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EFFECTIVE COMMUNICATION FOR WATER-RESILIENT COMMUNITIES

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

by

Mohammad Fahmi Abu Bakar

Supervised by
Prof. Wenyan Wu
Prof. David Proverbs
Prof. Eirini Mavritsaki

Faculty of Computing, Engineering, and the Built Environment (CEBE)
Birmingham City University

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DECLARATION

1) I, Mohammad Fahmi Abu Bakar, confirm that the work presented in this thesis is my own.
2) Where information has been derived from other sources, I confirm that this has been indicated in the thesis.
3) All the work described in this thesis was carried out under the supervision of Prof. Wenyan Wu, Prof. David Proverbs and Prof. Eirini Mavritsaki.
4) This thesis does not exceed 80,000 words, excluding footnotes, tables, figures, bibliography, appendices, and supporting data.
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Signed: 

(Mohammad Fahmi Abu Bakar)

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ABSTRACT

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The world is facing significant water challenges, including droughts and scarcity brought about by climate change and demographic changes. In the UK, where awareness levels are often low and other environmental issues tend to take priority, there exists a common perception that the country is blessed with abundant rainwater and is not susceptible to water scarcity. With the power of social media and the growing recognition of emotions in marketing, it has become essential to develop a robust framework for effective communication in the context of water conservation campaigns. This research thus aims to propose a new, socio-psychological water conservation framework that integrates elements of effective communication using video and social media technologies to motivate a change in household water consumption behaviour. The framework is built on the foundations of two key persuasion theories: the Elaboration Likelihood Model (ELM) and the Theory of Planned Behavior (TPB). The framework integrates elements of effective communication, aiming to bridge the gap between knowledge and action. Notably, it introduces emotional appeal as an important element of communication, a novel approach in the context of social media water conservation campaigns. By combining informativeness, credibility, and emotional appeal, this framework offers a comprehensive solution to the problem of stagnant communication efforts. To investigate this, an online questionnaire was administered, featuring a validated stimulus in the form of a video. A total of 443 responses were collected and analysed using Structural Equation Modeling (SEM) within the AMOS software. The study evaluated the framework's impact on shaping positive attitudes, empathy expressions, perceived behavioural control, and subjective norms, ultimately influencing intentions for water conservation. The findings also underscore the pivotal role of emotional appeal as a mediator, translating informativeness and creativity into favourable attitudes. Additionally, demographic variables particularly gender, water usage habits, awareness levels, and billpayer status were explored as potential moderators of the framework's effectiveness. Practically, this research may offer valuable guidance for designing effective communication strategies not just for water conservation but also for other critical matters.

CONTENTS

ILLUSTRATIONS

TABLES

ABBREVIATIONS

AEE	Attitude towards empathy expression
AWC	Attitude towards water conservation
AWR	Awareness
CR	Composite Reliability
CRD	Credibility
CRE	Creativity
EA	Emotional appeal
EFA	Exploratory Factor Analysis
ELM	Elaboration Likelihood Model
GoF	Goodness of Fit
HAB	Habit
IFI	Incremental Fit Index
INF	Informativeness
INT	Intention
MaxR(H)	Maximum Redundancy
MLE	Maximum Likelihood Estimation
MME	Multimedia Effects
MMI	Measurement Model Invariance
MSA	Measure of Sampling Adequacy
MSV	Maximum Shared Variance
PBC	Perceived behavioural control
PFQ	Post-Film Questionnaire
RMSEA	Root Mean Square Error of Approximation
RQ	Research question
S.E	Standard error
SEM	Structural Equation Modelling
SMA	Structural Model Assessment
SN	Subjective norms
SRMR	Standardized Root Mean Squared Residual
TLI	Tucker-Lewis Index
TPB	Theory of Planned Behaviour
WCC	Water Conservation Campaign
χ^2/df	Chi-Square divided by the Degrees of Freedom

1 INTRODUCTION

1.1 CHAPTER INTRODUCTION

Water is one of the most essential natural resources. Its scarcity and the looming threat of drought emphasise the urgency of managing this vital element sustainably. In the face of these challenges, effective communication becomes paramount (Antwi et al., 2022; Koop et al., 2019; Lede & Meleady, 2019; Liang et al., 2018). This research integrates various disciplines that have previously existed in isolation, forming a comprehensive framework aimed at understanding the emerging concept of effective communication within water conservation campaigns for promoting water resilience. Serving as the foundational introduction to this thesis, this chapter offers a holistic overview of the research. Section 1.2 navigates the underlying causes of this water scarcity and the complex web of interconnected factors. Building upon this foundation, attention turns to the concepts of awareness, resilience as an adaptive strategy, and water conservation, unravelling the complex challenges that encompass sustainable water consumption. Section 1.3 then delves into the driving forces that prompted this investigation and the imperative to explore strategies for effective social media communication to enhance resilience. The study's aims and objectives are outlined in Section 1.4. To attain these objectives, a comprehensive quantitative approach is employed, with Section 1.5 providing a brief overview of the methods. Following that, Section 1.6 discusses the research contributions. The overall structure of the thesis is then detailed in Section 1.7, providing readers with a roadmap of what lies ahead. Lastly, Section 1.8 concludes with a concise chapter summary, offering readers a recap of the key elements covered in this chapter.

1.2 WATER SCARCITY, AWARENESS, RESILIENCE AND WATER CONSERVATION CAMPAIGN (WCC)

1.2.1 Water Scarcity

Global water resources pose a major issue due to their geographical and temporal distribution (AghaKouchak et al., 2021; Cosgrove & Loucks, 2015; Joseph et al., 2020). This often results in the lack of freshwater resources to meet water demand, hence, the term "water scarcity" (Morante-Carballo et al., 2022; Rijsberman, 2006; Tzanakakis et al., 2020; Unfried et al., 2022). Demographic changes, urbanisation, pollution, and climate change projections indicate an impending increase in severe drought conditions, leading to critical water scarcity (Cosgrove & Loucks, 2015; McDonald et al., 2011; Mehrazar et al., 2020). These causes tend to be interrelated to one another as shown in Figure 1.1 which further complicates the nature of the water resource context, making improvements and responsiveness more difficult to achieve (Ahmadalipour et al., 2019; Din et al., 2022; Maleksaeidi et al., 2016; Smirnov et al., 2016; Vicente-Serranoa et al., 2020; Wang et al., 2022b). This also means there is a potential domino effect and that water supplies that have previously been reliable may no longer be so in the future (Bevan, 2019; Boretti & Rosa, 2019; Dadson et al., 2020).

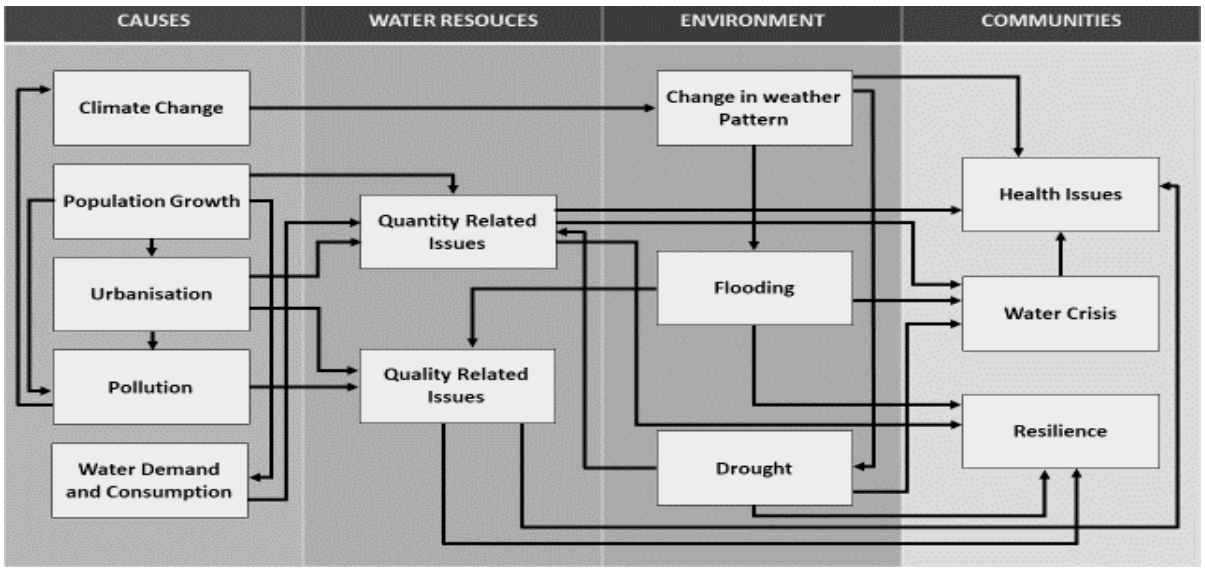

Figure 1.1. Issues of water resources. Water issues causal-effect relationship.

Global water scarcity already affects more than two billion of the world's population (Mekonnen & Hoekstra, 2016; Tzanakakis et al., 2020; van Vliet et al., 2021). Despite the perception of the UK as a country blessed with abundant water resources, water utilities in the region often grapple with significant challenges in managing and distributing water supply, particularly during the summer months (Mace, 2020; Salter & Singleton-White, 2019; Lu et al., 2019). Surprisingly, water scarcity has become a pressing issue in the UK due to the occurrence of water deficits (Barker et al., 2019; Tanguy et al., 2023; Parry et al., 2023), mainly attributed to dry seasons and exacerbated by geological features, climate change, urbanisation, and population growth (Baker et al., 2020; Bryan et al., 2019; Environment Agency, 2021a; Environment Agency, 2020; Salter & Singleton-White, 2019). The contrasting perception of abundant water resources in the UK versus the predicted drought, therefore, highlights the urgent need for enhanced awareness, education, and communication regarding sustainable water management.

Alarming predictions suggest that England could face a water shortage within the next 25 years (Bryan et al., 2019; Environment Agency, 2021a; Environment Agency, 2020; Mace, 2020). In fact, without proactive measures, some regions in the UK may even run out of water within the next decade (Chambers, 2020; Smart, 2023; Williams, 2023). Sir James Bevan, the chief executive of the Environment Agency, vividly describes this situation as the "jaws of death", referring to the critical point where the rising water demand from the country's growing population surpasses the declining supply caused by climate change (Bevan, 2019; Chambers, 2020).

To such an extent, the UK experiences different manifestations of water scarcity, such as hydrological and meteorological droughts (Barker et al., 2016; Rahiz & New, 2012; Turner et al., 2021). Hydrological drought, as defined by Van Loon (2015) signifies a deficiency of water in the hydrological system, leading to low streamflow and reduced levels in lakes, reservoirs, and groundwater. Between 2016 and 2019, the UK faced a series of hydrological droughts, exacerbated by an intense heatwave in 2018 (Turner et al., 2021). Meteorological droughts, on the other hand, arise from inadequate rainfall and uneven distribution of water resources (Cole & Marsh, 2006). The recent meteorological droughts in 2022 reached critical levels during a summer heatwave, emphasising the need for comprehensive strategies to address spatial and temporal disparities in water availability (Turner, 2022). These episodes further underline the vulnerability of the water supply system and the importance of proactive measures to mitigate the impact of droughts on water management (Osborne & Weedon, 2021).

1.2.2 Issues of Awareness

Understanding the importance of awareness such as recognising key issues, comprehending their consequences, and embracing responsibility, especially within the realm of the environment, stands as a fundamental step towards fostering responsible behaviour. Notably, this awareness process often paves the way for the manifestation of pro-environmental behaviours (Cheema et al., 2020; Confente & Scarpi, 2021; Saeed et al., 2019). Central to this concept is the critical necessity to instigate an awareness of the detrimental effects that environmental factors can exert on individuals. This emphasis on awareness underpins the belief that an individual's inclination towards participating in pro-environmental actions, aimed at mitigating climate change, significantly correlates with their self-efficacy levels and collective efficacy beliefs (Chen, 2016). Hence, this section delves into the existing body of research that specifically focuses on the awareness, perceptions and engagement surrounding the issues in the UK.

