

Letter to the editor

Navigating pro-environmental shifts: Celebrity advocacy in South African townships



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ABSTRACT

Celebrity and influencer endorsement, a widely used strategy, presents an ambiguous efficacy in promoting pro-environmental behavior. Past studies in this field have lacked exploration into the psychosocial mechanisms influencing individuals to adopt environmentally friendly practices. This study, grounded in the source credibility model, consumer decision model, and theory of reasoned action, delves into the effectiveness of celebrity endorsement. Comparing sports and entertainment celebrities in a quasi-experiment, the paper gathered data from diverse community hubs within a densely populated urban settlement. Focusing on Alexandra township in Johannesburg, South Africa, the research examines how individual and social factors influence residents' pro-environmental behavior, comparing two celebrity types: sports and entertainment figures. The paper employed a structural equation modeling to analysed the two samples. Findings highlight the pivotal roles of personal involvement and normative influence in shaping residents' environmental problem recognition. Additionally, a positive relationship emerges between problem recognition and pro-environmental attitude. This research extends beyond Western contexts, addressing a social imperative for behavior change in an urban poor setting. Contributing to celebrity endorsement theory, the study presents a practical strategy for transforming communities into proactive advocates for environmental consciousness. This study, transcending conventional boundaries, illuminates the multifaceted dynamics of celebrity influence. In doing so, it enriches our understanding of effective strategies for nurturing pro-environmental citizens through effective celebrity advocacy.

1. Introduction

Environmental pollution, a looming threat with profound implications for health, economies, and livelihoods, extends its pervasive influence across nations, South Africa being no exception. The global lifetime cost of plastic waste, a staggering US\$3.7 trillion, surpasses even the GDP of India, the world's sixth-largest economy (DeWit et al., 2021). Within this context, South Africa grapples with an urgent challenge, facing a minimum lifetime cost of R885.34-billion for plastic produced in 2019 (Bega, 2021). The Institute of Waste Management of Southern Africa (IWMSA) emphasizes the need for decisive governmental action, cautioning against the inadequacy of relying solely on legislation to address the waste crisis (iwmsa.co.za). This pressing scenario, shared across sub-Saharan Africa and developing nations, prompts a call for a nuanced paradigm shift. Beyond regulatory frameworks, which often fall short of addressing the enormity of the issue (Tshehla and Wright, 2019), this paper advocates for a comprehensive approach. We propose blending individual, societal, and endorsed messaging to foster socially desirable environmental behaviors (Dong et al., 2023).

In a quasi-experimental exploration, our study scrutinizes the intricate dynamics of personal involvement, normative influence, and celebrity-endorsed messaging on pro-environmental behavior within South African Townships - urban communities born from historical inequalities, grapple with many socio-economic challenges such as environmental pollution and hygiene challenges (Bazaanah and Mthapo, 2023). Within townships, a legacy of colonial rule and apartheid policies has disrupted the symbiotic relationship between communities, particularly black underprivileged populations, and their environment (Stull

et al., 2016). In this study, while Alexandra Township serves as our primary research setting, the insights derived are applicable to similar urban poor settings globally. This approach not only contextualizes our findings within Alexandra but also invites comparisons and extensions to other regions facing comparable environmental and social challenges. By doing so, we aim to contribute to a broader understanding of how celebrity endorsements can motivate pro-environmental behavior across diverse global contexts. The study's focus on Alexandra Township is instrumental in illustrating the unique challenges and opportunities within such communities, but the implications of our findings are discussed in terms of broader applicability to ensure that the relevance extends beyond the local context.

Recognizing the imperative for environmental behavioral change to avert looming disasters (Saracevic et al., 2022), our study critiques prevailing environmental campaigns that disproportionately prioritize awareness over behavioral modification (O'Rourke and Ringe, 2016; Geiger et al., 2019). Drawing on behavioral intention theory, our investigation employs the intention to seek pro-environmental information as a proxy for actual behavior change (Sawitri et al., 2015). Furthermore, we analyzed the impact of celebrity/influencer endorsements, probing whether the type of celebrity and their level of credibility influence pro-environmental behavior. This nuanced exploration seeks to unravel the multifaceted dimensions of environmental engagement within the unique socio-economic landscape of South African townships.

Celebrity endorsement, a symbiotic agreement between a public figure and an entity for promotional purposes, has transcended commercial contexts to permeate non-profit initiatives and social marketing

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communications (Bergkvist and Zhou, 2016; Knoll and Matthes, 2017). In South Africa, the escalating trend of celebrity endorsements, though not exclusively profit-driven, is conspicuous in endeavors to instigate public behavior change (Madinga et al., 2021; Khan et al., 2022; Mavundza et al., 2022). This study responds to the dearth of scientific estimates, unveiling the intricate dynamics of celebrity endorsements in fostering pro-environmental behavior within a South African context.

Distinct from commercial motives, social campaigns seek to heighten public awareness and cultivate socially desirable beliefs, attitudes, and behaviors in response to societal challenges (Salmones et al., 2013). Leveraging two prominent celebrities in pro-environmental messaging, our investigation navigates the interplay between celebrity influence, information search, and perceived credibility within Alexandra, a sprawling township in Johannesburg with over 700,000 residents (Mafisa, 2021). Townships, grappling with persistent pollution challenges (Tshehla and Wright, 2019), become the crucible for testing the potential influence of celebrity-endorsed messaging on pro-environmental behavior. We assert that perceived credibility, a nuanced dimension, modulates the impact of celebrity influence on followers, contributing to the unfolding discourse on the effects of celebrity endorsements.

Building upon the backdrop of heightened environmental awareness and the potential for celebrity influence in non-commercial contexts, this study aims to explicitly examine the effectiveness of celebrity endorsements in promoting pro-environmental behavior within the specific socio-economic conditions of South African townships. The primary research objective is to determine whether the type of celebrity (such as media personalities versus sports figures) and their perceived credibility significantly influence township residents' intentions to engage in pro-environmental activities. By doing so, the study seeks to provide empirical evidence to guide the design of celebrity-endorsed environmental campaigns that are culturally sensitive and effective in fostering actual behavioral changes rather than merely raising awareness.

The current study delivers three pivotal contributions to the existing literature. In contrast to previous environmental studies, which primarily concentrated on defining pro-environmental actions rather than probing determinants (Thondhlana and Hlatshwayo, 2018), this research explores the complex interplay of social contexts, cognitive processes, personal preferences, and interpersonal factors that shape pro-environmental behavior (Carmack and Lewis-Moss, 2009; Topa and Moriano, 2010). Furthermore, recognizing a significant gap highlighted by Knoll and Matthes (2017), previous research predominantly focused on single types of celebrities, neglecting explicit comparisons across different celebrity categories such as actors, models, musicians, athletes, and TV hosts. Our study addresses this lacuna, advancing knowledge in celebrity endorsements by explicitly comparing the effects of two distinct celebrity types—Bonang Matheba, acknowledged as the queen of South Africa's media personalities and recently voted among the top five most admired women alongside international luminaries, and Siya Kolisi, the charismatic 2x World Cup Champion captain of the South African National Rugby Team.

