysis was performed using the qualitative information coded in ATLAS.ti. The aim of this analysis was to understand the prevalence of each advertising characteristic. Second, co-occurrence analysis was performed to complement the descriptive analysis. Its aim was to find relationships between the features of the persuasion dimension and the communication strategy of the messages. Third, cluster analysis was performed to study the underlying profiles of the different communication campaigns included in the study.

4.1 Univariate descriptive analysis

Table 1 summarizes the data on the first dimension of the study, namely the persuasive characteristics of the advertisements.

Regarding the beneficiary of the action (first dimension), 58% of the campaigns had no explicit beneficiary. In 36% of the campaigns, society was the primary beneficiary. Only 6% of the campaigns had individuals as their beneficiaries. For the second dimension (message structure), 60% of the campaigns had explicit message statements, whereas 40% had implicit message statements. In terms of the message action, most of the campaigns (52%) were centered on active actions, with around a third focusing on passive actions (34%), and 14% not referring to any action. Notably, a high percentage of advertising campaigns (the 48% consisting of passive, and no-action campaigns) merely sought to educate the audience to generate future behavioral changes. Lastly, regarding message meaning, most of the campaigns included

Table 1 Persuasive characteristics of the advertisements ($n=95$)

Dimension	Variable	Code	Frequency (% of campaigns)
Beneficiary of the action	Beneficiary of the action	Individual	6%
		Society	36%
		No beneficiary	58%
Message structure	Message statement	Explicit	60%
		Implicit	40%
	Message action	Active	52%
		Passive	34%
		No action	14%
	Message meaning	Connotative	13%
Denotative		87%	
Message content	Emotional message		73%
	Logical message		88%
	Social norm message		3%
	Experiential message		55%
Authority	Authority		43%

denotative messages (87%), with 13% including connotative messages. The message content dimension (third dimension) referred to the persuasive ability of the campaign. Most of the campaign messages combined both emotional and logical elements (73% and 88%, respectively). In total, 55% of the campaigns sought to reduce the cognitive effort of the audience by appealing to perceived control (experience). Unexpectedly, only 3% of the campaigns based their messages on social norms. Lastly, regarding authority (fourth dimension), around 43% of the campaigns included elements to highlight the reputation, experience, and credibility of the source.

Table 2 shows the dimensions, codes, and relative prevalence of the different message communication strategies. Regarding the first dimension, 25% of the campaigns appealed to gains, and only 44% of the campaigns based their message on losses. Regarding temporal distance (second dimension), two-thirds of the campaigns used temporal distance as a communication strategy. Around 59% explicitly cited the current generation as a beneficiary of the behavioral change (or as a victim of the problem). Only 7% linked the problem or solution to future generations. Finally, there seemed to be a balance between the advertisements that required doing more to save water (37%) and those that promoted taking less (40%). In contrast, 23% of the campaigns requested no active participation from the audience regarding the problem.

4.2 Co-occurrence analysis

Following analysis of the individual campaign features, one way to identify the potential relationship between the two sets of previously analyzed factors was co-occurrence analysis (Scharp, 2021). This approach enabled exploration of possible underlying patterns in advertising in terms of persuasive features and communication strategies. Table 3 shows the co-occurrence matrix of the features under study to identify patterns in the analyzed communication frameworks. To facilitate the interpretation of results, only categories with a co-occurrence of more than 2% are shown, following the procedure adopted by Wacker and Groth (2020).