The preceding section has highlighted the looming issue of water scarcity and drought in the UK, addressing this pressing challenge, therefore, requires a thorough understanding of public perceptions, engagement levels, and awareness regarding these water-related issues. People are often encouraged to reduce their water consumption, however, there is a common lack of comprehensive understanding regarding the underlying problems (CCW & Yonder Consulting, 2022; Doron et al., 2011; Heath, 2018; Morris & McGuinness, 2019). The absence of thorough awareness regarding the underlying relevant issues acts as a major barrier, as this knowledge gap may hinder the ability to effectively address the challenges at hand (Burningham et al., 2008; Hynds et al., 2018; Mkenda et al., 2020). Lack of knowledge about mitigation actions, often referred to as the "Knowledge-Action Gap", leaves individuals ill-prepared to manage the devastating impacts of disasters or unfavourable circumstances (Flagg & Kirchhoff, 2018; Frick et al., 2021; Roche et al., 2021). This glaring disparity presents a significant opportunity for relevant stakeholders to play a pivotal role in bridging this gap and leading the necessary transition towards sustainability (Finn, 2023).

The UK is perceived by the public as a country with frequent wet weather and infinite water (CCW, 2021; Jones et al., 2021; Weitkamp et al., 2020). For example, the findings of the Great British Rain Paradox survey suggest that 72% of the public believes that the UK has sufficient water to meet daily demands and most of the public is unaware of the water supply threat as a result of population

growth and climate change (Mace, 2020). An additional factor is the water sector's emphasis on customer service, leading to the perception that interruptions to water supply are unacceptable and many consumers remain unaware of their water usage patterns (CCW, 2022; CCW & Yonder, 2022; Dessai & Sims, 2010; Taylor et al., 2009). Research shows that 46% of people (survey of 2,190 UK adults) thought their daily household water usage was less than 20 litres when an average family of four could use more than 500 litres per day (main uses being showers, baths and toilet flushing) (Water UK, 2020a). As a result, drought risk communication is complicated by this long-standing cultural narrative (Ward & Wentworth, 2021).

Another crucial area that requires attention is inadequate preparation for droughts, water scarcity, and water stress events. The preparation for drought, water scarcity, and water stress events tends to be less well-developed and English water consumers have not traditionally been involved in drought management (Bryan et al., 2019; Hannaford et al., 2018). Water consumers frequently ignore water-related threats or prioritise other environmental concerns (Blue Marble Research Ltd, 2021; Howarth & Butler, 2004; Mace, 2020; Water UK, 2020b). Unlike the issues of flooding which are more commonly captured in the public mind, issues of drought and water scarcity are not well-familiar in the UK (Carvalho & Spataru, 2023; Garde-Hansen et al., 2016). The issue also tends to affect only selected areas, hence, those who live in unaffected areas do not feel that they have to be concerned (CCW, 2021; Gilbertson et al., 2011; Lamm et al., 2016; Pankhania & Jenkins, 2018). This shows that people's interactions with their environment and their perceptions of its condition have a direct bearing on their water usage patterns. As a result, communicating drought and water scarcity poses further significant challenges as a result of its gradual onset, complex nature, and often hidden during its early stages, similar to the difficulties associated with conveying threats related to climate change (Weitkamp et al., 2020; Hurlimann & Bell, 2019).

With changing weather patterns, building and improving resilience to mitigate the impacts of water-related issues are crucial (Howard et al., 2010; Hurlimann et al., 2021; Shammin et al., 2022; Stoler et al., 2023; Tiwari, 2023). In the UK, research has been devoted to the need for being water resilient (Bryan et al., 2019; Butler et al., 2016). Individual levels in a community need to be more adapted and prepared for the rising issues of drought and water scarcity. Hence, a comprehensive understanding of the underlying problems is necessary for effective action. By involving consumers in water management and increasing their awareness, it is possible to enhance behavioural changes that lead to more resilient communities and a sustainable water future.

1.2.3 Resilience as the Adaptive Strategy

From the perspective of policymakers, both adaptation and mitigation are equally crucial (Diener, 2022; Dudley et al., 2022; IPCC, 2014; Vignola et al., 2009). Both these approaches are the vital components of community resilience (Mihunov et al., 2017; Water UK, 2016), yet both are time-sensitive, requiring swift action to address the challenges (Kyriakopoulos & Sebos, 2023; VijayaVenkataRaman et al., 2012; Wilbanks, 2005; Wilbanks et al., 2007). In the context of the UK's drought and water scarcity issues, it becomes paramount for vulnerable communities to prioritise the enhancement of their resilience to effectively cope with the adverse impacts (Bryan et al., 2019). Communities, therefore, need to adopt a proactive and adaptive environmental risk management strategy to effectively adjust to the new conditions and foster creativity before, during, and after hazardous events (Comfort & Dunn, 2023; Imperiale & Vanclay, 2023; Mihunov et al., 2017).

"Resilience" focuses on the act of equalisation to respond to change and to persist in changing conditions (Holling, 1973). Resilience can be characterised as being "persistent", "adaptable" and "transformable" (Hall et al., 2019). The definition revolves around the context of the capacity of a system to cope with and adapt to disturbances (Berkes et al., 2003; Carpenter et al., 2001). Resilience acts as affirmative adaptation and persistence to hardship to withstand, cope with, or adapt to changes, risks or calamities while continuing to maintain certain key functions, and protect the natural environment now and in the future (Fielding et al., 2012; Fleming & Ledogar, 2008; Folke, 2016; Ofwat, 2019a). This generally indicates that the concept of resilience has the potential to increase a system's ability to adapt to specific adversity which then supports sustainable development. Hence, resilience can be regarded as a promising tool for analysing adaptable change toward sustainability, as highlighted by Rockström et al. (2014).

Several recent approaches use a comprehensive approach to resilience that incorporates different views from the built-environment perspective (Hollnagel et al., 2011), and the social-ecological system (Carpenter et al., 2001; Cohen, 2020; Johannessen & Wamsler, 2017). Concerning the socioecological system, Carpenter et al. (2001) define resilience as the capacity of which disruption can be endured and hence should consider the question of "what to what?". To assess a system's resilience, one must specify "resilience of what?" and "resilience to what?" (Carpenter et al., 2001). In other words, in order to effectively evaluate the resilience of a system, it is crucial to specify the

system configuration under examination and identify the particular disturbances. By clearly defining the desired outcomes, researchers and practitioners can align their efforts towards targeted and effective interventions (Liao & Fei, 2016; Quandt & Paderes, 2022). Considering "resilience of what?" and "resilience to what?" also helps to gain a deeper insight into the system's capacity to endure disruptions and recover effectively, enhancing the effectiveness and relevance of resilience-building strategies and interventions (Carpenter et al., 2001; Dewulf et al., 2019).

In response to Carpenter et al.'s (2001) work, Lebel et al. (2006) put forth the argument that the concept of resilience should go beyond "what to what?" and also incorporate the question of "for whom?". Lebel et al. (2006) contend that a comprehensive understanding of resilience must take into account the diverse stakeholders and groups that are impacted by and involved in the socioecological system under examination. By acknowledging the varying needs, interests, and vulnerabilities of different actors, resilience assessments can effectively address the distributional aspects and potential inequalities that may arise in the face of disruptions (Herrera, 2017; Takinana & Baars, 2023). By considering social dynamics, their roles, and their relationships within the system, researchers can gain insights into the differential impacts of disturbances and the potential for marginalised or vulnerable communities to be disproportionately affected (Lebel et al., 2006; Tai, 2020).

Expanding on the previous discussions, Meerow and Newell (2019) propose a comprehensive approach to urban resilience by considering the five dimensions: whom, what, when, where, and why. The "whom" dimension focuses on understanding the stakeholders and communities affected by urban systems and recognising their diverse needs and vulnerabilities (Lebel et al., 2006; Meerow & Newell, 2019). The "what" dimension addresses the specific objectives and goals of resilience strategies, as highlighted by Carpenter et al. (2001). The "when" dimension emphasises the importance of timing and sequencing interventions to develop adaptive strategies (Elmqvist et al., 2019; Meerow & Newell, 2019). The "where" dimension acknowledges the significance of the context in which resilience strategies are implemented, considering the distinct characteristics and resources of different areas (Meerow & Newell, 2019). Lastly, the "why" dimension explores the motivations and justifications for driving resilience efforts, providing insight into the values and priorities that shape resilience strategies (Meerow & Newell, 2019). By answering these 5 Ws, researchers and practitioners can gain insight into the values, priorities, and desired outcomes that shape resilience strategies (Meerow & Newell, 2019; Yi & Jackson, 2021).

In light of the growing challenges posed by climate change, the concept of resilience is gaining traction as an essential approach for enhancing the management of water systems and communities. This shift is aimed at effectively addressing the contemporary challenges in water resource management (Laskey et al., 2023; Obasi et al., 2023; Paling, 2020; Rodina, 2018; Rodina et al., 2017). Communities in any settlement hierarchy can be thought of as having water-related functions that must be maintained over time (Amirzadeh et al., 2022; Cao, 2023; Kang et al., 2023; Lanlan et al., 2023). Among multidisciplinary views on resilience, the concept should consider social justice and complement it with a fitting view on the functioning of people instead of the distribution of primary goods (Bindu & Vishnudas, 2022; Doorn et al., 2019). The level of susceptibility and capacity to respond to the detrimental consequences of a disaster varies across different communities or societies, highlighting the importance of understanding their vulnerability and preparedness measures (Amirzadeh et al., 2022; Lankao & Qin, 2011).

Environmental policies are increasingly dependent on communities' awareness and action (Holstead et al., 2018). Water-resilient communities are characterised by their awareness of susceptibility to the detrimental effects of water scarcity and drought (Kennedy et al., 2013), as well as their capacity to respond effectively and recover quickly through robust social support mechanisms (Rodriguez-Llanes & Guha-Sapir, 2013). Additionally, enhancing knowledge and skills (Coles & Buckle, 2004), reducing risks (Rego & Mehta, 2005), and utilising community resilience toolkits for action planning (Chandra et al., 2013), can all contribute to a community's overall resilience. Water-resilient communities also focus on optimising water use efficiency, adopting sustainable practices, and developing strong water management systems (Kennedy et al., 2013). They also prioritise social cohesion and collaboration among stakeholders, ensuring equitable access to water resources, particularly for vulnerable populations (Patel et al., 2017; Rodriguez-Llanes & Guha-Sapir, 2013). By integrating these elements, water-resilient communities can effectively mitigate the impacts of water scarcity and drought, fostering sustainability and well-being (Aguilar et al., 2022; Sharma et al., 2022; Sridharan et al., 2023; Zarei et al., 2020).

In summary, resilience empowers individuals with the ability to navigate transformative changes with adaptability and effectively respond to life's challenges (e.g., Hall et al., 2019; Holling, 1973). Building a positive self-image and maintaining an optimistic outlook lays the groundwork for increased resilience (Mowbray, 2011; Roesch-McNally et al., 2018). Furthermore, the acquisition of knowledge (Kumar et al., 2016) and active engagement (Norris et al., 2008) strengthen one's

resilience, while the presence of robust social support (Yu et al., 2014) acts as an invaluable resource. The promising aspect is that resilience isn't an innate trait, but rather a skill that can be honed and fortified (Wilborn, 2015). It entails cultivating attitudes and behaviour to enable individuals to bounce back from difficult situations (Cherry, 2022; Neenan, 2017). By developing this skill, individuals are equipped not only to endure challenges but to emerge from them with newfound strength and a deeper sense of capability.

1.2.4 Water Conservation Campaign (WCC)

The predicted intensification of droughts raises concerns about effectively managing limited water resources and meeting the escalating water demands (Boretti & Rosa, 2019; Kilemo, 2022; Plessis, 2023). In order to guarantee the sustainable use of water in residential areas, demand-side water management has attracted substantial interest on a global scale by limiting and controlling usage (Inman & Jeffrey, 2006; Tortajada et al., 2018; Willis et al., 2011). Demand management encompasses measures aimed at reducing the resource intensity of the supply and it can be effectively categorised into two key strategies: (1) addressing the infrastructure requirements of the supply, such as minimising leakage, more water metering, insisting on new building regulations to drive greater water efficiency, and (2) targeting the reduction of water demand in relation to psychology and environmental psychology (Abu-Bakar et al., 2021; Araral & Wang, 2013; Beal et al., 2023; Brooks, 2006; Environment Agency, 2019; Hoolohan, 2016; Russell & Fielding, 2010; Sharma & Vairavamoorthy, 2009). Water supply should be able to cater to water demand, thus the second strategy mentioned earlier stresses the effectiveness of water resource demand management to ensure sufficient and continuous water supply regardless of drought events (Brooks, 2006; Watts et al., 2009).