Critically appraising environmental behavioral change campaigns, the study responds to persistent critiques highlighting their tendency to prioritize awareness over tangible behavior modification (O'Rourke and Ringe, 2016; Geiger et al., 2019). Guided by behavioral intention theory, our research not only underscores the paramount importance of behavior change in environmental campaigns but also introduces the intention to search for pro-environmental information as a nuanced proxy for measuring actual behavioral change (Octav-Ionut, 2015). This novel addition enhances our understanding of the multifaceted outcomes achievable through campaigns aiming to foster environmental behavior change. Moreover, by extending the applicability of celebrity endorsements beyond Western societies, the current study assumes particular significance for South African townships characterized by a unique socio-economic past and present, distinct from the contexts prevalent in prior research. This broader contextualization strengthens

the external validity of our findings, making them pertinent and actionable in the distinct socio-economic landscape of many African and developing countries' townships.

The rest of the paper deals with the theoretical background and hypotheses, methodology, analysis and discussion of findings, and finally, conclusions and implications.

2. Theoretical background and hypotheses development

Our investigation into the role of celebrity endorsements in promoting pro-environmental behavior within South African townships draws upon a synergistic theoretical framework, incorporating the Engel-Blackwell-Miniard Model (EBM), the Source Credibility Model (SCM), and the concept of psychological reactance. These frameworks are not only pivotal individually but also interlink to provide a comprehensive understanding of the decision-making processes influenced by environmental messaging. Central to our study, the Engel-Blackwell-Miniard Model (EBM) framework underscores the complexity of decision-making processes by detailing how stimuli are processed within individual, social, and external contexts (Topa and Moriano, 2010; Liu et al., 2022). In our analysis, we apply this model to demonstrate how personal involvement and normative influences, crucial antecedents identified by Blackwell et al. (2018), shape environmental problem recognition in townships. This model serves as the foundational structure through which other theoretical insights are integrated.

Building upon the decision-making framework provided by EBM, the Source Credibility Model (SCM) examines the influence of message source credibility on the acceptance and effectiveness of environmental messages. As articulated by Pornpitakpan (2004) and Gong et al. (2024), a celebrity's credibility—encompassing expertise, trustworthiness, and attractiveness—enhances the persuasiveness of the message. This integration is crucial in our context, where celebrity endorsements are employed to significantly alter environmental perceptions and behaviors. The concept of psychological reactance further enriches our framework by addressing the resistance individuals might exhibit towards perceived impositions on their freedom, a vital consideration in message framing and delivery. Simatele (2023) highlights the importance of acknowledging and mitigating reactance in persuasive environmental campaigns, especially within contexts where mistrust and skepticism prevail (Moloi et al., 2022).

The interplay between these models is illustrated through our hypothesis that while the EBM model shows how individuals come to recognize environmental problems through personal and normative influences, the SCM posits that the credibility of the endorsing celebrity significantly modifies this recognition process. Furthermore, psychological reactance is anticipated to moderate the relationship between message acceptance and behavior change, suggesting that even highly credible endorsements must be carefully framed to avoid triggering defensive reactions. By interlinking these theoretical perspectives, our study provides a clear understanding of the multi-layered influences on pro-environmental behavior within uniquely challenging socio-economic settings. Each theory not only stands on its own merit but also complements the others, creating a robust theoretical framework that explains both the cognitive and emotional dimensions of environmental decision-making. We demonstrate the hypothesized relationships in Fig. 1 below:

3. Hypotheses development

3.1. Personal involvement and problem recognition

Whilst literature dealing specifically with the direct relationship between personal involvement and problem recognition is limited, there is an abundance of literature placing personal involvement as a key antecedent for processes that may affect problem recognition (Amazeen,

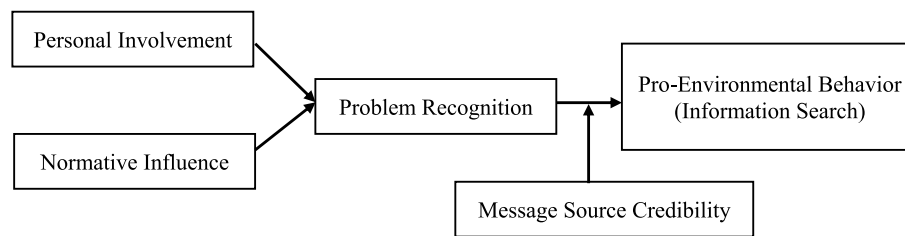


Fig. 1. Conceptual model.

2024; Wang, 2022). For example, de Almeida and Düsenberg (2014) describe involvement as the most important factor shaping the decision-making behavior that will be followed. They describe a process in which personal involvement impacts information processing, which in turn impacts problem recognition. Problem recognition, which represents entry into the decision process, is triggered when the information is attended to and processed because the problem is deemed to be personally relevant (de Almeida and Düsenberg, 2014; Amazeen, 2024). In public relations, it is said that people selectively invest their cognitive resources in a problem only when it is personally relevant to them (Kim, Kim & Kim, 2012).

High involvement has also been found to be a key determinant for the deeper processing of information (Filiari and McLeay, 2013; Acikgoz et al., 2023). Nowak and Salmon (1987) developed a scale for measuring involvement with social issues and suggested that, among other things, the level of involvement with a social issue will affect how information about the issue is processed and the amount of search behavior that follows. It has also been suggested that personal involvement influences the information processing that manifests into overt behaviors such as participation, search behavior, memberships, and affiliations (Gbadamosi, 2012). Consistent with these views, The ELM offers that personally involving persuasion situations are characterized by considerable cognitive processing in which people tend to process information with relatively high motivation and involvement. Accordingly, as an issue increases in personal relevance, people become more motivated to devote the cognitive effort required to evaluate the true merits of an issue than when involvement is low (Filiari and McLeay, 2013; Bartschat et al., 2022). The study therefore posits that in response to pro-environmental messages, residents who exhibit high involvement in environmental issues are more likely to consider the environmental situation in the township as a real problem that must be dealt with. In contrast, those with low involvement are more inclined not to recognize the situation as problematic. The current study therefore hypothesizes that:

H1. High personal involvement in environmental issues positively influences residents' problem recognition of environmental contamination in their living space.

3.2. Normative influence and problem recognition

Numerous studies probing into pro-environmental behavior underscore a robust association with social factors, revealing the pivotal role of normative influences in shaping a spectrum of attitudes and behaviors (Saracevic et al., 2022; Caniëls et al., 2021; Rajapaksa et al., 2018). This body of evidence extends beyond environmental concerns, demonstrating the far-reaching impact of normative influences on diverse behaviors, including but not limited to littering, cancer screening intentions, alcohol consumption, fruit and vegetable consumption, and spousal violence against women (Mead et al., 2014).