The first dimension was the beneficiary of the action. Most campaigns using the gain–loss frame considered society the primary beneficiary. There was a reasonable balance between a gain approach (3.4%) and a loss approach (2.9%). In contrast,

Table 2 Communication strategy of the message ($n=95$)

Dimension/variable	Code	Frequency (% of campaigns)
Gain–loss frame	Gain	25%
	Loss	44%
	No reference to gains or losses	31%
Temporal distance	Current generation	59%
	Future generations	7%
	No reference to generation	34%
Required action	Doing more	37%
	Taking less	40%
	No reference to the action	23%

Table 3 Co-occurrence matrix (relative value in %)

Variable	Code	Gain-loss frame			Temporal distance			Required action		
		Gain	Loss		Current generation	Future generations	No reference to generation	Doing more	Taking less	No reference to the action
Beneficiary of the action	Individual	-	-	-	-	-	-	-	-	-
	Society	3.4%	2.9%	5.7%	-	-	-	2.9%	2.7%	2.0%
Message statement	No beneficiary	-	6.1%	6.6%	-	-	5.2%	4.8%	5.0%	2.7%
	Explicit	4.1%	4.5%	8.6%	-	-	3.6%	3.6%	7.9%	-
	Implicit	-	5.0%	4.1%	-	-	3.6%	4.3%	-	3.6%
Message action	Active	3.4%	4.1%	8.4%	-	-	2.5%	2.9%	6.8%	-
	Passive	-	4.5%	3.9%	-	-	2.7%	4.1%	-	-
	No action	-	-	-	-	-	-	-	-	2.3%
Message meaning	Conative	-	-	-	-	-	-	-	-	-
	Denotative	5.0%	7.9%	11.6%	-	-	5.7%	6.3%	8.6%	3.9%
Emotional message	Emotional message	5.0%	7.0%	10.2%	-	-	3.9%	6.3%	5.9%	3.4%
Logical message	Logical message	5.2%	8.6%	11.6%	-	-	5.9%	7.7%	7.5%	3.9%
Social norm message	Social norm message	-	-	-	-	-	-	-	-	-
Experiential message	Experiential message	2.9%	5.2%	8.6%	-	-	2.5%	3.6%	7.0%	-
Authority	Authority	-	3.6%	5.2%	-	-	3.4%	2.5%	4.1%	2.7%

For ease of interpretation, only co-occurrences of more than 2% are shown

6.1% of those using a loss approach did not explicitly target any beneficiary. In terms of temporal distance, the campaigns seemed to focus on the current generation rather than future generations. Within the current generation, the most prevalent targets were society (5.7%) or no beneficiary (6.6%). A similar pattern was observed for required action because individual beneficiaries were also irrelevant. Between the other two groups (society and no beneficiary) there seemed to be a balance between doing more and taking fewer actions. Concerning the second dimension (message structure) the loss approach (9.5%) prevailed over the gain approach (4.1%). More than twice as many had an explicit message (8.6%), mainly focusing on the current generation. In terms of required action, messages about taking less were more common when the message was explicit (7.9%). In contrast, messages about doing more were as common among explicit (3.6%) and implicit (4.3%) messages. Regarding message action, the gain approach was associated with active messages (3.4%). In contrast, the loss approach was equally associated with active (4.1%) and passive actions (4.5%). Likewise, for the previous dimension, future generations were not usually mentioned. Active messages were more prevalent (8.4%) than passive ones (3.9%) among the current generation. Actions referring to taking less were more strongly associated with active messages (6.8%). In contrast, actions referring to doing more were more strongly related to passive messages (4.1%). In terms of message meaning, denotative messages were most prevalent for both losses (7.9%) and gains (5.0%). They were mainly associated with the current generation (11.6%) and required actions both to take less (8.6%) and to do more (6.3%). Concerning the third dimension (message content), social norm messages were the least prevalent. Overall, the loss approach was the most common for the rest of the messages: emotional (7%), logical (8.6%), and experiential (5.2%). Once again, most campaigns centered on current generations, with a focus on logical (11.6%), emotional (10.2%), and experiential messages (8.6%). Experiential messages promoted more actions to take less (7.0%). In contrast, emotional and logical messages promoted actions to do more and take less almost equally. Lastly, regarding the authority dimension, campaigns including elements such as reputation, experience, and credibility of the source were associated with the loss perspective (3.6%). They were focused on the current generation (5.2%) and were more strongly associated with actions to take less (4.1%) than actions to do more (2.5%).