In terms of targeting the reduction of water demand in relation to psychology and environmental psychology, policymakers and social marketers employ various policy instruments to influence human behaviour (Global Water Partnership, 2000; Siew, 2023). The classification of policy instruments into "old tools" and "new tools" was introduced by Dietz and Stern (2002) to categorise different approaches used by policymakers and social marketers to influence behaviour. The classification is based on the characteristics and strategies for example, "old tools" focus on traditional policy instruments that have been used for a long time (Dietz & Stern, 2002). These

include command and control legislation and market-based policies (Grillos et al., 2021; Shatanawi & Al-Jayousi, 1995). The "new tools" encompass more recent approaches to policy implementation. These include education and the provision of information (Antwi et al., 2022; Boyer et al., 2020). Education involves raising awareness and providing knowledge about the desired behaviours and their benefits (Dietz & Stern, 2002; Ehret et al., 2021). Provision of information focuses on providing individuals with data, feedback, and comparative information to encourage them to make informed choices (Allison et al., 2023; Tortajada & Joshi, 2013).

The significance of promoting WCCs is highlighted by Randolph and Troy (2008), who argue that without a well-designed strategy to encourage WCCs, the battle for effective water demand management would ultimately be lost. WCCs have emerged as crucial tools and key methods for addressing water shortages (Aveek & Rosenberg, 2022; Boyer et al., 2020; Gilbertson et al., 2011; Gonzalez et al., 2021; Kassirer, 2022; Katz et al., 2016; Maduku, 2021; Randolph & Troy, 2008) and enhancing water resilience (Berkes & Turner, 2006; Rockström, 2003; Zou et al., 2011). In addition, WCCs, especially during droughts, are vital for effective water management (Fielding et al., 2013; Gilbertson et al., 2011; McDonald, 2015; Otaki et al., 2019). Table 1.1 below summarises the benefits, opportunities, and barriers of a water conservation campaign. While such programmes often address minor supply shortages, they rely on a multifaceted approach for long-term success (Otaki et al., 2019). By implementing these campaigns, it becomes possible to create a greater understanding and awareness among the public, enabling them to actively participate in managing water resources and mitigating water scarcity challenges effectively.

Table 1.1. WCC benefits, opportunities and barriers. Environmental benefits and opportunities and barriers to a public water conservation campaign. Adopted from UNCTCN (2016).

BENEFITS AND OPPORTUNITIES	BARRIERS
• Reduces water demand and consumption, thus, reducing pressures on water utilities to supply freshwater sources (UNCTCN, 2016). • Reduces water costs for utilities and end-users (C2ES, 2018). • Improves knowledge, understanding and awareness (Dietz & Stern, 2002; Ehret, et al., 2021). • Shifts the public to a sustainable lifestyle (Boyer, et al., 2015; Kassirer, 2022; March, et al., 2015). • Encourages collaboration among stakeholders (Ward & King, 1998). • Improves resilience (Boyer et al., 2015; Rasoulkhani, 2019). • Requires relatively low-cost technology with wide-reach management (Boyer et al., 2020; Hove & Osunkunle, 2019). • Successful in reducing usage when combined with other policy tools (March et al., 2015; Lavee et al., 2013; Roibás et al., 2007).	• Certain conservation techniques, such as water recycling, necessitate corresponding educational initiatives (Belayneh, 2023; Hopson & Fowler, 2022). • Public scepticism and lack of understanding about the whole water system (Corral-Verdugo & Frías-Armenta, 2006; do Paço & Reis, 2012). • Successfulness is based on individual behaviour at the household level which is difficult to monitor and measure (Addo et al., 2018a; Wang & Chermak, 2021). • Policy and institutional e.g., water transfer restrictions, and land tenure arrangements (Brown & Hess, 2017; Ward et al., 2007).

1.3 Problem Statement and Research Motivation

The state of today's water resources is one of the most important environmental and socioeconomic issues (Cosgrove & Loucks, 2015; Plessis, 2023). Water scarcity issues have been exacerbated by climate change, urbanisation and socio-demographic changes (He et al., 2021; McDonald et al., 2011; Mehrazar et al., 2020). In the UK, the recent projections for water scarcity have underscored the urgent need to enhance the resilience of public water supplies and the entire community to withstand drought and meet additional demands (Chambers, 2020; Environment Agency, 2017; Environment Agency, 2019; Environment Agency, 2020; Water UK, 2022). This predicament has brought about significant stress on both the natural environment and public water supplies in the UK (Grecksch & Landström, 2021; Turner et al., 2021). Consequently, conserving water resources becomes critical in order to foster sustainable water supply management (Makanda et al., 2022; Tsakiris & Loucks, 2023).

In a world full of uncertainties and where the climate change effect is increasingly visible, the conservation of natural water resources is one of the important components which should be considered for creating resilient (Boyer et al., 2015; Savari et al., 2023; Shao et al., 2022; Sridharan et al., 2023; Tabibian & Movahed, 2016). Droughts and water scarcity affect water supplies such as drinking water quality and accessibility. This makes water a critical attribute to the landscapes' and communities' resilience (Rockström et al., 2014). The increasing occurrence of droughts has served as a catalyst for policy changes worldwide, prompting numerous nations to adopt measures aimed at enhancing water resilience (Bandyopadhyay et al., 2020; Clarvis et al., 2014; Ma et al., 2020; Rodina et al., 2017; Stein et al., 2016), commonly through the contemporary water management practices (Bunney et al., 2021; Fritsch, 2016; Rockström, 2003).

Environmental education facilitates the exploration of environmental issues, problem-solving, and taking action to enhance sustainability (EPA, 2023). The aim is to educate the public about preventing environmental risks (Briandana & Mohamad Saleh, 2022; Cox, 2013; Skutka, 2021), an integral part of contemporary water management practices. This form of public education is crucial in guiding individual responses to changes (Alam, 2022; Antwi et al., 2022), highlighting the pivotal role of communication campaigns in raising awareness and fostering engagement (Coffman, 2002; Rice & Atkin, 2009; Rogers & Storey, 1987; Wi & Chew-Hung, 2019).

In recent years, society's increased reliance on the digital environment has transformed communication dynamics. The domination of social media has significantly influenced multiple aspects, including environmental awareness, and disaster management (Anderson-Wilk, 2009; Czarnecka et al., 2022; Han & Xu, 2020; Merchant & Lurie, 2020; Merchant et al., 2011; Tang et al., 2015; Xiao et al., 2022). Social media platforms provide an interactive and dynamic means of disseminating information, enhancing pro-environmental behaviour and shaping users' perceptions (Czarnecka et al., 2022; Fischer et al., 2023; Han & Xu, 2020). In relation to public education, this digital landscape serves as a powerful tool for environmental communication, particularly short online videos, as an effective means to engage the public with scientific, environmental, and conservation messages (Pavelle & Wilkinson, 2020). Additionally, in the water conservation context, this advanced technology has created more opportunities for communities to reach, participate, and become more water-resilience, thus, creating a new model of water management (Boyer et al., 2020; Hove & Osunkunle, 2019; Koroleva & Novak, 2020).

As social media is becoming more acceptable as a new means of marketing, it is important to understand what engages social media users in favourable online behaviour, thereby resulting in an effective advertising campaign (Arora & Agarwal, 2019; Lee & Hong, 2016; Lee et al., 2018). Previous studies conceptualised effective marketing in general and in social media as a concept encompassing informativeness, credibility, entertainment and creativity (Logan et al., 2012; Mir, 2012; Murillo, 2017; Van-Tien Dao et al., 2014). All of these aspects of advertising have the potential to contribute to the development of positive online behaviour and attitudes, as well as sales.

Emotions and their profound influence on behaviour have been extensively studied within the realms of psychology, behavioural sciences, and marketing (Chandy et al., 2001; Matthes et al., 2014; Nelson-Field et al., 2013; Teixeira et al., 2012; Tellis et al., 2019). In fact, emotions are known to significantly impact decision-making, judgment, and persuasion (Bechara et al., 2000; Blanchette & Richards, 2010; Izard, 2009; Naqvi et al., 2006). It has been demonstrated that communications concerning brands and marketing are more effective when they generate an emotional connection (Rodriguez, 2020; O'Shaughnessy & O'Shaughnessy, 2003). While informative advertisement content provides customers with brand and product information, emotionally appealing advertisement content allows customers to make judgments using logical reasoning and increases their interest (Guo et al., 2020; Lee et al., 2018; Tan et al., 2021). As a result, understanding and leveraging the interplay between emotions and consumer behaviour emerges as a pivotal aspect of successful marketing strategies.

With these ideas in mind, it is interesting to consider social media video advertising as a way to promote communities' resilience to water scarcity. However, the effectiveness of such a social media advertising campaign depends largely upon how the message is delivered (Alsaad et al., 2023; Ashley & Tuten, 2015; Lee & Hong, 2016). It is therefore imperative that elements of effective communication are considered to influence the audience's decision-making processes, particularly on the role of "emotional appeal". The study inquiry is whether communications that aim to generate an emotional connection are helpful in terms of enhancing engagement and improving awareness, which may lead to behaviour change, in the water sector. Figure 1.2 below summarises the field of inquiry.

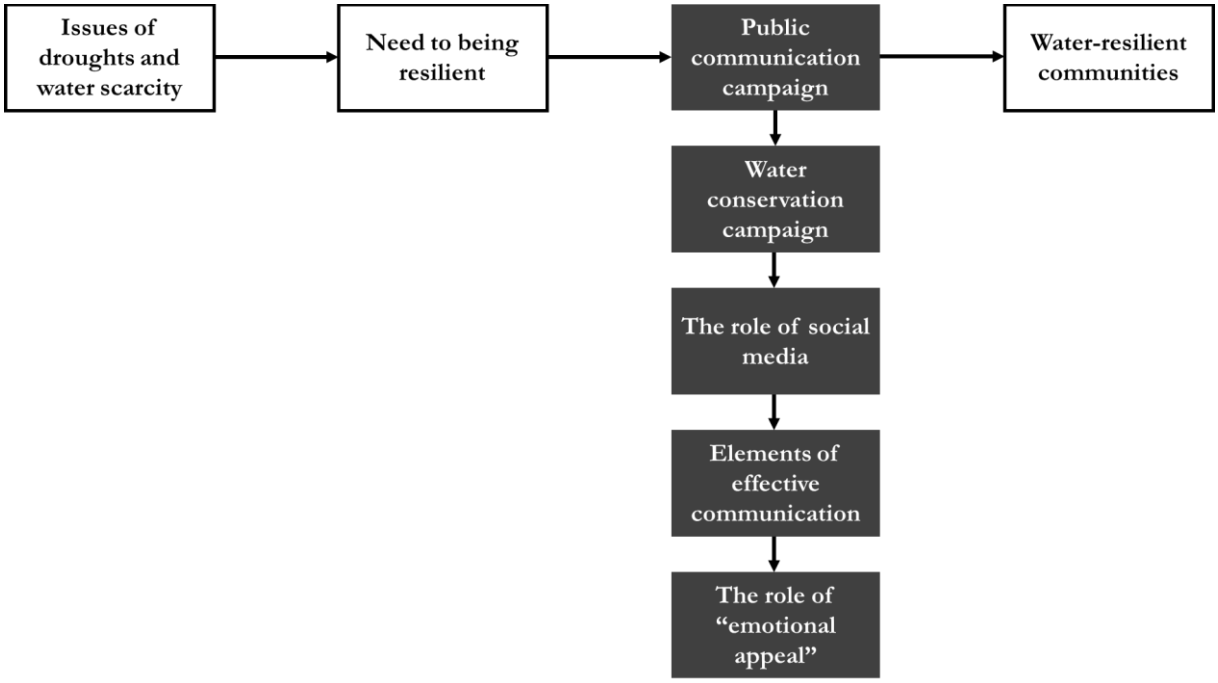

Figure 1.2. The field of inquiry. Depicting the field of inquiry from the rising issues of water scarcity to developing resilient communities through public communication campaigns. Note: Boxes shaded in black represent areas of focus requiring further research

While water conservation and relevant awareness have grown over the previous decades, the growth in pro-environmental behaviours that are required to alleviate environmental risks still yields mixed results (Addo et al., 2019; Katz et al., 2016; Maduku, 2021). This calls for a reevaluation of how to deliver effective strategic communication, particularly those communications that have purposive attempts to inform and persuade audiences or motivate behavioural changes. This research, therefore, proposes a new set of "effective communication for water-resilient communities" paradigms in consideration of water conservation audio-visual communication in social media advertising.