The intricate interplay between subjective norms and environmental behavior engagement is evident, with studies such as De Leeuw et al. (2015) and Helferich et al. (2023) highlighting a strong direct relationship. Subjective norms not only foster a sense of the need to engage in pro-environmental behavior but also exert a pervasive influence on

problem recognition. Moreover, research by Burchell et al. (2013) suggests that perceptions of social approval or the acceptance of certain behaviors as norms can significantly impact individual choices. For instance, adolescents may engage in excessive alcohol consumption to conform to perceived social norms.

In environmental awareness, von Borgstede and Andersson (2010) propose that normative influences function similarly to values, directing attention towards information congruent with established norms. This, in turn, contributes to an elevated general awareness of environmental problems. Building upon this body of knowledge, the hypothesis is proposed:

H2. Normative influence has a positive impact on residents' problem recognition of environmental contamination in their living space.

4. Problem recognition and pro-environmental behavior

The foundational role of problem recognition as a precursor to information search behavior is well-documented in decision-making literature (Utkarsh, 2017; Blackwell et al., 2018; Tonellato et al., 2024). In the sequential unfolding of the decision-making process, problem recognition marks the initiation of the journey, setting the stage for subsequent stages, particularly the search for information in response to identified needs or problems (Blackwell et al., 2018).

Evidence from various sectors, including healthcare, underscores the pervasive influence of problem recognition on information search processes and related pre-decision activities. For instance, Hill (2001) affirms the impact of problem recognition on subsequent search processes in the context of long-term healthcare decisions.

In pro-environmental behavior, Bamberg and Möser's (2007) meta-analysis of responsible environmental behavior research resonates with this perspective, establishing problem recognition as a significant antecedent to pro-environmental intention. The recognition of environmental challenges serves as a catalyst, propelling individuals towards a heightened intention to engage in pro-environmental practices. Building upon this understanding, the study proposes the hypothesis:

H3. Residents' problem recognition of environmental contamination positively influences their intentions to seek information about pro-environmental practices.

5. Moderation effect of message source credibility

Message source theory posits that high source credibility enhances message persuasion, a principle well-established in consumer behavior literature (Pornpitakpan, 2004; Jiang and Park, 2021; Alsaeed et al., 2023). A wealth of evidence underscores the predictive power of source credibility in shaping consumer responses. Notably, Halder et al. (2021) and Wheeler (2009) highlight the paramount role of source credibility, identifying it as the most influential factor in determining the effectiveness of celebrity endorsements, particularly in purchase situations.

Given the identifiable and influential nature of celebrities within specific audiences (Olmedo et al., 2020), the study anticipates that celebrity endorsement of pro-environmental behavior will not only amplify the impact of problem recognition but also expedite the

transition from awareness to positive action. Celebrities, by virtue of their visibility and amplified agency, possess the capacity to influence pro-environmental courses. The study contends that while residents in Alexandra Township may recognize potential environmental crises, their inclination to take positive action may be constrained by self-efficacy concerns.

In light of this, the study proposes that the endorsement of a pro-environmental message by a favorite celebrity serves as an empowering catalyst, motivating residents to take action in the form of actively seeking information to address environmental problems. Therefore, the study hypothesizes:

H4. The perceived credibility of celebrities enhances the positive relationship between residents' problem recognition of environmental contamination and their intentions to search for information to promote the environment.

6. Methodology

6.1. Data collection

In pursuit of methodological rigor, this study employed a purposive approach to gather data from residents of Alexandra in Johannesburg, focusing on the intricate dynamics of environmental pollution and pro-environmental behavior. The choice of a convenient sampling strategy aligns with the practical constraints inherent in studying a densely populated and dynamic township like Alexandra. The inclusion criteria comprised of a) persons living in Alexandra township in Johannesburg, b) who are 18 years or older, c) who were available to be interviewed when approached by the researchers and d) were familiar with the celebrities under discussion. Purposive sampling, while beneficial for targeting relevant subsets of a population, inherently introduces potential biases, such as selection bias, which could affect the reliability and applicability of the results. To mitigate these effects, our study includes a detailed description of the sampling process and the characteristics of the gathered sample. We also discuss how these characteristics relate to the broader population of Alexandra Township. Furthermore, we conducted statistical tests to assess the potential effects of sampling bias by comparing the first 100 responses to the last 100, which showed no significant difference in responses. The respondent recruitment process aimed to mirror the township's demographic structure as closely as possible. Our sample included a balanced gender distribution, a range of age groups, and varied educational backgrounds to reflect the township's diverse population. The adequacy of our sample size and its diversity enhances the robustness of our findings, allowing for reliable extrapolation of our results to the broader township population.

Alexandra Township's population estimate is at over 700,000 (Roefs et al., 2003) and is considered one of the most densely populated townships in an African city. It covers an area of 6.91 square kilometers. Just like any other township in South Africa and in many developing countries, Alex has basic challenges. An MIT report enumerates some of Alex's challenges as overloaded system, poor access for maintenance, poor sanitation facilities for informal clusters, low water pressure, extremely high density, poor access and services, tributaries blocked and polluted, among others (web.mit.edu). While Alexandra Township serves as our primary research setting, the insights derived are applicable to similar urban poor settings globally. This approach not only contextualizes our findings within Alexandra but also invites comparisons and extensions to other regions facing comparable environmental and social challenges. By doing so, we aim to contribute to a broader understanding of how celebrity endorsements can motivate pro-environmental behavior across diverse global contexts. Data collection was conducted at strategic locations frequented by residents of Alexandra Township, including shopping centers, taxi ranks, bus stations, and local municipal-run multi-purpose community centers.

These venues were deliberately chosen due to their significance as community hubs, where residents engage with essential municipal services such as home affairs, labor, health, and electricity services. The choice of these locations aimed to tap into the natural congregation points for a broad cross-section of the community, thereby enhancing the potential diversity and representativeness of our sample within the constraints of our purposive sampling strategy.

Respondents were initially presented with survey questions on personal involvement, normative influence and problem recognition before the research stimulus –either the advertised message endorsed (Love Your Kasi (Township) – Fig. 2) by Entertainment (Bonang Matheba) or Sports (Siya Kolisi) Celebrities. Participants were randomly assigned to either Poster A or Poster B without prior qualifications. Bonang is a media personality with a huge social media following – over 12 million followers across Twitter, Instagram and Facebook. Some of the brands Bonang has endorsed include Samsung, Peugeot, Courvoiser, BIC Razor, Revlon, Cell-C, etc. Siya, on the other hand, captained the South African National Rugby Union Team – The Springboks to win the 2019 and 2023 World Cups. Siya has supported many social projects in South Africa and uses his foundation to support underserved communities. He has endorsed brands such as Mercedes, Lenovo, LG, TotalEnergies, RedBull, DSTv, MTN, etc. These celebrities resonate with all South African communities, including the townships.