4.3 Cluster analysis

Lastly, cluster analysis was performed to classify the advertising campaigns into homogeneous groups. This classification provides a better understanding of the profile of campaigns promoting water conservation. The two-step procedure proposed by Hair et al. (2010) was followed. This procedure is widely used in the pro-environmental literature (e.g., Cajiao et al., 2022; Mohamed et al., 2016). The clustering variables were several of the previously defined dimensions. These variables were chosen to offer conceptual support for the cluster and to overcome a common criticism of these techniques (Hair et al., 2010). Specifically, the clustering variables were advertising duration, country, beneficiary, message content, authority,

gain–loss, required action, and temporal distance. All except advertising duration and country were non-metric binary variables. Therefore, two-step cluster analysis in IBM-SPSS statistics (v. 26) was implemented using the log-likelihood as a distance measure. This approach echoed that of previous research using continuous and discrete variables (e.g., Gan & Koh, 2006; Okazaki, 2006). Four clusters were automatically selected based on the Bayesian information criterium (BIC).

Table 4 shows the features of the four underlying advertising profiles in terms of duration, country of origin, and prevalence of advertising characteristics. The last two columns of Table 4 present the statistical differences between the four profiles together. Parametric analysis was conducted using ANOVA and Welch's t-test for continuous variables. Non-parametric analysis was conducted using the Kruskal–Wallis H test and the Jonckheere–Terpstra test for discrete variables. Overall, both the parametric and the non-parametric tests revealed statistical differences between all four campaign profiles, except between “social norm message” and “future generations”. Accordingly, the clustering procedure classifies the campaigns into differentiated groups.

The first cluster (29% of campaigns) is labeled *Persuade to act*. The main message can be summarized as follows: “Do these actions to save water. If you do them, you will contribute to solving the water problem. Otherwise, you will aggravate it.” The average duration is 68.5 s. The most represented countries are Mexico (21%), Peru (17.9%), and Chile (17.9%). Regarding persuasion strategies, these campaigns do not target any specific beneficiary. Their message is explicit and uses active actions. The meaning of the message is denotative. They mix logical and emotional messages. Finally, they make some use of authority. In terms of communication strategies, they focus on current generations and promote taking-less behaviors related to water conservation.

The second cluster (35% of campaigns) is labeled *Motivate without scaring*. The main message can be summarized as follows: “I will show you how easy it is to take care when using water. You must do these actions for the good of society.” On average, they are the longest ads (87.18 s). The most represented countries are Peru (24%), Mexico (18%), Chile (15%), and Colombia (12%). Regarding persuasion strategies, these campaigns mainly target society as the beneficiary. Their message is explicit. Their meaning is denotative. Finally, they mix logical, emotional, and experiential messages. In terms of communication strategies, they use a gain approach and focus on current generations.

The third cluster (19% of campaigns) is labeled *Raise awareness about water problems*. The main message can be summarized as follows: “Let's take care with water. Let's become aware of its importance.” On average, they are the shortest ads (53.5 s). The most represented countries are Argentina (72%) and Colombia (11%). Regarding persuasion strategies, they have no explicit beneficiary. Their message is implicit and denotative. They do not promote any specific action. They mix logical and emotional messages. Finally, they use authority in their message. In terms of communication strategies, they do not explicitly refer to any generation or call for any specific action in terms of water conservation.