The research inquiry was therefore based on the idea of emotional marketing. More specifically, the influence of emotionally appealing audio-visual communication, along with other persuasive cues, on water consumers' attitudes to the advertisement and messages, and their behavioural intentions will be tested. The theoretical exploration of "effective communication" in a water conservation campaign found that the role of emotions has not been adequately researched, although its importance has been mentioned numerous times in relevant studies (de Miranda Coelho et al., 2016; Koop et al., 2019; Singha et al., 2022; Wang et al., 2021; Wang et al., 2022a).

An understanding of how to conceptualise the alignment of important elements such as informativeness, creativity and credibility, along with the role of emotions is also important. Hence, this study clarifies the role of emotions as determinants of the perceived effectiveness of a water conservation campaign.

1.4 RESEARCH AIM AND OBJECTIVES

1.4.1 Research Aim

This research aims to propose a new, socio-psychological water conservation framework that integrates elements of effective communication using video and social media technologies to motivate a change in household water consumption behaviour through the integration of emotional appeal.

The research also explores the role of emotions as important variables within the proposed framework, examining their influence on individuals' motivation to conserve water. Additionally, the research investigates the effectiveness of the framework across different socio-demographic groups, particularly gender, age, existing habit, awareness level and billpayer status, to understand any variations in response and identify potential factors for future customisation. By developing and testing this integrated framework, this research provides insights into effective strategies for fostering sustainable water usage and contributes to the field of socio-psychological interventions for behaviour change.

1.4.2 Research Objectives

The objectives of this research are:

1. To conduct a comprehensive review of water resources issues and scarcity, resilience, water conservation campaigns, communication and persuasion, and attitudes and behaviours, with the aim of bridging the themes and deriving conclusive insights and

actionable recommendations to inform an effective communication strategy for water conservation.

2. To develop a framework that integrates relevant factors, determinants and predictors that are more effective in influencing water consumers' conservation actions.

3. To design and validate a measurable stimulus that encompasses emotional appeal and other dimensions of advertising effectiveness in water conservation and serves as a tool for assessing the impact of communication efforts.

4. To develop a comprehensive and tailored data collection instrument specifically designed to capture key variables related to emotional appeal, informativeness, creativity, multimedia effects, credibility, and intentions in the context of the proposed water conservation framework.

5. To collect and analyse relevant data to support research goals and to address key research questions mainly using Structural Equation Modeling (SEM) techniques by assessing the relationships among key variables.

6. To synthesise the research outcomes and present a comprehensive research report and findings.

1.5 RESEARCH METHODS IN BRIEF

The research commences by formulating a framework that emphasises the components of effective communication and persuasion. This framework is utilised to derive cues for the Elaboration Likelihood Model (ELM) and subsequently integrate it with the Theory of Planned Behavior (TPB), a behavioural change model. The next step involved creating a water conservation video that incorporated key elements of informativeness, credibility, and emotional appeal. Multimedia effects and creative elements were used to enhance engagement and ensure a compelling viewing experience. To assess the emotions evoked by the video, Rottenberg et al.'s (2007) Post-Film Questionnaire (PFQ) was adopted. This questionnaire captured participants' emotional responses to the video, including the intensity of emotions felt and the specific emotions

experienced. The video must effectively convey the water conservation message while evoking targeted emotional responses in order to use it as a stimulus.

Simultaneously, the construction of the questionnaire underwent a rigorous process to ensure the validity and reliability of the measurement scales. The items on informativeness, credibility, creativity, multimedia effects, emotional appeal, and the TPB constructs (attitudes, subjective norm, and perceived behavioural control) were adapted from existing validated scales. The relevant literature served as the foundation for selecting and modifying items to suit the context of the current study. A panel of experts with expertise in water conservation communication (CCW) reviewed the questionnaire for content validity. The measurement of constructs was based on Likert-type scales, ranging from 1 (strongly disagree) to 6 (strongly agree). The reliability of the scales was evaluated, indicating satisfactory internal consistency for all constructs. Additionally, confirmatory factor analysis was conducted to assess the convergent and discriminant validity of the measurement model.

The study adopted a quantitative research approach to examine the relationships between emotional appeal, informativeness, credibility, and the TPB constructs. This design allowed for a systematic analysis of the variables and their associations, offering insights into the underlying factors influencing individuals' behavioural intentions in the context of the targeted persuasive communication. The target population for this study comprised household water consumers, and social media users (e.g., Facebook, Instagram, Twitter) and above 18 years old. A convenience sampling method was employed to recruit participants from various online platforms.

Data collection took place over a four-month period using an online survey platform. Participants were presented with a consent form outlining the purpose of the study, their rights as participants, and the voluntary nature of their involvement. Upon providing informed consent, participants completed the questionnaire anonymously. To minimise response bias, respondents were assured of the confidentiality and anonymity of their responses. The data collection process adhered to ethical guidelines set by Birmingham City University's ethics committee.

The primary statistical technique for data analysis was Structural Equation Modeling (SEM). SEM allowed for the examination of complex relationships between latent constructs and observed variables, making it a suitable method for testing the proposed communication framework. Within the SEM framework, mediation analysis was conducted to explore whether emotional appeal

mediated the relationships of interest. This analysis offers a better understanding of underlying mechanisms through which informativeness, creativity, and multimedia effects impacted emotions in the context of Water Conservation Campaign (WCC) communication. Furthermore, moderation analysis was performed within the SEM framework to investigate whether factors particularly gender, age, existing water usage habits, awareness level, and billpayer status moderated the relationships of interest. This analysis offered a valuable understanding of the potential moderating effects on the proposed communication framework.

1.6 BUILDING ON CONTRIBUTIONS

This research has led to the identification of key contributions to a comprehensive understanding of effective WCC communication strategies. In this section, the researcher highlights the distinctive contributions to the existing body of knowledge and practices in the water-related sector.

1.6.1 Knowledge Perspectives

This study contributes to significant contributions to the field of environmental communication. Firstly, empirical studies on the interplay between the ELM and TPB are abundant in the literature to illuminate the complex relationship between cognitive processes and intention formation (Liu et al., 2022; Maduku, 2021; Meng & Choi, 2019; Miller et al., 2019; Wang, 2015). However, despite this wealth of research, little is known about the role of emotional appeal as a peripheral cue in the ELM and/or its predictive role in the TPB. The exploration of emotional impact on behaviour change enriches the understanding of how the appeal operates within the proposed framework. The study thus delves into the often-overlooked implications of emotions and cognitive consequences in environmental communication, providing a comprehensive perspective on the emotional facets of WCC communication. Secondly, despite the plethora of studies on emotional appeal and its effect on marketing and advertisement strategies, little is known about the underlying mechanism behind this association. This study is an attempt to fill this knowledge gap by investigating the mediating role of emotional appeal in the relationships between informativeness and attitudes, creativity and attitudes, and multimedia effects and attitudes.

1.6.2 Practical Perspectives

The findings of this study have important implications for marketers and communication professionals who are interested in designing effective communication. Short videos are constantly on the rise, parallel to the new media era. The proposed framework can inform the development of more effective communication strategies. Marketers and communication professionals should consider incorporating emotional appeal into their campaigns to maximise their effectiveness, but also take into account other factors that may influence consumer attitudes and behaviours such as creativity and multimedia effects.

As water challenges become more complex and unpredictable in the 21st century, effective communication becomes more important for the water sector industry to liaise with the relevant stakeholders (Larbey & Weitkamp, 2020). Various scholars, governments and agencies have recently published short-term and long-term strategies to better communicate water conservation (AWWA, 2023; Environment Agency, 2017; Shaw & Corner, 2016; Ward et al., 2022). The proposed conceptual framework in this research may serve as a guideline for water sectors and beyond to develop an effective marketing campaign on social media platforms. The insights garnered from the comprehensive investigation into the effectiveness of the proposed water-resilient community communication model have significant implications for the design and implementation of water conservation communication strategies.

1.7 THESIS STRUCTURE

The thesis is structured into distinct chapters, each serving a specific purpose in advancing the research objectives. This chapter provides an overview of the research and discusses the motivation behind the study. The chapter states the specific aims and objectives of the research emphasises the importance of the research topic and highlights its interdisciplinary nature, illustrating the need for a comprehensive approach in addressing water conservation challenges.

In the next chapter (Chapter 2), an extensive review of existing literature is conducted. The focus is on various aspects, particularly in relation to elements of effective communication and persuasiveness, as well as attitudes and behaviour. Through this review, the chapter aims to bridge

the disciplines and identify gaps in the current body of knowledge, highlighting the need for further research in the field. By synthesising the existing literature, this chapter serves as a foundation for the proposed framework.

Chapter 3 presents the conceptual framework for the study. Firstly, additional background is provided on the theoretical frameworks of the TPB and ELM, demonstrating their relevance to the research topic. Hypotheses are then developed based on the research questions (RQs) to guide the empirical investigation.

Chapter 4 focuses on the research design, providing a comprehensive overview of the methodological choices and research philosophy. Based on Saunders et al.'s (2019) research onion model, the chapter discusses the rationale behind the chosen research approach and methodology. It outlines the research process, starting from the literature review and the development of the conceptual framework. Furthermore, it explores the steps involved in creating a water conservation video as a stimulus and describes the data collection methods employed. By detailing the research design, this chapter ensures the transparency and reliability of the study's methodology.

In Chapter 5, the process of creating the water conservation video is discussed in detail. It presents an understanding of the techniques, tools, and considerations involved in producing an impactful and persuasive video. Additionally, the chapter provides an overview of the post-film questionnaire used to validate the video and ensures its reliability and validity as a research instrument. It also presents an analysis of the results obtained from the video validation process, further supporting the development and effectiveness of the proposed framework.

Chapter 6 is dedicated to the analysis and results of the study. It discusses the statistical techniques employed, such as Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), Structural Equation Modeling (SEM), mediation analysis, and multiple group analysis. The chapter provides an in-depth examination of the findings, including the results of hypothesis testing, mediation analysis, and Multigroup Analysis. Through this rigorous analysis, the chapter offers insights into the empirical evidence supporting the effectiveness of the proposed framework and provides a comprehensive understanding of the research outcomes.

In Chapter 7, the findings of the study are comprehensively discussed in relation to the research questions. The chapter examines the implications of the results and interprets them within the context of existing literature. By engaging in a thoughtful discussion, this chapter adds depth to the study's findings and contributes to the broader understanding of water conservation and behaviour change.

The last chapter (Chapter 8) offers a comprehensive synthesis of the research study, encompassing the limitations, future research directions, and the overall significance of the research.

1.8 CHAPTER SUMMARY

The issue of water scarcity is a complex challenge, stemming from various causes and affecting regions globally (Cosgrove & Loucks, 2015; McDonald et al., 2011; Mehrazar et al., 2020). In the context of the UK, a nation perceived as having abundant water resources (CCW, 2021; Jones et al., 2021; Weitkamp et al., 2020), the emergence of water deficits due to dry seasons, geological characteristics, urbanisation, and population growth (Chambers, 2020; Smart, 2023; Williams, 2023), presents a stark contrast. This contrast underscores the pressing need for action and awareness.