All respondents confirmed their familiarity with the presented celebrity – who they are and what they are known for. The study used the most popular pictures of both celebrities in designing the adverts, which were presented on a glossy A2 sheet (42 × 59.4cm) for clarity and visibility. The pictures used were the most common of these celebrities in their endorsement deals and on social media. To reduce the potential effect of facial expressions, we statistically tested the potential effect of the facial expression by asking the participants this question: "On a scale from 1 to 10, how would you rate the emotional appeal or emotional impact of the poster you just viewed?" We analysed this data via a paired sample *t*-test to compare the mean emotional response scores, which returned a non-significant difference. This means that while the types of pictures used could influence respondents' judgement, this was not the case in this study. Participants completed questions for their respective celebrities, guided by the researcher to maintain clarity and consistency in the survey process.

This methodological approach seeks to balance practical considerations with the need for a representative and diverse sample, ensuring the study's outcomes are robust and applicable to the unique socio-economic context of South African townships.

6.2. Measures

Personal Involvement (PI) was operationalized as the extent to which a resident perceives environmental issues as central or personally important in their lives (Gendel-Guterman and Levy, 2013). *Normative Influences (NI)* was conceptualized as residents' perceived social pressures by significant others to comply with environmental behavior norms (Fishbein and Ajzen, 2010). *Problem Recognition (PR)* was conceptualized as residents' acknowledgement of the negative impact of current environmental practices in contaminating their living space and consequently affecting their overall health and well-being (Blackwell et al., 2018). *Source Credibility (SC)* describes the extent to which a resident perceives the celebrity to be relaying valid information about pro-environmentalism (Amos et al., 2008). *Information Search (IS)* is defined as the likelihood that residents will actively gather information about pro-environmental practices after being exposed to the advertisement (Fishbein and Ajzen, 2010). All scale items were from the extant literature.

7. Analysis and results

The data collection process resulted in a total of 440 respondents,



Fig. 2. Love your Kasi Campaign.

with 220 in each sample. After screening for errors in the datasets, the total for both samples stood at 209 each, which was used for the analysis. This study followed the two-step approach to structural equation modelling. The initial step assessed the measurement model, while the second dealt with the structural model using IBM AMOS 26. First, confirmatory factor analysis (CFA) was used to establish the measurement model which produced an acceptable fit for the two samples. The sports celebrity: Chi-square χ^2/DF (1.769); GFI (0.869); CFI (0.955); NFI (0.903); IFI (0.955), TLI (0.945), and RMSEA (0.051). And the entertainment celebrity: Chi-square χ^2/DF (1.324); GFI (0.903); CFI (0.977); NFI (0.912); IFI (0.977), TLI (0.971), and RMSEA (0.33).

On the validity and reliability front, the two samples produced relatively good scores for factor loadings, average variance extracted (AVEs) and composite reliability (CR) figures. In both cases, the AVEs for all the constructs were above 0.50 while the least for CR was 0.81. All the factor loadings were above 0.6 while the inter-construct correlations were all below 0.457 in both samples. See Table 1 for details.

The structural model produced relatively good indices which paved the way for our hypothesized relationships to be assessed. The sports celebrity: Chi-square χ^2/DF (2.388); GFI (0.814); CFI (0.923); NFI (0.876); IFI (0.924), TLI (0.904), and RMSEA (0.068). And the entertainment celebrity: Chi-square χ^2/DF (2.097); GFI (0.837); CFI (0.917); NFI (0.854); IFI (0.918), TLI (0.906), and RMSEA (0.061). All variables involved in the interactive moderation effect testing were standardized before being included in the final models. We controlled for the effect of gender, age, and educational background throughout the analysis and Table 3 shows the path analysis results for the interpreted model.

To assess the last hypothesis on the moderation effect via interaction approach, the study conducted a multi-group analysis in AMOS to assess group differences in the moderation effect. In doing so the moderation effect, we constrain the interaction term (the moderator = message

source and problem recognition) path to the dependent variable, i.e. pro-environmental behavior, to be equal across groups. Constraining only the interaction term allows us to specifically test whether the moderation effect differs between the two conditions (Poster A and Poster B). The p-value of the constrained path model was not significant, which indicated that there was no group difference between the two samples.

8. Results and discussions

The sample characteristics for both samples are as follows (sports/entertainment): 45.5/45.9% - females, 47.8/48.8% - male, and 7/5.3% preferred not to disclose their sex. In terms of age, participants were mostly evenly spread across the age groups across the samples: 19–30 at 25.5/26.3%, 31–45 at 28.7/29.1%, 46–60 at 27.8/31.1%, and 18/13.5% were over 60. Regarding education, in both samples, all respondents had some level of education, with 34/39% having at least some elementary school education, while the rest had more than elementary education. See Table 2 for details.

The exploration of the relationship between personal involvement and residents' recognition of environmental issues in their living space reveals a robust connection, see Table 3. This relationship is evident in both the sports and entertainment celebrity samples, with path coefficients of $\beta = 0.153$ ($p = 0.008$) and $\beta = 0.200$ ($p = 0.000$), respectively. These results substantiate the pivotal role personal involvement plays in shaping residents' perceptions of environmental challenges within their community. These findings resonate with established research, notably emphasizing personal involvement as a pivotal driver of decision-making behavior (de Almeida and Düsenberg, 2014).

This revelation carries profound implications for environmental campaigns tailored to Alexandra residents and similar contexts in

Table 1
Measurement model.

Construct/Items	Sports Celebrity	Entertainment Celebrity
Personal Involvement CR=0.89/0.89; AVE=0.66/0.67	Loadings	Loadings
I think that environmental pollution of my living space and associated health and wellbeing problems	Fixed	Fixed
Environmental pollution of my living space and associated health and wellbeing problems	0.850	0.867
I think that environmental pollution of my living space and associated health and wellbeing problems	0.878	0.870
I think that environmental pollution of my living space and associated health and wellbeing problems	0.771	0.760
I think that environmental pollution of my living space and associated health and wellbeing problems	0.752	0.760
Normative Influences CR=0.87/0.86; AVE=0.62/0.63		
Most people who are important to me, think that I should be concerned about the environmental pollution of my domestic space	Fixed	Fixed
Most people who are important to me, do take actions to avoid environmental pollution of their domestic space	0.786	0.791
Most people who are important to me, expect me to take action to avoid environmental pollution of my domestic space	0.822	0.846
It matters to me, what people that are important to me, think I should do to avoid the environmental pollution of my domestic space	0.753	0.754
My neighbors expect me to take action to avoid environmental pollution of my domestic space	0.781	0.796
Problem Recognition CR=0.87/0.86; AVE=0.62/0.64		
I think that environmental pollution of domestic spaces is a problem in my community	Fixed	Fixed
I feel that something needs to be done to improve the state of environmental pollution in my community	0.818	0.930
I feel that environmental pollution has a negative effect on my and health and wellbeing	0.763	0.877
The government should take action to solve problems of environmental pollution in the community	0.916	0.796
Source Credibility CR=0.88/0.85; AVE=0.64/0.59		
In relation to environmental issues, I think that the celebrity has some (credibility)	Fixed	Fixed
In relation to environmental issues, I think that the celebrity has some (experience)	0.825	0.794
In relation to environmental issues, I think that the celebrity is (qualified)	0.796	0.805
In relation to environmental issues, I think that the celebrity is (knowledgeable)	0.801	0.713
In relation to environmental issues, I think that the celebrity is (skill level)	0.769	0.758
Info Search Intentions CR=0.90/0.87; AVE=0.75/0.69		
After seeing the advert, I plan on learning more about how I can become more pro-environmental in my actions	Fixed	Fixed
After seeing the advert, I plan to seek more information about environmental pollution	0.898	0.833
After seeing the advert, I will request information about pro-environmental behavioural practices	0.860	0.882
After seeing the ad, I will check the media regularly to see if there is any new information about pro-environmental behavioural practices	0.835	0.768