The fourth cluster (17% of campaigns) is labeled *Warn of water problems*. The main message can be summarized as follows: “Water is going to run out. You must

Table 4 Cluster composition, characterization, and labeling

	Profile 1	Profile 2	Profile 3	Profile 4	Analysis of differences
Size	<i>n</i> = 28 (29%)	<i>n</i> = 33 (35%)	<i>n</i> = 18 (19%)	<i>n</i> = 16 (17%)	
Label	Persuade to act	Motivate without scaring	Raise awareness about water problems	Warn of water problems	F (ANOVA) Welch
Duration (average)	68.5 s	87.18 s	53.5 s	59.31 s	2.36* 45.11*
Country (most prevalent)	Mexico (21%), Peru (17.9%), and Chile (17.9%)	Peru (24%), Mexico (18%), Chile (15%), Colombia (12%)	Argentina (72%), Colombia (11%)	Panama (31%), Mexico (25%), Chile (19%)	
Persuasive strategies	Percentage	Percentage	Percentage	Percentage	H Kruskal–Wallis
Beneficiary of the action	Individual	0%	11%	0%	6.94*
	Society	0%	0%	6%	89.96**
Message structure	No beneficiary	86%	89%	94%	69.06**
	Message statement	96%	64%	28%	31.28**
Message structure	Message action	4%	72%	25%	946.0**
	Message action	21%	36%	72%	31.28**
Message structure	Message action	79%	33%	81%	20.17**
	Message action	0%	61%	22%	22.13**
Message structure	Message action	0%	18%	39%	17.04**
	Message action	0%	9%	33%	11.83**
Message structure	Message action	100%	91%	67%	11.83**
	Message action	100%	91%	67%	1398.5**
					Jonckheere–Terpstra
					1554.0
					1583.5
					1791.5
					946.0**
					2340.0**
					2069.5**
					1054.5**
					1782.5
					1887.5**
					1398.5**

Table 4 (continued)

Size	Profile 1 <i>n</i> = 28 (29%)	Profile 2 <i>n</i> = 33 (35%)	Profile 3 <i>n</i> = 18 (19%)	Profile 4 <i>n</i> = 16 (17%)	Analysis of differences
Label	Persuade to act	Motivate without scaring	Raise awareness about water problems	Warn of water problems	F (ANOVA) Welch
Message content					
	Emotional message	79%	50%	100%	12.15** 1796.5
	Logical message	91%	67%	100%	11.04** 1584.0
	Social norm message	0%	0%	6%	2.88 1676.5
	Experiential message	79%	11%	44%	21.85** 1164.5**
Authority	57%	42%	61%	0%	16.57** 1312.5**
Communication (Message) strategies	Percentage	Percentage	Percentage	Percentage	H Kruskal–Wallis
Gain–loss frame	Gain 29%	45%	0%	6%	16.26** 1369.5**
	Loss 25%	36%	44%	94%	20.71** 2145.0**
Temporal distance	Current generation 68%	73%	0%	81%	32.29** 1448.0
	Future generations 0%	12%	6%	13%	3.98 1732.5
	No reference to generation 32%	15%	94%	6%	39.82** 1748.5

Table 4 (continued)

Size	Profile 1 <i>n</i> = 28 (29%)	Profile 2 <i>n</i> = 33 (35%)	Profile 3 <i>n</i> = 18 (19%)	Profile 4 <i>n</i> = 16 (17%)	Analysis of differences	
					F (ANOVA)	Welch
Label	Persuade to act	Motivate without scaring	Raise awareness about water problems	Warn of water problems		
Required action	Doing more 4%	36%	44%	88%	31.09**	23,065**
	Taking less 89%	36%	6%	0%	47.58**	792.0**
	No reference to the action 7%	27%	50%	13%	12.53**	1830.5**

* $p < 0.10$; ** $p < 0.05$

The text in bold indicates the values of the most prevalent feature in each segment

do something to take care with water.” The average duration is 59.31 s. The most represented countries are Panama (31%), Mexico (25%), and Chile (19%). Regarding persuasion strategies, these campaigns have no explicit beneficiary. The actions are passive. The message is implicit and denotative. They also mix logical and emotional messages. In terms of communication strategies, they use the loss approach, focus on the current generation, and promote actions to do more about water conservation.