Despite the urgency, awareness and engagement around water scarcity and conservation remain low in the UK (Carvalho & Spataru, 2023; Garde-Hansen et al., 2016). This lack of awareness not only hampers proactive responses but also restricts the ability to effectively address the looming water scarcity challenge. Recognising the urgency of the situation, it becomes imperative to embrace resilience as a proactive and adaptive strategy. By building resilience, communities can enhance their capacity to respond effectively to the changing dynamics of water availability and demand. This strategy serves as a shield against the adverse impacts of water scarcity, enabling communities to withstand and mitigate its effects.

Recognising the importance of resilience, the chapter emphasises the need to proactively build resilience in communities to effectively respond to changing water dynamics (Fielding et al., 2012; Fleming & Ledogar, 2008; Folke, 2016; Ofwat, 2019a). This chapter thus explored the multifaceted realm of water scarcity, examining not only its environmental dimensions but also the role of

resilience and conservation campaigns in addressing the awareness-related issues that often exacerbate the crisis. It is increasingly important to increase public knowledge of issues regarding water resources since many of these concerns demand broad public acceptance and support. Evidence suggests that awareness helps build resilience not only to bounce back from any setback but also to be knowledgeable and adaptable (Antwi et al., 2022; Blauhut et al., 2022; Demyen, 2022; Wens et al., 2022; Yuan et al., 2022). The concept of resilience has the potential to increase the system's ability to adapt to specific adversity which then supports sustainable development. The concept of resilience and building resilient communities in this thesis is summarised in Table 1.2 below.

Table 1.2. Water-resilient concept. The concepts of resilience and building resilient communities in this thesis are based on the 5Ws and 1H (Carpenter et al., 2001; Lebel et al., 2006; Meerow & Newell, 2019).

	Resilience	Water Scarcity and Drought Framing
Who?	Who is most likely to benefit?	Water consumers in the UK.
What?	What systems are the focus here?	Water distribution system.
	To what risks is resilience to be built against?	Water shortage/scarcity - exacerbated by climate change, population growth, demand and consumption, and local geology
When?	Is the focus on short-term and long-term resilience? Present or future?	Short term to react to existing scarcity; medium to long term to promote water sustainability.
Where?	What spatial scales are more likely to be prioritised?	The UK (particularly the vulnerable regions in high-risk areas prone to drought and scarcity e.g., Southeast England).
Why?	What is the goal of building resilience?	• To increase awareness; • To enhance adaptability; • To ensure continued supply through periods of drought or other disturbances.
How?	Through what actions is resilience to be achieved?	Social media water conservation campaign video.

A pivotal step towards combating water scarcity and bolstering resilience involves launching a comprehensive water conservation campaign (Antwi et al., 2022; Koop et al., 2019; Lede &

Meleady, 2019; Liang et al., 2018). This campaign aims to bridge the gap in awareness and engagement, equipping individuals with the knowledge needed to make informed decisions about their water consumption habits. By instilling a sense of responsibility and urgency, the campaign empowers individuals to reduce water usage, adopt sustainable practices, and contribute collectively to the larger goal of responsible water resource management (Benedict & Hussein, 2019; Singha et al., 2022). Through heightened awareness, better understanding, and a shared commitment to conservation, the campaign endeavours to create a society that is not only more water-conscious but also prepared to face the challenges posed by water scarcity in the years ahead (Singha et al., 2023).

This research specifically focuses on non-structural strategies, particularly on water conservation communication. The rationale for this emphasis lies in the understanding that enhancing resilience requires equipping communities with the capacity to anticipate, endure, tolerate, and adequately prepare for the consequences of water scarcity in a timely and efficient manner (Fielding et al., 2012; Fleming & Ledogar, 2008; Folke, 2016; Ofwat, 2019a). Building public awareness and understanding fosters proactive engagement, facilitates cooperation, and mobilises collective positive action, ultimately enhancing resilience to water scarcity and its associated challenges (Cross & Chappell, 2022; Golladay et al., 2021; Khatibi et al., 2019; Zhang et al., 2019; Ziegler et al., 2014). By focusing on communication and awareness-raising or educating the public, this research seeks to empower individuals and communities with knowledge, encouraging informed decision-making, behavioural changes, and effective response strategies. Figure 1.3 below visually represents this research focus, highlighting it in blue to provide a clear depiction of its significance.

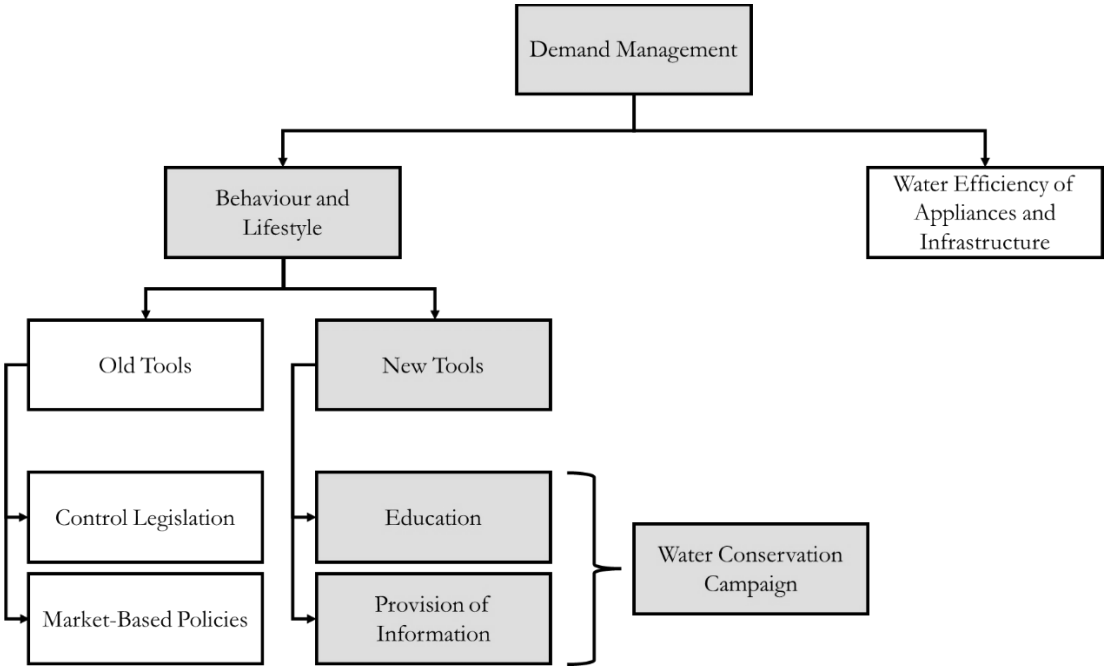

Figure 1.3. Demand management. Note that the boxes coloured in grey represent the specific elements that are the primary focus of this study.

Previous research has highlighted the key aspects of effective communication, emphasising factors such as informativeness and credibility (e.g., Logan et al., 2012; Mir, 2012; Murillo, 2017; Van-Tien Dao et al., 2014). In the marketing realm, the significance of emotions cannot be underestimated. A substantial body of literature in psychology and behavioural science underscores the impact of emotions on decision-making, critical thinking, attitudes, persuasion, and actions (e.g., Gosling et al., 2020; Izard, 2009; Mankad, 2012; Naqvi et al., 2006; Schwarz, 2007). The concept of "emotional marketing" has arisen as a strategy to enhance communication effectiveness by eliciting emotional responses. Therefore, this study focuses on investigating the role of emotions in shaping water consumers' attitudes and behaviours regarding WCCs on social media platforms.

Thus, this research aims to propose a new, socio-psychological water conservation framework that integrates elements of effective communication using video and social media technologies to motivate a change in household water consumption behaviour through the integration of emotional appeal. The research focuses on how to deliver effective WCC video communications on social media platforms to increase positive social media responses, promote communities' awareness and encourage behavioural change. It revolves around building a conceptual framework

that integrates elements of effective communication that will potentially enhance resilience among the communities.

This research encompasses five significant phases. The initial phase involved conducting an extensive literature review spanning relevant disciplines to gain insights into effective communication. Subsequently, a comprehensive framework, incorporating socio-psychological factors essential for effective communication in the context of social media communication, was proposed. As part of the third phase, a water conservation campaign video was developed to serve as a stimulus for the primary study. Prior to conducting the main study, the fourth phase focused on validating the stimulus through a separate study. Finally, the researcher evaluated the psychological components influencing the intention to engage in water conservation behaviours. Consequently, the study contributes to understanding emotional appeal's role in communication, with implications for marketers and water sector professionals. It addresses gaps in literature by investigating emotions in environmental communication and offers practical strategies for water conservation campaigns, tailored to demographics.

2 BRIDGING DISCIPLINES: EXPLORING EFFECTIVE COMMUNICATION AND ATTITUDE AND BEHAVIOUR DYNAMICS

2.1 CHAPTER INTRODUCTION

The urgent issues tied to the concerns of the Earth's water resources as highlighted in Chapter 1 require effective environmental communication to motivate a change in household water consumption behaviour towards sustainability. This chapter therefore explores the convergence of different fields to effectively address these important concerns. Recognising the pivotal role of effective communication in shaping practical solutions, Section 2.2 focuses on effective communication and persuasion. Central to this discourse is the role of attitudes and behaviours. Hence, Section 2.3 delves into the concept of attitudes, behaviour, and behavioural change, laying the groundwork for understanding the factors that drive individual intentions and actions related to water conservation. Finally, this chapter concludes by summarising the key points discussed and identifying research gaps (presented in Section 2.4). These gaps will play a pivotal role in formulating the research questions (RQs) and hypotheses that will be addressed in the next chapter (Chapter 3).

2.2 ELEMENTS OF EFFECTIVE COMMUNICATION

2.2.1 Overview

In continuation of the previous chapter (Chapter 1), which explored the issues of water scarcity and the potential of water conservation campaigns as tools to improve awareness and promote resilience, this section delves into the crucial aspect of effectively communicating such campaigns on social media platforms. It is imperative to understand the key elements of effective communication in order to optimise the impact of these campaigns. Thus, this section takes a comprehensive approach by reviewing various perspectives on effective communication, encompassing persuasive advertisements, the water industry, and social media campaigns. To establish a robust foundation for the research context, this section commences by offering a comprehensive review of the definition of effective communication (Section 2.2.2). The selection of this particular definition is deliberate, as it closely aligns with the specific focus of this research. Additionally, the section draws insights from empirical research on advertising effectiveness, which highlights key factors such as informativeness, credibility, and emotional appeal (Section 2.2.3). Lastly, Section 2.2.4 discusses the relevance and significance of these key points to the current research.

2.2.2 Defining Effective Communication

Communication is a process of transferring messages from the sender to the receiver through a medium (Akilandeswari et al., 2015; Lunenburg, 2010; Velentzas & Broni, 2014). The primary objective of communication is to ensure that information is not only received but also comprehended by the intended recipient (Percy, 2023; Robinson et al., 2020). Yet, effective communication surpasses the mere exchange of facts and figures; Robinson et al. (2020) highlight that effective communication necessitates a deep understanding of the emotions and intentions underlying the message being conveyed. When the connection is established, it will be easier for the purpose or intention of the communication to be achieved (Percy, 2023; Prachi, 2018).

Communication plays a crucial role in mitigating hazards and building community resilience (Albright & Crow, 2021; Anshul et al., 2022; Antwi et al., 2022; Dunning, 2020; Kassirer, 2022; Madnor et al., 2019). Several studies have highlighted the multifaceted impact of effective communication in various aspects of resilience, including knowledge acquisition, awareness, risk perception, adaptation, preparedness, and overall community resilience as well as exploring their interconnectedness (Antwi et al., 2022; Bodoque et al., 2019; Coppock, 2020; Duduetsang et al., 2022; Haigh et al., 2023; Knocke & Kolivras, 2007; McGee & Russell, 2003; Patel et al., 2020; Paton, 2003; Paton et al., 2000). Furthermore, communication acts as a catalyst for behaviour change and encourages communities to take proactive steps towards resilience (Jain et al., 2022; Koop et al., 2019; Lee & Hong, 2016; Maduku, 2021; Olfert & Hutter, 2022; Rose et al., 2009). These studies suggest that effective communication serves as a vital tool for disseminating information, educating communities about hazards, and increasing their understanding of potential risks, thus helping individuals and communities become more aware of the threats they face and the importance of preparedness measures.