Table 2
Demographic breakdown of participants.

Demographic	Description
Age	Distributed across: 18–30 (25%), 31–45 (30%), 46–60 (25%), 60+ (20%)
Gender	Male (50%), Female (48%), Other (2%)
Education	High School (40%), College (35%), Postgraduate (25%)
Celebrity Familiarity	High familiarity (70%), Moderate (20%), Low (10%)

Table 3
Hypothesized relationships and results.

Relationships	Hypothesis	Sport Celebrity		Entertainment Celebrity	
		Path Coefficient β	P Value	Path Coefficient β	P Value
PR \leftarrow PI	H1	0.153	0.008	0.200	0.000
PR \leftarrow NI	H2	0.215	0.000	0.320	0.000
IS \leftarrow PR	H3	0.231	0.000	0.334	0.000
IS \leftarrow PR*SC	H4	0.142	0.014	0.151	0.009

different countries. Contrary to prevailing assumptions, the residents do indeed perceive environmental issues as significant and personally relevant. This newfound understanding should guide marketers in crafting strategies that resonate with the high involvement observed. Leveraging influencers or celebrities in this context could serve as a catalyst for residents to take decisive action, fostering enduring attitude and behavior change (Wheeler, 2009; Filieri and McLeay, 2013). Marketers, armed with this insight, can tailor campaigns to maintain resident engagement in environmental issues while also addressing those with lower involvement.

Turning to the examination of normative influence on residents' recognition of environmental contamination in their living space, the results strongly support this relationship. Path coefficients of $\beta = 0.215$ ($p = 0.001$) for the sports celebrity sample and $\beta = 0.320$ ($p = 0.000$) for the entertainment celebrity sample underscore the significant impact of perceived social pressures from relevant others. Particularly, normative pressures from significant others play a pivotal role in prompting residents to recognize environmental pollution in their living space as a significant problem. This aligns seamlessly with the vast body of social and behavioral literature, reinforcing the influential role of normative influences in predicting and directing behaviors (Mead et al., 2014).

This positive influence of social context on problem recognition opens avenues for actionable strategies. Marketers can identify influential community figures and effectively convey environmental awareness through community-centric media such as radio. The emotional resonance of stories can be harnessed to strengthen the impact of these messages, further deepening residents' understanding and concern for environmental issues (Koll et al., 2010).

Moving forward to the relationship between residents' problem recognition of environmental contamination and their intentions to seek information about pro-environmental practices, our study confirms positive and significant relationships in both the sports and entertainment celebrity cohorts. This robustly establishes the pivotal role of problem recognition as an antecedent to information search behavior. The positive influence of problem recognition on residents' intentions to seek information about pro-environmental practices aligns seamlessly with established research emphasizing the significance of problem recognition as a key determinant of pro-environmental intention (Utkarsh, 2017; Blackwell et al., 2018). Health promotion studies, especially those examining responsible environmental behavior (Bamberg and Möser, 2007), consistently underscore the importance of problem recognition in fostering pro-environmental intentions.

Given the identified prominence of problem recognition, marketers should strategically prioritize this element as a key driver of behavioral

intentions. The crafting of persuasive messages that compellingly articulate reasons why residents should not be complacent with their current environmental situation can effectively trigger or enhance problem recognition. This aligns with literature suggesting that creating a state of imbalance between residents' current and desired states prompts them to pay attention and address this disparity (Solomon et al., 2016; Agostinelli et al., 2004). Leveraging normative influencers within the community or selecting a celebrity endorser can enhance the effectiveness of these messages, considering the importance of reference groups as influential sources.

Our final hypothesis delved into the potential moderation effect of celebrities' perceived credibility on the relationship between problem recognition and the intention to search for information to promote the environment. The findings reveal a significant moderation effect in both cases of the celebrities used, indicating that residents, perceiving celebrities as possessing credibility, are more inclined to take action by seeking additional information about pro-environmental initiatives. This substantiates the theory that high source credibility enhances message persuasion, a principle well-established in consumer behavior literature (Pornpitakpan, 2004). The study confirms that irrespective of the celebrity type, their potential effect on eliciting positive pro-environmental behavior is positive.

This study contributes significantly to the existing body of consumer behavior literature, aligning with prior research that underscores the predictive power of source credibility in shaping consumer responses (Visentin et al., 2019; Olmedo et al., 2020; Jiang and Park, 2021). The paper elucidates that individuals employ heuristics, such as expertness, to process information and decide whether to accept it, even when thoughtfully considering the arguments in the message (Wheeler, 2009). The findings suggest that the well-known status of the two celebrities within the Township audience, coupled with their amplified agency, surpasses the impact of an average individual or a regular campaign without their endorsement (Olmedo et al., 2020).

This nuanced understanding of the interaction between personal involvement, normative influences, problem recognition, and the moderating effect of celebrity credibility paints a comprehensive picture of how these elements interplay in influencing residents' pro-environmental behavior.

9. Implications

9.1. Theoretical implications

This study significantly advances theoretical understanding in the domain of environmental psychology and marketing by applying and extending the Engel-Blackwell-Miniard Model (EBM) and Source Credibility Model (SCM) to the relatively unexplored area of celebrity endorsements for pro-environmental behavior in developing countries. Unlike previous research that primarily focused on the commercial impact of celebrity endorsements, our investigation explores the efficacy of these endorsements within a societal context, particularly in fostering environmental behavior changes. Our findings suggest a nuanced modification of existing theories: while the EBM traditionally explores consumer behavior in a transactional context, our study illustrates its applicability in influencing pro-environmental actions through non-commercial motivations. This adaptation demonstrates that the decision-making processes related to environmental behaviors can be significantly influenced by the credibility and social authority of celebrities, as articulated by the Source Credibility Model. By doing so, we extend the SCM by demonstrating that the source's credibility is not only crucial in commercial persuasion but also in promoting societal and environmental changes.