5 Discussion and conclusions

To elicit behavioral changes in citizens to help meet the environmental Sustainable Development Goals (SDGs; United Nations, 2022), policymakers require a deep knowledge of the most effective strategies. From the point of view of designing strategies for pro-environmental behavior change, communication is a key tool to inform, educate, and persuade a target population to modify its behaviors by influencing attitudes, values, and social behaviors (VanDyke & Tedesco, 2016). The current study examined communication strategies in water conservation advertisements in Latin America to determine whether they are aligned with the recommendations found in the literature on creating persuasive strategies.

Regarding persuasion strategies, most campaigns do not explicitly name any beneficiary of the promoted behavior. These ads thus miss an opportunity to persuade their audience because, if saving water involves sacrifices for citizens, highlighting who will benefit from the proposed pro-environmental behavior could offer a powerful incentive (Hardeman et al., 2017). Ads that indicate a specific beneficiary usually target companies, contrary to what is suggested in the literature (Villarino & Font, 2015). The campaigns may appeal to social benefits because the target audience belongs to the Latin American culture, where collective achievements and interdependence between groups are valued (Hardeman et al., 2017). In contrast, in individualistic cultures, individuals are perceived as more important (Hofstede, 2001). There is evidence that collectivism and individualism are antecedents of care for the environment (Palacios et al., 2015). The fact that previous research indicates that choosing individuals as the beneficiary is more persuasive may be because most research was conducted in countries with individualistic cultures (Agarwal & Kumar, 2020). In addition, campaigns that depict individuals as more responsible for care for the environment than society as a whole may elicit “eco-fatigue and lack of responsibility” (Pol et al., 2001, p. 112).

Regarding message structure, most of the analyzed messages are explicit. This result is in line with those of Villarino and Font (2015) in the case of sustainability messages from award-winning tourism businesses. However, it contradicts the results of Hardeman et al. (2017), who studied sustainability messages on tour operator websites. Implicit messages are effective when the audience is familiar with the topic because it is assumed that they will draw their own conclusions from the information provided. In contrast, explicit messages include arguments and conclusions, so the message is less likely to be misinterpreted (O’Keefe, 2002). More than half of the ads use active messages that clearly and simply tell the audience what behavior to perform. The literature also recommends using

active messages because they are more persuasive than passive messages (O’Keefe, 2002). Passive messages are less persuasive because they do not prescribe any specific action. An example of a passive message would be “Take care with water. Don’t waste it.” This type of message does not tell the audience what to do with this information. Therefore, it is less effective at motivating behavior (Villarino & Font, 2015). Another interesting result is that most ads deliver denotative messages. A denotative message has a meaning that is shared by all, that is easy to interpret, and that provides objective information (Hardeman et al., 2017). Instead, a connotative message is more intuitive and implicit and contains specific cultural knowledge (Wolf & Schröder, 2019). Connotative messages are persuasive only if the audience shares the set of meanings that are conveyed. Otherwise, such messages lack meaning and will be ignored (Culloty et al., 2019). Although most ads use persuasive strategies in the structure of their messages, the prevalence is low, especially in the case of action messages.

Regarding message content, the advertisements mainly use logical and emotional approaches to target the peripheral and central routes of the ELM (Bator & Cialdini, 2000). Studies have shown the effectiveness of water conservation messages using these persuasive techniques (e.g., Maduku, 2020). Contrary to expectations, only 3% of the messages use social norms. Similar results have been found in other studies. For instance, Hardeman et al. (2017) showed that using social norms as a discursive resource is very uncommon. Finally, unlike other relevant studies (Hardeman et al., 2017; Villarino & Font, 2015), the results of the present research indicate that more than half of the ads appeal to experience. This tool is effective because it means that the requested behavior is perceived to be easy to perform (Andrews et al., 2022). Concerning the communication strategy, the use of a *loss* frame is the predominant frame in the sample, with messages specifying the negative consequences of not taking care with water. This framework is persuasive because people are more motivated to avoid negative consequences than to pursue positive outcomes (Bertolotti et al., 2021). Negative information has a greater impact on people’s mental judgments because of negativity bias (Grazzini et al., 2018). However, the empirical evidence is inconclusive as to whether messages focused on the *loss* framework are more persuasive than those focused on the *gain* framework (Baek & Yoon, 2017). Nevertheless, there is a consensus that its impact depends on the context and type of communication behavior (Grazzini et al., 2018). Regarding temporal distance, the evidence shows that appealing to the current generation is the most common approach. This persuasive strategy is effective because if problems are perceived as close and tangible (Chang et al., 2015), the audience will feel the urge to act.