WCC communications fall under the category of public communication campaigns, as noted by Kassirer (2022). According to Rice and Atkin (2009), public communication campaigns can be defined as deliberate and persuasive efforts aimed at informing large audiences within a specific timeframe to generate non-commercial benefits for individuals and society as a whole. The objective of such campaigns is to modify people's behaviours, attitudes, social norms, and beliefs (Matusitz, 2022; Rice & Atkin, 2009). The primary goal of WCC communication is, therefore, to raise awareness and induce a shift in attitudes and behaviours among water consumers to enhance water use efficiency (Matikinca et al., 2020; Pretorius et al., 2022; Syme et al., 2000).

An effective educational program related to water conservation should have several key objectives that include informing and educating the public about the importance of water conservation, highlighting its advantages, emphasising the risks associated with failing to conserve water, and outlining the necessary steps to achieve water conservation goals (Alliance for Water Efficiency, 2021; C2ES, 2018; Waterwise, 2017). In line with these objectives, effective WCC communication specifically encompasses a coordinated approach to raising awareness at all societal levels regarding the significance of water conservation in tackling water scarcity, promoting water resilience, enhancing behavioural and attitudinal change, and ensuring long-term sustainability (Boyer et al., 2015; Kassirer, 2022; Maduku, 2021; March et al., 2015; Schaap & van Steenbergen, 2002). By

integrating these goals, the relevant educational program strives to create a well-informed and empowered public that actively participates in conserving water resources.

In the marketing context, effective communication is viewed from customer-relationship perspectives which may be defined as the process by which organisations and audiences interact with one another through their preferred medium, influencing audiences' decision-making processes and encouraging attitudinal, emotional, and behavioural responses (Fill, 2013; Percy, 2023). To achieve effective communication, organisations need to carefully establish clear objectives, identify their target audience, select appropriate communication channels, deliver information, create brand awareness, ensure messaging consistency, attract audience attention and prioritise customer satisfaction (Correia et al., 2023; Shakeel-Ul-Rehman & Ibrahim, 2011; Percy, 2023). By employing these strategies, organisations can engage with their audience in a meaningful way, build strong relationships, and ultimately drive desired outcomes.

In the context of social media communication, effective communication involves utilising relevant platforms, to attract users' interest in the information relevant to organisational innovation practices and to create value for stakeholders and achieve organisational goals, encompassing strategic decisions regarding scope, culture, structure, and governance (Felix et al., 2017; Gandhi et al., 2023). Furthermore, effective communication on social media platforms can be measured by its ability to stimulate positive online behaviours, leading to increased likes, shares, and engagement (Lee & Hong, 2016; Yanti et al., 2022). By delivering relevant and valuable content, organisations can capture the attention of their target audience and foster a sense of community, encouraging active participation and the dissemination of their messages. This, in turn, amplifies the reach and impact of their communication efforts, enhancing their overall effectiveness in the realm of social media communication.

2.2.3 Persuasive Advertising

Promoting community resilience through communication is a complex process (Andrade et al., 2023; Dufty, 2012; Gil-Rivas & Kilmer, 2016; Hugelius et al., 2019). The effectiveness of communication lies in delivering messages that are tailored to the specific needs and contexts of the community, using appropriate channels and formats that resonate with the target audience, thus simply increasing awareness is often insufficient to drive preparedness and action (Antwi et

al., 2022; Bodoque et al., 2019; Haigh et al., 2023; Knocke & Kolivras, 2007; Patel et al., 2020; Paton, 2003; Paton et al., 2000). By understanding the dynamics of communication and considering the social-cognitive variables at play, communication strategies can be designed to maximise their impact in building resilient communities.

Advertising is a form of commercial communication that uses print or electronic media to persuade the consumer to carry out or adopt a desired action, to change consumers' attitudes towards products and brands (Cheah et al., 2019; Verlegh et al., 2015). The key is "to persuade" and this is an umbrella term for "influence" (Ogah & Abutu, 2021; Pan & Zhang, 2023). Much has been written about how persuasive messages affect ideas, attitudes, intentions, motives, or behaviours (Ajzen, 2012; Cialdini et al., 1981; Crano & Prislin, 2006; Gass & Seiter, 2011; Jayawardena et al., 2023; O'Keefe, 2016; Petty & Briñol, 2012; Petty et al., 2003; Sundar & Kim, 2005; Susmann et al., 2022), and it is, therefore, imperative to understand such methods when trying to create effective advertisements.

The academic study of persuasion was started by the Greek philosopher Aristotle who stressed rhetoric and elocution as the highest criterion of persuasive communication as mentioned in Kuchel and Rowland (2023). The rhetorical triangle (Figure 2.1) is a common reference to the three rhetorical appeals identified by Aristotle which comprises three Greek terms: ethos, pathos, and logos (Kuchel & Rowland, 2023; Genete, 2020; TheVCG, c2021). Firstly, the term logos refers to "logic". This simply means building a logical argument such as using facts and figures, hence "informativeness". Secondly, ethos refers to "ethics" and this is related to the element of "credibility". Lastly, pathos demands "emotion". The emotional response is required to create a spark and build persuasion that drives the behaviour and action of the receiver by tapping into a singular emotion, like happiness, sadness, anger, or fear (Genete, 2020; Emotion in Marketing, 2018).

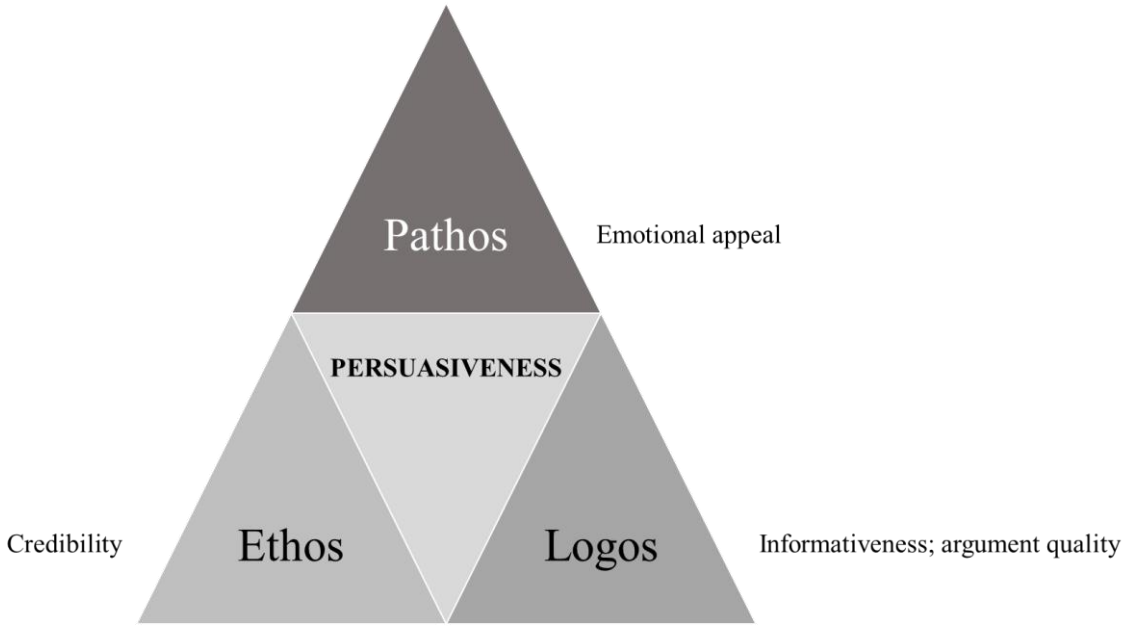

Figure 2.1. The rhetorical triangle. The three rhetorical arguments that Aristotle identified — ethos, pathos, and logos—are together referred to as the rhetorical triangle.

2.2.3.1 Informativeness

The concept of advertising often relies on the assumption of public "unawareness" or "lack of awareness", with the initial step being to provide information to persuade individuals (Cahyani & Artanti, 2020; Holdack et al., 2022; Moldovan et al., 2019; Peña-Martel et al., 2018). "Informativeness" is commonly employed to stimulate "primary demand", especially for new products and services (Bartle, 2020). In the commercial marketing context, informativeness refers to consumers' overall perception of whether an advertisement provides complete, relevant, and up-to-date information (Arora & Agarwal, 2019; Ducoffe, 1996). It encompasses the idea that information receivers will learn valuable and useful insights (Lee & Hong, 2016; Pavlou et al., 2007). In other words, informativeness represents the extent to which communication imparts pertinent and advantageous information, taking into account consumers' ability to comprehend and assess the information (Zhang et al., 2014b). Thus, informative communication serves as a typical tactic for encouraging specific customers' behaviours and influencing customers' purchasing decisions (Hamouda, 2018; Van-Tien Dao et al., 2014).

Information can affect people differently and elicit different reactions from them depending on their perceptions and experiences (Cai et al., 2023; Chaiken, 1980; Kaushik et al., 2018; Lee & Hong, 2016). Within the social media ecosystem specifically, advertisements featuring informative content play a crucial role in assisting consumers throughout their decision-making processes, notably influencing purchase intentions (Buaprommee & Polyorat, 2016; Ducoffe & Curlo, 2000; Yang et al., 2017), fostering positive attitudes towards advertisements, and enhancing their perceived value (Cahyani & Artanti, 2020; Hamouda, 2018; Logan et al., 2012; Mir, 2012; Murillo, 2017; Shareef et al., 2019). Moreover, the perceived level of informativeness is negatively correlated with their perceived intrusiveness (Noguti & Waller, 2020). This implies that when advertisements are perceived as informative, they effectively capture viewers' attention and stimulate active engagement with the advertisement itself as highlighted by Lee and Hong (2016).

Information has a larger role in creating awareness and influencing behaviour and knowledge provision becomes a key policy tool (Addo et al., 2019; Gee, 2000; Madsen & Ulhøi, 2001; Maduku, 2021; Maibach, 1993; Moglia et al., 2018). Hence, informativeness plays a crucial role in environmental-related communication campaigns. Previous research, particularly on sustainable resource consumption, details a variety of nudge-based impacts on resource utilisation which often include information provision (Allcott & Rogers, 2014; Andor et al., 2022; Wichman, 2017). There is a sizable corpus of research on the role of information in assist in educating the public about water limitations and influencing favourable attitudes and behaviour toward water conservation (Boyer et al., 2015; Boyer et al., 2020; Bruvold & Smith, 1988; Dziegielewski, 1991; Kassirer, 2022; Lewis & Hendrix, 2012; Renwick & Green, 2000; Trumbo & O'Keefe, 2005). Ultimately, the goal is for water consumers to be prepared and motivated to actively conserve water.

A well-designed water conservation communication program should facilitate a transformative journey for water consumers, guiding them from a state of ignorance to a genuine desire to take action to reduce water usage (Howarth & Butler, 2004; Lavee et al., 2013; Verma et al., 2023). Achieving this progression necessitates effective communication strategies, which involve disseminating pertinent information and providing educational resources to help the public comprehend the trade-offs involved (Cary, 2008; Nisbet & Gick, 2008). Educating the public, especially during water crises helps fill knowledge gaps about water-saving advice (Seyranian et al., 2015), and create a general awareness of water crises (Dean et al., 2016; Pérez-Urdiales & García-Valiñas, 2016) and encourage people to voluntarily reduce their water usage (Zietlow et al., 2016).

However, delivering such communication poses significant challenges due to the intricacies of the environmental context and the need to capture the attention of viewers and readers (Gee, 2000; Saurí, 2013). Despite a significant body of literature suggesting the pivotal role of informativeness in fostering positive attitudes towards water conservation, some argue that relying solely on informational approaches has proven to be insufficient (Cary, 2008; Dolnicar & Demeter, 2023; Ferraro & Price, 2013; Howarth & Butler, 2004; Jackson, 2005; McKenzie-Mohr, 2000). Cary (2008) underscores the importance of a comprehensive understanding of the factors influencing water conservation behaviours, which must encompass both "internal" factors such as attitudes and habits, and "external" factors including the water supply environment, pricing, and prevailing social norms related to water consumption. Therefore, an effective water conservation communication program necessitates a multi-faceted approach that moves beyond the mere provision of information (Cary, 2008; Ferraro & Price, 2013; Granina, 2022; Koop et al., 2019; Moglia et al., 2018; Rumble et al., 2017). It should encompass education, an understanding of internal and external factors to shape behaviours, and the integration of social marketing techniques (Cary, 2008). By utilising comprehensive strategies that consider both individual, societal and environmental dynamics, it becomes possible to cultivate long-lasting positive attitudes and encourage meaningful actions towards water conservation.