Furthermore, this research introduces a comprehensive model that integrates both individual and societal factors influencing pro-environmental behavior, thus broadening the application of celebrity endorsement theory to include a focus on sustainable behavior change

rather than mere product promotion. This integrated model suggests that effective celebrity endorsements in the environmental sector depend heavily on the alignment of the celebrity's public persona with genuine environmental concerns, which enhances the authenticity and impact of the message. Moreover, by contextualizing our study within the unique socio-economic backdrop of South African townships, we contribute to a more inclusive understanding of how celebrity influence operates across diverse global settings. This is particularly relevant as the dynamics of celebrity endorsements can vary significantly in different cultural and economic environments. Our study not only broadens the theoretical application of celebrity endorsement and consumer decision-making models to pro-environmental behavior but also enriches the discourse on how these models can be adapted and extended to foster genuine societal change. These theoretical contributions offer valuable insights for future research and provide a robust framework for developing targeted, culturally sensitive environmental campaigns.

9.2. Practical implications

This study's findings provide actionable insights for policymakers, campaign designers, and marketers focused on promoting pro-environmental behavior through celebrity endorsements. By identifying the critical role of celebrity credibility and alignment with environmental values, we offer specific strategies to enhance the effectiveness of environmental campaigns:

Celebrity Selection Based on Credibility and Environmental Alignment: Campaign designers should prioritize selecting celebrities who are not only popular but also visibly committed to environmental causes. For example, a celebrity who actively participates in environmental conservation efforts, such as participating in or donating to reforestation projects, will likely resonate more authentically with the public. This alignment enhances the perceived sincerity of the endorsement, increasing the likelihood of the public adopting the endorsed behaviors.

Integration of Celebrity Endorsements with Community Engagement Initiatives: Our findings suggest that endorsements are more effective when they are part of a broader, integrated campaign that includes community engagement activities. For instance, a campaign could involve a celebrity-endorsed advertisement coupled with community clean-up events where the celebrity makes an appearance. This strategy not only boosts the campaign's visibility but also demonstrates a tangible commitment to the cause, enhancing public engagement and action.

Tailoring Messages to Local Contexts: Given the unique socio-economic characteristics of South African townships, it is crucial that the messages delivered by celebrities are tailored to the local context. Campaigns should use language and cultural references that are relatable to the local population, and address specific environmental issues pertinent to the community, such as local water conservation or waste management challenges.

Measuring and Adapting Campaign Strategies Based on Feedback: To ensure the ongoing effectiveness of celebrity-endorsed environmental campaigns, it is essential to measure their impact and continuously adapt strategies based on feedback. This could involve conducting periodic surveys to gauge public perception of the celebrity's credibility and the campaign's impact on behavior, allowing for adjustments to be made in real-time.

10. Conclusions

In contrast to previous research primarily centered on celebrity endorsement within commercial settings (Salmones et al., 2013; Park, 2017; Knoll and Matthes, 2017), this study pioneers an exploration into the efficacy of celebrity endorsements within the domain of pro-environmental behavior. By transcending the boundaries of celebrity endorsement theory beyond commercial contexts, this research links

celebrities to a broader societal call for environmental behavior change. This extension not only broadens the application of celebrity endorsement theory but also contributes to a deeper understanding of the role of celebrities in pro-environmental literature. Unlike previous studies that often focused on individual pro-environmental actions or single influencing factors like demographics (Thondhlana and Hlatshwayo, 2018; Li et al., 2019; Do Paco et al., 2013), this study takes a departure, proposing a comprehensive model that integrates individual and social factors. This not only contributes to scientific knowledge but also enhances the understanding of celebrity endorsements within the pro-environmental literature, moving beyond mere awareness goals to measure actual behavior change.

Moreover, this study extends the applicability of celebrity endorsements in pro-environmental behavior beyond developed contexts into developing societies. The unique socio-economic characteristics of South African townships compared to the contexts of previous studies, which predominantly focused on developed contexts, represent a significant addition to knowledge. As celebrity endorsements continue to be a prominent strategy in pro-environmental behavior campaigns in South Africa, this research offers crucial insights for government communicators and policymakers. Unlike previous approaches based on anecdotal intuition (Knoll and Matthes, 2017), this study integrates celebrity endorsement theory with established behavior change theories, providing a scientific foundation for decision-making. It underscores the importance of careful celebrity selection, emphasizing the need for market research and empirical knowledge, including considerations of celebrity fit, meaning, and association transfer to the issue at hand.

The findings highlight that the effects of a celebrity endorsement strategy cannot be solely attributed to the celebrity alone, as other factors may outweigh its impact. By comparing the effects of different types of celebrities, the study suggests that campaign implementors should prudently select celebrities based on market research and empirically validated knowledge, understanding that there is no one-size-fits-all solution. This study emphasizes that the use of celebrity endorsement as a persuasive strategy in pro-environmental behavior campaigns demands thoughtful consideration. It positions psychosocial factors as crucial determinants of behavior, urging marketers to thoroughly understand their target audience's motivations and contextual influences. This understanding will enable the design of more effective campaigns that foster greater behavioral persistence. The study reinforces the importance of incorporating proven communication principles rather than relying on anecdotal claims when developing public awareness and behavioral change campaigns. In its contribution, the study advances theory development by providing a more comprehensive model for the application of celebrity endorsements within pro-environmental literature. For practitioners, including government communicators and policymakers, the study offers an empirical basis for decision-making when considering celebrity endorsement as a persuasive tactic in the unique context of South African townships.

While this study has made noteworthy contributions to literature, practitioners, and policymakers, it is essential to acknowledge certain limitations that create avenues for future research to explore new topics and areas of interest. One key limitation pertains to the study's context specificity, conducted exclusively in Alex township, South Africa, thereby limiting its generalizability. Future studies could enhance external validity by extending research to diverse townships across the continent, considering varied socio-economic and cultural landscapes.

While our study provides valuable data from Alexandra Township, the unique socio-economic and cultural characteristics of this setting limit the generalizability of our findings. Future research should consider applying a similar methodology in diverse townships across Africa, which vary significantly in socio-economic status and cultural background. This expansion is essential to understand the broader applicability of our results and to determine if the same patterns of celebrity influence are observable in different settings. Exploring these

varied contexts can help refine and adapt celebrity endorsement strategies to fit diverse cultural and economic landscapes, enhancing the external validity of our model.

Our focus on pro-environmental behavior leaves open the question of how celebrity endorsements might influence other types of social behaviors, such as health behavior, education awareness, and violence prevention. These areas are critically important in disadvantaged communities where effective communication strategies can significantly impact public health and safety. For example, experiential marketing, which emphasizes personal relevance and direct engagement, could be explored for its potential to foster longer-lasting behavioral changes in these areas. Research into these alternative campaign types would not only broaden the scope of celebrity endorsement theory but also provide practical insights into its applicability to a wider range of social issues.