The segmentation of the ads reveals four underlying profiles. The first and fourth profiles represent the two extremes. The first profile refers to *Persuade to act* campaigns, which use most of the persuasion and communication strategies analyzed in this study. These campaigns use active, explicit, and denotative messages. They combine logical and emotional resources and appeal to experience and authority. All ads indicate an action to be taken by adopting the *taking-less* frame. The only weakness of ads with this profile is that they do not indicate any specific beneficiary (individual or social) of the pro-environmental behavior. Conversely, the fourth profile, which refers to *Warn of water problems*, is at the other extreme. Campaigns with this profile contain passive, implicit, denotative messages with few connotative

messages. All ads with this profile use both logical and emotional persuasion. This cluster has the highest prevalence of *loss* framing and *doing-more* actions. In between these two extremes lie the second and third profiles. The second profile, *Motivate without scaring*, is the only one where the campaigns specify a beneficiary (society) of the promoted behavior. Campaigns with this profile are those that most strongly adopt *gain* framing. Finally, the third profile, *Raise awareness about water problems*, consists of ads with implicit and passive messages. Ads in this cluster use connotative appeals the most and emotions, logical appeals, and experience the least. Campaigns with this profile are those that refer most strongly to authority. These ads do not explicitly ask the audience to take actions. In conclusion, campaigns with Profiles 1 and 2 have greater persuasive capacity than those with Profiles 3 and 4. Profiles 3 and 4 include advertisements that seek to educate or inform the population about water issues. Instead, Profiles 1 and 2 use persuasive techniques that could influence the behavior of the audience.

5.1 Theoretical implications

This study makes several valuable contributions to broadening knowledge of social marketing, particularly environmental communication, by offering insight into the strategies employed in conservation communication campaigns aimed at changing behavior and using water more sustainably. First, several communication frames are jointly analyzed to describe advertisements according to the persuasive message techniques they employ and their message strategy. This twofold approach and the use of multiple communication frames provides more in-depth analysis of message persuasion in pro-environmental advertising than the analyses found in previous related studies (e.g., VanDyke & Tedesco, 2016; Villarino & Font, 2015). Moreover, some of these communication frames, such as taking less versus doing more (Davis, 1995), have scarcely been analyzed in the water conservation literature. Second, this study focuses on advertising campaigns in Spanish. Previous studies have primarily focused on environmental advertisements in English (e.g., Agarwal & Kumar, 2020; Hardeman et al., 2017; Krajewski, et al., 2019). Research on advertisements in Spanish is scarce (e.g., Pergelova & Angulo-Ruiz, 2017). Therefore, the present study not only expands the understanding of conservation communication campaigns but also fills a gap in the literature by considering the strategies employed in advertisements delivered in Spanish. Third, this study context is Latin American countries. Most research on water conservation and environmental communication strategies has focused on developed countries, where the contextual, cultural, and socioeconomic variables differ from those in emerging countries (Maduku, 2020). Therefore, the present study responds to calls from scholars for further research on this topic in emerging countries (e.g., Burgess & Steenkamp, 2006; Maduku, 2020). Fourth, this study is one of the first to examine environmental communication (advertisements) and persuasion using an exploratory sequential mixed method. Content analysis was used to characterize the features of communication campaigns in terms of the proposed communication frameworks. Then, quantitative cluster analysis identified the underlying profiles of advertising campaigns. The sequential use of these two approaches enriches the findings of the qualitative analysis (e.g., Chan et al., 2016; Cipollaro et al., 2021; Creswell, 2003).