2.2.3.2 Credibility

In the rhetorical triangle (Figure 2.1, p. 31), Aristotle introduced the concept of credibility and argued that communicators needed to establish credibility with their audiences. In most communication, the credibility factor is very critical (Dedeoglu, 2019; Kaushik, 2011). It can influence the cognition process of a message, increase public trust, shape consumer attitude and influence intention to purchase (Kumar et al., 2022; Li, 2020; Metzger & Flanagin, 2013; Verleye et al., 2023; Wathen & Burkell, 2002). Compared to sources lacking credibility, perceived credible sources, which are recognised by audiences as reliable or at least more trustworthy than themselves, generally have a more significant impact (Gabriel et al., 2000; Ohanian, 1990).

Depending on the elements thought to make up credibility, source credibility can be characterised in various ways, with two primary dimensions commonly recognised: expertise and trustworthiness (Chokkannana & Vivekanandan, 2017; Jia, 2022; Sugiantari et al., 2018; Sussman & Siegal, 2003).

The expert and trustworthy source generated the most opinion change, however, the trustworthy communicator was more persuasive, whether expert or not (McGinnies & Ward, 1980). However, many distinct operationalisations arise in the literature, thus, making it difficult to understand and define credibility in the context of persuasion theory. For instance, source credibility is frequently treated as a categorical variable in experimental investigations, where people are categorised as having high or low credibility (O'keefe, 1987; Whitehead, 1968) or using other relevant terms such as ethos (McCroskey & Young, 1981), involvement, identification and reputation (Molinillo et al., 2022) and competency (Yang, 2018).

Expertise refers to the extent to which the audience perceives the communicator as skilled, intelligent, knowledgeable, and an expert in their field (Lambert, 2021). The perceived expertise of a communicator plays a significant role in shaping audience perceptions and behaviours. Studies have shown that expert sources have the ability to influence not only product evaluations but also the audience's opinions, behavioural intentions, and actual actions (Chambers et al., 2023; Filieri et al., 2023; Frewer, 2004; Kristan & Suffoletto, 2015; Maddux & Rogers, 1980; Stoddard et al., 2023; Wiener & Mowen, 1986). Furthermore, within the context of healthcare communication, the influence of expert-perceived information sources becomes even more pronounced, as the public tends to place greater trust in sources they perceive as knowledgeable and authoritative (Braunsberger & Munch, 1998; Eastin, 2001; Jung et al., 2018; Serman & Sims, 2022; Yi et al., 2013).

Trustworthiness, on the other hand, is the most important credibility dimension which refers to the audience's perception of the communicator's honesty, justice, fairness, and open-mindedness, as well as the sources' validity (Lambert, 2021; Ohanian, 1990; Reichelt et al., 2014; Weerakoon et al., 2022). Trustworthiness positively influences consumers' attitudes and behaviours, message elaboration, attitude strength, and advertising effectiveness (Balaban et al., 2022; Dou et al., 2012; Jia, 2022; Miller & Baseheart, 1969; Priester & Petty, 2003; Zainal et al., 2017). This highlights the importance of considering expertise and trustworthiness as crucial credibility factors in effective communication strategies and message dissemination.

It is essential to acknowledge that, in the digital realm, attitudes, perceptions, and beliefs are moulded through online interactions facilitated by platform design and information exchange within them (González-Bailón & Lelkes, 2023; Greer, 2003; Metzger & Flanagin, 2015). Perhaps,

because of these, in contemporary research, particular emphasis has been placed on the topics of misinformation and fact-checking, reflecting the recognition of their prominence in the digital landscape (Alshare et al., 2023; Dhiman, 2023; Freiling et al., 2023; Guo et al., 2023). Previous studies on online social media advertisements argue that the credibility factor affects consumers' perceived value of advertising (Arora & Agarwal, 2019; Hamouda, 2018; Murillo, 2017; Shareef et al., 2019; Van-Tien Dao et al., 2014), attitudes towards advertisement, positive reactions towards social media advertisements and intention (Arora & Agarwal, 2019; Chen et al., 2022; Mukherjee & Banerjee, 2017; Uyen & Ha, 2021; Yang et al., 2017). Hence, these findings collectively underscore the critical role of credibility in shaping online digital experiences and perceptions.

Credibility plays a crucial role in conveying messages about environmental issues (Corner et al., 2018b; Dziegielewski, 1991; Mors et al., 2010; Poortinga et al., 2011; Rodriguez-Sanchez & Sarabia-Sanchez, 2020; Sander et al., 2021), and it is influenced by three key factors: the source of information, the content of the message, and the context in which the message is generated (Rodriguez-Sanchez & Sarabia-Sanchez, 2020). Despite its significance, credibility has often been emphasised rather than thoroughly tested (e.g., Dziegielewski, 1991; Kassirer, 2022). However, recent studies have started to address this gap and examine the role of credibility in water conservation communication (e.g., Maduku, 2021; Rodriguez-Sanchez & Sarabia-Sanchez, 2020). Notably, while limited research exists on the influence of credibility specifically on water conservation communication content, there is evidence that the perception of credibility in relation to message framing, particularly through gain frames, positively predicts increased concern and favourable perceptions of message credibility (Addo et al., 2019; Aveek & Rosenberg, 2022; Baek & Yoon, 2017; Holland et al., 2019; Liang et al., 2017; Liang et al., 2018; Warner et al., 2015).

In the context of water conservation communication, there is often a focus on spatiotemporal-related experiments, particularly concerning individuals' experience in dealing with water scarcity, their level of concern, and their perceptions of message credibility. These factors have been found to be positively associated with future engagement in water conservation practices (Gilbertson et al., 2011; Holland et al., 2019; March et al., 2012; Moglia et al., 2018; Rodriguez-Sanchez & Sarabia-Sanchez, 2020). Additionally, Maduku (2020) revealed that although source credibility negatively affects individuals' attitudes towards water conservation, it remains a significant and strongly correlated factor with subjective norms. In regions facing water scarcity, where people are accustomed to frequent warnings, the impact of credibility on risk perception is less pronounced.

This can be attributed to the greater familiarity these individuals have with receiving such communications (Buil, 2005; Jackson, 2005; Rodriguez-Sanchez & Sarabia-Sanchez, 2020).

2.2.3.3 *Emotional Appeal*

Emotion can be defined as "a programmed neural response evolved to serve an adaptive function by mobilising specific neural activity in both the brain and periphery and by favouring certain behaviours" (Pace-Schott et al., 2019, p. 269). It encompasses conscious feelings and behavioural reactions to events (Holt et al., 2015), which are regulated by biological conditions related to the nervous system (Damasio, 1998; Ekman & Davidson, 1994; Panksepp, 2005; Quadt et al., 2022). The theory of discrete emotions suggests that human basic emotions can be distinguished based on neural, physiological, behavioural, and facial expressions (Colombetti, 2009; Ekman & Davidson, 1994; Parrott, 2001). Researchers have identified several popular basic emotions, as proposed by various theorists and proponents (Ekman, 1992; Parrott, 2001). Hence, understanding the concept of emotion and its different manifestations is crucial in comprehending the complexities of human experiences and behaviour.

Emotions have a pervasive influence on various cognitive processes, including interpretation, judgment, decision-making, learning, and reasoning (Blanchette & Richards, 2010; Rick & Loewenstein, 2008; Petty & Briñol, 2015; Quadt et al., 2022; Wang et al., 2023). Recent developments in the research highlight the role of emotions in attention, information processing, social interaction, and persuasion (Bechara et al., 2000; Forgas, 1995; Gosling et al., 2020; Izard, 2009; Lerner & Tiedens, 2006; Mankad, 2012; Naqvi et al., 2006; Schwarz, 2007). Moreover, recent developments in the knowledge of the role of emotions in attention (Guerreiro et al., 2015; Rodrigues, 2018; Zamani et al., 2016); information processing and behaviour (He & Hu, 2022; Kwak et al., 2011); social interaction for sustainability (Son et al., 2022); and persuasion and advertising effectiveness (Cockrill & Parsonage, 2016; Han & Ling, 2016; Hur et al., 2020; Lee & Hong, 2016; Rawal & Saavedra, 2017; Stevens, 2018; Grigaliunaite & Pileliene, 2016) may be of particular interest. These findings, therefore, highlight the profound impact of emotions on human cognition and behaviour.

While communication and emotion may appear unrelated, emotions play a significant role in communication (Davidson & Kecinski, 2021; Holt et al., 2015; Konijn & Holt, 2010; Li et al.,

2022). This is because, emotions have multiple connections with thoughts, feelings, behavioural responses, and attitudes (Cabanac, 2002; Holt et al., 2015). Positive emotions, for instance, enhance cognitive flexibility, influencing individuals' risk-taking behaviours (Isen et al., 1992; Shiota et al., 2014). Conversely, negative emotions like sadness and guilt lead to cautious decision-making due to the presence of judgmental bias (Alloy & Abramson, 1979; Bodenhausen et al., 2000; Shipley & van Riper, 2022). Hence, effective communication in marketing often relies on establishing an emotional connection with consumers (Holbrook & Batra, 1987; Kaushik et al., 2023; Kim & Lennon, 2011; Olney et al., 1991; Orth et al., 2020).

Emotional appeal influence attitudes towards advertisements and products (Burman et al., 2017; Fu & Chen, 2012; Mattila, 1999; Mattila, 2001; Nysveen & Breivik, 2005; Stafford & Day, 1995; Wang et al., 2017; Zhang et al., 2014a). Additionally, emotional appeals significantly impact consumer purchase intentions (Orth et al., 2020). Extensive research highlights the effectiveness of emotionally appealing advertisements in various contexts, such as green products, advertisement viewing time, intentions and sales (Chandy et al., 2001; Matthes et al., 2014; Orth et al., 2020; Teixeira et al., 2012). Humorous content with higher violence intensity, for instance, leads to increased engagement, better information retention, and greater advertisement likability (Brown et al., 2010a). Anger can also enhance consumer perceptions and participation in politically related advertising (Webber, 2012). This shows that marketers can effectively engage and influence consumer behaviours, ultimately driving the desired outcomes.

In addition, marketing strategies seem to be successful in taking advantage of online social media platforms to advertise their products by making an emotional connection with the users (Chivandi et al., 2018; Darley et al., 2010). Content with a strong emotional appeal on social media has a significant beneficial impact on "likes" (Kaushik et al., 2023; Lee & Hong, 2016). In terms of attention and social sharing, content that induces high arousal tends to be shared more frequently (Nelson-Field et al., 2013). Some studies argue that there is a positive relationship between advertisements that evoke positive emotions and social sharing (Teixeira et al., 2012; Tellis et al., 2019). Moreover, inducing such emotion could potentially engage viewers, and increase attention and retention (Teixeira et al., 2012). Additionally, elements of surprise and joy effectively capture attention and retain viewers (Teixeira et al., 2012). Embedding the elements of a drama, such as surprise, likeable characters, and a plot, significantly affects positive uplifting emotions and enhances more sharing (Tellis et al., 2019).

A recurring theme often leverages emotional engagement through persuasive techniques such as assertive language and framing (Bang et al., 2021; Homar & Cvelbar, 2021; Martinez & Vilajosana, 2022). For example, researchers have evoked emotions, fostering empathy or aligning with individuals' internal values, to address behaviours such as littering in cinema settings (Hansmann & Scholz, 2003). Such approaches that elicit emotional responses tend to lead to favourable changes in behaviour (Sussman, 2013), facilitating individual-driven actions linked with high motivation and cognitive connections. This indicates that interventions that stimulate thought and resonate with audiences on a deeper cognitive level are more likely to yield positive shifts in behaviour as argued by Thomas-Walters et al. (2023).