Given the cross-sectional nature of our study, a key limitation is the inability to track changes in behavior over time. Future studies employing longitudinal designs could provide a deeper understanding of how celebrity endorsements impact behavior in the long term. Such studies are vital for observing the duration of the influence celebrities have on behavior change, which can inform the strategic planning and timing of campaigns. Longitudinal research would also allow for the examination of enduring impacts and the effectiveness of repeated celebrity endorsements over time.

Reflecting on the limitations noted regarding our sampling strategy, future research should also aim to employ more probabilistic sampling methods to ensure a more representative demographic spread. Additionally, integrating qualitative methodologies could enrich the quantitative data, providing deeper insights into the psychological and socio-cultural dynamics at play.

CRediT authorship contribution statement

Samkelisiwe Levin: Project administration, Investigation, Conceptualization. **Thomas Anning-Dorson:** Writing – review & editing, Writing – original draft, Formal analysis, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The data that has been used is confidential.

References

- Acikgoz, F., Perez-Vega, R., Okumus, F., Stylos, N., 2023. Consumer engagement with AI-powered voice assistants: a behavioral reasoning perspective. *Psychol. Market.* 40 (11), 2226–2243.
- Agostinelli, G., Floyd, T.E., Grube, J.W., Woodall, G., Miller, J.H., 2004. Alcohol problem recognition as a function of own and others' perceived drinking. *Addict. Behav.* 29 (1), 143–157.
- Alsaeed, G.R., Keeling, K.A., Sarantopoulos, P., Gadalla, E., 2023. Source, message and medium? The role of personal values in forming credibility perceptions of non-sponsored product review videos. *Eur. J. Market.* 57 (5), 1272–1297.
- Amazeen, M.A., 2024. The misinformation recognition and response model: an emerging theoretical framework for investigating antecedents to and consequences of misinformation recognition. *Hum. Commun. Res.* 50 (2), 218–229.
- Amos, C., Holmes, G., Stratton, D., 2008. Exploring the relationship between celebrity endorser effects and advertising effectiveness: a quantitative synthesis of effect size. *Int. J. Advert.* 27 (2), 209–234.
- Bamberg, S., Möser, G., 2007. Twenty years after Hines, Hungerford, and Tomera: a new meta-analysis of psycho-social determinants of pro-environmental behavior. *J. Environ. Psychol.* 27 (1), 14–25.
- Bartschat, M., Cziesho, G., Hennig-Thurau, T., 2022. Searching for word of mouth in the digital age: determinants of consumers' uses of face-to-face information, internet opinion sites, and social media. *J. Bus. Res.* 141, 393–409.