5.2 Managerial implications

The present study offers findings based on the analysis of persuasion strategies, message structure, message content, communication strategy, and segmentation of water conservation advertisements. Several recommendations can be derived from these findings. These recommendations can enhance the effectiveness and persuasiveness of environmental communication campaigns designed in Latin America. Armed with these recommendations, social marketers can tailor their campaigns to appeal to the target audience by leveraging persuasive techniques to maximize the impact of their messages. When designing communication campaigns, social marketers should explicitly name the beneficiary of the target behavior. Depending on the type of culture of the target audience, they should focus on either an individual or a collective beneficiary. In this case, segmentation can be effective in dealing with globally broadcasted ads (Kidd et al., 2019; Raval & Subramanian, 2004). Furthermore, social marketers should include explicit and active messages that clearly and simply indicate the behavior that the audience should perform. They should add arguments and conclusions to minimize misinterpretation. Advertisements should highlight the norms of the reference group as a defining element of group identity (Lede et al., 2019). In other words, they should use social norms because doing so encourages behavior by creating a sense of belonging (Reno et al., 1993). To drive behavioral change, social marketers should consider using both logical and emotional resources in their campaigns. Logical arguments help provide factual information and reasoning. In contrast, emotional appeals tap into the audience's feelings and values and can create a personal connection and evoke empathy. By combining logical and emotional elements to target both the peripheral and central routes of the ELM, social marketers can engage the audience at both the rational and emotional levels, enhancing the persuasive impact of their messages. Furthermore, social marketers should emphasize the temporal distance frame. Highlighting the immediate consequences of inaction and targeting the current generation can enhance the sense of urgency and motivation to act. Finally, segmentation of the target audience based on the profiles described in this paper can help social marketers design effective communication campaigns. By tailoring messages and strategies to each profile, social marketers can increase the persuasive capacity of their campaigns. Profiles 1 and 2 are characterized by active and explicit messages. These profiles have greater potential for persuasion than Profiles 3 and 4, which focus more on raising awareness and education. Understanding the characteristics and preferences of a target audience is crucial for designing effective communication campaigns. Therefore, before social marketers design ads, they should segment the target audience so that the information they provide is consistent with the audience's reference frames and the audience can interpret this information correctly.

5.3 Limitations and future research lines

This study has several limitations that also offer potential research lines for the future. First, the scope of this research was Spanish-language advertising campaigns promoting water conservation behavior in Latin American countries. Ads in Spain were excluded to ensure homogeneity in terms of social and economic development. Future

studies should compare pro-environmental advertising campaigns in Latin American countries and Spain to understand the similarities and differences between developing (emerging) and developed countries (e.g., Bahadir & Bahadir, 2020). Second, this research is mainly exploratory and descriptive. Drawing on the present findings, scholars could design both correlational and experimental studies to investigate the relationship between the analyzed frameworks in greater depth. These studies should examine more than whether these frames are used in environmental communication campaigns. They should also explore their effect in terms of persuading individuals to change their behavior. Third, this study is pioneering in its exploration of advertising campaigns using four conceptual frameworks together. Despite its academic value, future research should focus on a smaller number of frames in-depth or should jointly use several approaches (as recently proposed by Fu et al., 2022, and Ngo et al., 2022). Fourth, cultural differences between countries may be relevant in multi-country comparisons of advertising campaigns (e.g., Bentley et al., 2021; Soye, 2012). Future research should explicitly include indicators to account for these possible cultural differences.

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Declarations

Conflict of interest No potential conflict of interest was reported by the authors.

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