- Bazaanah, P., Mthapo, R.A., 2023. Sustainability of drinking water and sanitation delivery systems in rural communities of the Lepelle Nkumpi Local Municipality, South Africa. *Environ. Dev. Sustain.* 1–33.
- Bega, S., 2021. Plastic Pollution in 2019 Cost South Africa Staggering R885bn. *Mail & Guardian*, 17 Sep 2021. <https://mg.co.za/environment/2021-09-17-plastic-pollution-in-2019-cost-south-africa-staggering-r88534-billion/>.
- Bergkvist, L., Zhou, K.Q., 2016. Celebrity endorsements: a literature review and research agenda. *Int. J. Advert.: The Review of Marketing Communications* 35 (4), 642–663.
- Blackwell, R.D., Miniard, P.W., Engel, F.J., Rahman, Z., 2018. *Consumer Behavior*. Cengage Learning, New Delhi.
- Burchell, K., Rettie, R., Patel, K., 2013. Marketing social norms: social marketing and the 'social norm approach'. *J. Consum. Behav.* 12 (1), 1–9.
- Caniëls, M.C., Lambrechts, W., Platje, J.J., Motylska-Kuźma, A., Fortuński, B., 2021. Impressing my friends: the role of social value in green purchasing attitude for youthful consumers. *J. Clean. Prod.* 303, 126993.
- Carmack, C.C., Lewis-Moss, R.K., 2009. Examining the theory of planned behavior applied to condom use: the effect-indicator vs. causal-indicator models. *J. Prim. Prev.* 30 (6), 659–676.
- de Almeida, V.M.C., Düsenberg, N.B., 2014. Consumer involvement with products: comparison of PII and NIP scales in the Brazilian context. *Review of business management* 16 (50), 75–95.
- De Leeuw, A., Valois, P., Ajzen, I., Schmidt, P., 2015. Using the theory of planned behavior to identify key beliefs underlying pro-environmental behavior in high-school students: implications for educational interventions. *J. Environ. Psychol.* 42, 128–138.
- DeWit, W., Burns, E.T., Guinchard, J.C., Ahmed, N., 2021. *Plastics: the Costs to Society, the Environment and the Economy*. World Wide Fund for Nature, Gland, Switzerland.
- Do Paco, A., Alves, H., Shiel, C., Filho, W., 2013. A multi-country level analysis of the environmental attitudes and behaviours among young consumers. *J. Environ. Plann. Manag.* 37 (10), 1532–1548.
- Dong, Z., Wu, Z., Hou, Y., 2023. Protect the environment for impressing others? Understanding whether, why, and when relational mobility shapes individual pro-environmental behaviors. *J. Clean. Prod.* 427, 139215.
- Filieri, R., McLeay, F., 2013. E-WOM and accommodation: an analysis of the factors that influence travelers' adoption of information from online reviews. *J. Trav. Res.* 53 (1), 44–57.
- Fishbein, M., Ajzen, I., 2010. *Predicting and Changing Behavior: the Reasoned Action Approach*. Psychology Press, New York.
- Gbadamosi, A., 2012. Consumer involvement and marketing in Africa: some directions for future research. *International Journal of consumer studies* 37 (2), 234–242.
- Geiger, S.M., Geiger, M., Wilhelm, O., 2019. Environment-specific vs. general knowledge and their role in pro-environmental behavior. *Front. Psychol.* 10, 718.
- Gendel-Guterman, H., Levy, S., 2013. Does consumers' personal involvement have an influence on store brand buying proneness? *J. Consum. Market.* 30 (7), 553–562.
- Gong, H., Bian, X., Zheng, C., 2024. Leveraging celebrities with inconsistent attractiveness and credibility for charitable endorsement: a cue diagnosticity perspective. *J. Retailing Consum. Serv.* 78, 103771.
- Halder, D., Pradhan, D., Chaudhuri, H.R., 2021. Forty-five years of celebrity credibility and endorsement literature: review and learnings. *J. Bus. Res.* 125, 397–415.
- Helferich, M., Thøgersen, J., Bergquist, M., 2023. Direct and mediated impacts of social norms on pro-environmental behavior. *Global Environ. Change* 80, 102680.
- Hill, C.J., 2001. Within the nature of problem recognition and search in the extended health care decision. *J. Serv. Market.* 15 (6), 454–479.
- Jiang, Y., Park, H., 2021. The effects of CSR appeals and message sources on consumer responses to branded content on Instagram. *J. Interact. Advert.* 21 (3), 209–224.
- Khan, A., Sabir, R.I., Majid, M.B., Javaid, M.U., Anwar ul Haq, M., Mahmood, H., 2022. Celebrity endorsements, whitening products, and consumer purchase intentions: a review of literature. *J. Cosmet. Dermatol.* 21 (10), 4194–4204.
- Knoll, J., Matthes, J., 2017. The effectiveness of celebrity endorsements: a meta-analysis. *J. Acad. Market. Sci.* 45 (1), 55–75.
- Koll, O., Von Wallpach, S., Kreuzer, M., 2010. Multi-method research on consumer-brand associations: Comparing free associations, storytelling, and collages. *Psychology & Marketing* 27 (6), 584–602.
- Li, G., Li, W., Jin, Z., Wang, Z., 2019. Influence of environmental concern and knowledge on households' willingness to purchase energy-efficient appliances: a case study in Shanxi, China. *Sustainability* 11 (14), 1–18.
- Liu, X., Wang, D., Gretzel, U., 2022. On-site decision-making in smartphone-mediated contexts. *Tourism Manag.* 88, 104424.
- Madinga, N.W., Maziriri, E.T., Mototo, L.T., Chuchu, T., 2021. Political campaigns in South Africa: does celebrity endorsement influence the intention to vote? *J. Publ. Aff.* 21 (2), e2225.
- Mafisa, I., 2021. *Waiting to Exhale: the Story of Alexandra Township*. Sowetan Live Newspaper. <https://www.sowetanlive.co.za/news/south-africa/2019-10-18-waiting-to-exhale-the-story-of-alexandra-township/>. (Accessed 2 November 2023).
- Mavundza, E.J., Ndwandwe, D., Wiysonge, C.S., 2022. COVID-19 vaccine demand protest might have increased vaccine acceptance and uptake in South Africa. *Hum. Vaccines Immunother.* 18 (5), e2064691.
- Mead, E.L., Rimal, R.N., Ferrence, R., Cohen, J.E., 2014. Understanding the sources of normative influence on behavior: the example of tobacco. *Soc. Sci. Med.* 115, 139–143.
- Moloi, M., Quaye, E.S., Saini, Y.K., 2022. Evaluating key antecedents and consequences of the perceived helpfulness of online consumer reviews: a South African study. *Electron. Commer. Res. Appl.* 54, 101172.
- Nowak, G.J., Salmon, C.T., 1987. Measuring involvement with social issues. In: *Paper Presented at the Annual Meeting of the Association for Education in Journalism and Mass Communication*, San Antonio, TX, United States.
- O'Rourke, D., Ringe, A., 2016. The Impact of sustainability information on consumer decision making. *J. Ind. Ecol.* 20 (4), 882–892.
- Octav-Ionut, M., 2015. Applying the theory of planned behavior in predicting pro-environmental behavior: the case of energy conservation. *Economica* 11 (4), 15–32.
- Olmedo, A., Milner-Gulland, E.J., Challender, D.W., Cugnière, L., Dao, H.T.T., Nguyen, L. B., et al., 2020. A scoping review of celebrity endorsement in environmental campaigns and evidence for its effectiveness. *Conservation Science and Practice* 2 (10), e261.
- Park, S., 2017. Celebrity endorsement for non-profit organizations: the Role of experience-based fit between celebrity and cause. *Int. Bus. Res.* 10 (1), 8–21.
- Pornpitakpan, C., 2004. The persuasiveness of source credibility: a critical review of five decades' evidence. *J. Appl. Soc. Psychol.* 34 (2), 243–28.
- Rajapaksa, D., Islam, M., Managi, S., 2018. Pro-environmental behavior: the role of public perception in infrastructure and the social factors for sustainable development. *Sustainability* 10 (4), 937.
- Roefs, M., Naidoo, V., Meyer, M., Makalela, J., 2003. *Alexandra: a Case Study of Urban Renewal for the Presidential 10 Year Review Project*, June.
- Salmones, M., Dominguez, R., Herrero, A., 2013. Communication using celebrities in the non-profit sector: determinants of its effectiveness. *Int. J. Advert.* 32 (1), 101–119.
- Saracevic, S., Schlegelmilch, B.B., Wu, T., 2022. How normative appeals influence pro-environmental behavior: the role of individualism and collectivism. *J. Clean. Prod.* 344, 131086.
- Sawitri, D.R., Hadiyanto, H., Hadi, S.P., 2015. Pro-environmental behavior from a socialcognitive theory perspective. *Procedia Environmental Sciences* 23, 27–33.
- Simatele, M., 2023. Trust as a mediator for continued mobile financial service use: a case of the eastern cape province of South Africa. *J. Afr. Bus.* 1–19.
- Solomon, M., Bamossy, G., Askegaard, S., Hogg, M.K., 2016. *Consumer Behaviour: A European Perspective*. Pearson, UK.
- Stull, V., Bell, M., Ncwadi, M., 2016. Environmental apartheid: eco-health and rural marginalization in South Africa. *J. Rural Stud.* 47, 369–380.
- Thondhlana, G., Hlatshwayo, T., 2018. Pro-environmental behavior in student residences at Rhodes University, South Africa. *Sustainability* 10 (8), 1–19.
- Tonellato, M., Tasselli, S., Conaldi, G., Lerner, J., Lomi, A., 2024. A microstructural approach to self-organizing: the emergence of attention networks. *Organ. Sci.* 35 (2), 496–524.
- Topa, G., Mariano, J.A., 2010. Theory of planned behavior and smoking: meta-analysis and SEM model. *Subst. Abuse Rehabil.* 1 (6), 23–33.
- Tshehla, C., Wright, C.Y., 2019. 15 years after the national environmental management air quality act: is legislation failing to reduce air pollution in South Africa? *South Afr. J. Sci.* 115 (9–10), 1–4.
- Utkarsh, 2017. Individual differences in consumer information search for services: a multiple mediation study. *J. Retailing Consum. Serv.* 27 (3), 33–42.
- Visentin, M., Pizzi, G., Pichierri, M., 2019. Fake news, real problems for brands: the impact of content truthfulness and source credibility on consumers' behavioral intentions toward the advertised brands. *J. Interact. Market.* 45 (1), 99–112.
- von Borgstede, C., Andersson, K., 2010. Environmental information-explanatory factors for information behavior. *Sustainability* 2 (9), 2785–2798.
- Wang, Y., 2022. When relationships meet situations: exploring the antecedents of employee communication behaviors on social media. *Soc. Sci. Comput. Rev.* 40 (1), 77–94.
- Wheeler, R.T., 2009. Nonprofit advertising: impact of celebrity connection, involvement and gender on source credibility and intention to volunteer time or donate money. *J. Nonprofit & Public Sect. Mark.* 21 (1), 80–107.

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