In the subject of environmental science, the investigation of emotion in communication has gathered momentum, for example, emotion is an important factor in sustainable transport communication (Lee & Hong, 2016; Manca & Fornara, 2019; Manca et al., 2020). People can have a strong emotional connection with the water environment. Many studies also argue that the hydrosphere may link to a range of behaviours and emotions (Holyfield & Jonas, 2003; Keremane & McKay, 2011; de Miranda Coelho et al., 2016). Water in the environment is commonly linked to a range of positive experiences, perceptions, emotions, empathy, creativity, health, and healing (Wallace, c2014). For example, people will post images or references to quality times spent in the outdoors enjoying rivers, lakes, and bathing waters. This shows that water in the environment is often linked to a range of positive experiences and emotions (Holyfield & Jonas, 2003; Johnsen & Rydstedt, 2013). Emotion in this regard acts as a powerful element in moving people to practice sustainable behaviour (Carmi et al., 2015).

Environmental emotions can be divided into two parts: the sense of duty and the sense of belonging (Raeisi et al., 2018). These environmental emotions have a significant impact on different types of behaviours towards the environment (Kalantari et al., 2015). Duty-based emotions indicate individuals' sensitivities to problematic environmental situations and behaviours. Hence, previous research has integrated emotion into communication frameworks, revealing its impact on decision-making (Lee & Hong, 2016; Manca & Fornara, 2019; Mankad, 2012). In water conservation campaign communication, emotions can be evoked through message appeal and entertainment and are believed to lead to positive behavioural change (Albertarelli et al., 2018; Mankad, 2012; Singha et al., 2022; Tijs et al., 2017). In this way, emotions and communication are intricately connected, influencing human behaviours and decisions.

In relation to the current climate change phenomena, individuals' opinions on climate change often stem from emotions rather than scientific evidence (Lehman et al., 2019; Vasileiadou & Botzen, 2014; MacDonald et al., 2013; Roeser, 2012). Extensive empirical literature in climate communications has yielded three key conclusions as identified by Davidson and Kecinski (2021). Firstly, research suggests that narratives with high emotional content are more effective in arousing concern and promoting proactive behaviour compared to those with low emotional content (Barrazaa et al., 2015; Bloodhart et al., 2019; Nabi et al., 2018). Secondly, not everyone reacts the same way to the same emotional inputs (Davidson & Kecinski, 2021), as individual reactions to emotional stimuli vary based on cultural, social, and geographical factors, which can influence responsiveness to emotionally charged messages (Wolf & Moser, 2011). Additionally, people may respond inconsistently to the same information depending on their existing emotional state (Bloodhart et al., 2019; Lair et al., 2020; Wang et al., 2018). Lastly, the presence of efficacy in climate messaging plays a crucial role in inspiring action, with fear appeals being motivators for both healthy fear-control behaviours and defensive reactions (Bieniek-Tobasco et al., 2019; Bouman et al., 2020; Nabi et al., 2018). Strong fear appeals with high efficacy messages seem to lead to the most behavioural change, whereas strong fear appeals with low efficacy messages lead to the most defensive reactions (Witte & Allen, 2000). These findings underscore the importance of understanding the role of emotions in climate communication and the potential to leverage emotions effectively to drive behavioural change.

2.2.4 Relevances

Building upon the rich tapestry of literature and the specific goals of effective communication previously elucidated, this study now introduces its own tailored definition of effective communication within its unique context. The term "effective communication" in this research thus refers to the process of delivering a water conservation campaign leading to influence or change the audiences' decision-making processes to perform positive online behaviour and practise water conservation. The campaign needs to reach a wider audience, to allow users to respond to the advertisement, encourage positive perceptions, contribute to more awareness and promote behavioural change. The overall process revolves around two important goals: positive advertisement responses (retain viewers and promote likes and shares) and the promotion of

resilience (increasing awareness and persuading viewers to change their behaviour). Figure 2.2 depicts the concept of effective communication in this research.

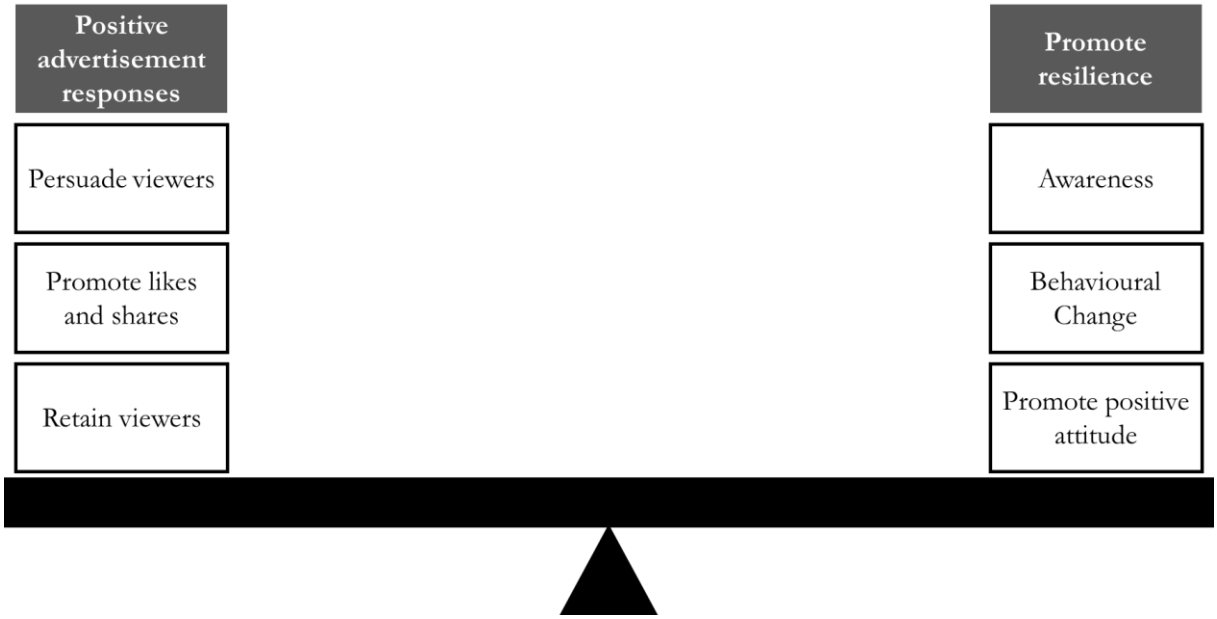

Figure 2.2. The goal of effective communication in the context of this study. The objective of communication in this study is to strike a delicate balance between eliciting positive advertising responses and fostering resilience. On one hand, positive advertising responses should aim to persuade viewers, encourage likes and shares, and maintain viewer engagement until the end. On the other hand, promoting resilience focuses on enhancing awareness, facilitating behavioural change, and cultivating positive attitudes.

One of the main strategies for altering people's attitudes is persuasive communication. Informativeness (Cahyani & Artanti, 2020; Hamouda, 2018; Logan et al., 2012; Mir, 2012; Murillo, 2017; Shareef et al., 2019) and credibility (Kumar et al., 2022; Li, 2020; Metzger & Flanagin, 2013; Verleye et al., 2023; Wathen & Burkell, 2002) have an impact on communication efficacy. Despite changes brought about by technology in their mode of transmission and the scope of their influence, the role of informativeness and credibility in influencing consumer attitude modification and behaviour over exposure to material has been shown to be mostly unaltered and can be adopted in any type of communication.

Emotion plays an important role in influencing attitudes, behaviour and decision-making (Bechara et al., 2000; Forgas, 1995; Gosling et al., 2020; Izard, 2009; Lerner & Tiedens, 2006; Mankad, 2012; Naqvi et al., 2006; Schwarz, 2007) especially when it comes to something that is perceived as threatening or relevant. In addition, marketing strategies seem to be successful in taking advantage

of online social media platforms to advertise their products by making an emotional connection with the users. This is because consumers' emotions and behaviours have a significant influence on purchase and consumption decisions for a wide variety of products (e.g., Chivandi et al., 2018; Darley et al., 2010). The fundamental principle is that individuals engage with and propagate content that connects with their emotions, as their decisions are primarily guided by feelings. However, currently, there has been a dearth of research related to conceptual frameworks that incorporate emotional appeal in environmental communication. Overall, it is still unclear how emotions can be evoked and how emotional appeal fits in the communication framework affecting online behaviour towards advertisement and intention to change behaviour.

Consequently, this study posits that persuasive communication strategies for water conservation should incorporate three key components: informativeness, credibility, and emotional appeal (Figure 2.3). In order to effectively engage individuals and motivate behavioural changes, water conservation communication should strive to be informative, providing relevant and accurate information about the challenges and consequences of water scarcity. Additionally, the credibility of the message and its sources must be established to build trust and increase the perceived reliability of the communicated information. However, it is essential to recognise that emotions play a significant role in influencing human behaviour. Therefore, incorporating emotional appeal into communication strategies can help bridge the gap between understanding and action, fostering a deeper emotional connection with the issue of water conservation.

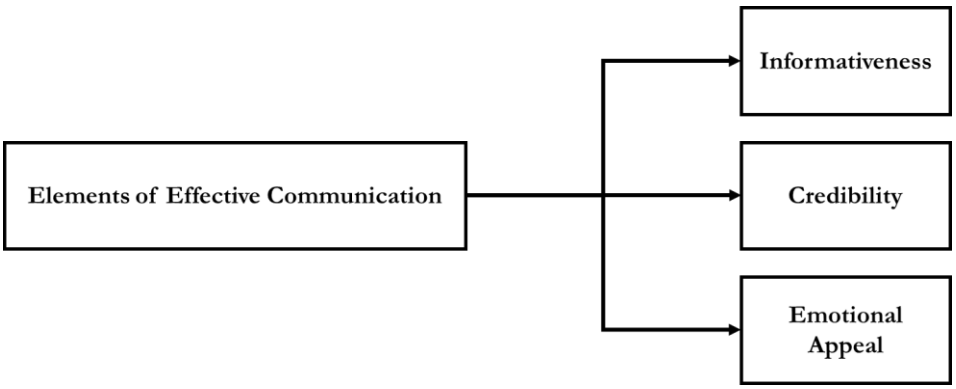

Figure 2.3. Elements of effective communication. Informativeness ensures that messages are rich in relevant content, equipping the audience with essential knowledge. Credibility, rooted in Aristotle's ethos, cultivates trust and reinforces the authority of the communication source. Meanwhile, emotional appeal, evoking pathos, establishes a profound connection with the audience, motivating them towards action. These elements not only adhere to Aristotle's rhetorical triangle but also form a robust foundation for effective water conservation communication.

By combining informativeness, credibility, and emotional appeal, water conservation campaigns can enhance their persuasive power and encourage individuals to adopt sustainable behaviours. Such a comprehensive approach takes into account the importance of scientific evidence while acknowledging the critical influence of emotions in shaping attitudes and behaviours. Ultimately, by addressing these three components, water conservation communication can effectively motivate individuals to take meaningful action in response to the pressing challenges posed by climate change.

Undoubtedly, marketing research has illuminated the pivotal role played by emotional appeal in shaping consumer behaviours and decision-making (e.g., Burman et al., 2017; Fu & Chen, 2012; Mattila, 1999; Mattila, 2001; Nysveen & Breivik, 2005; Stafford & Day, 1995; Wang et al., 2017; Zhang et al., 2014a). However, the precise significance of emotional appeal in the context of conveying water conservation messages remains somewhat elusive, even though the fundamental components of persuasion are well-established. Drawing inspiration from marketing insights, a thought-provoking avenue unfolds: How can a persuasive message be communicated effectively to enhance positive viewer responses and promote resilience? This further prompts a pertinent consideration: How can emotions be effectively evoked within the context of the WCC video? and what role does emotional appeal play as a mediator in the relevant relationships? By venturing into this unexplored terrain, a potential trove of insights emerges into the mechanisms that underscore the resonance of water conservation messages with their target audience.

2.3 Attitudes and Behaviours

2.3.1 Overview

In the pursuit of environmental resilience, public commitment approaches play a significant role by engaging respondents in pledging behavioural changes, leveraging the psychological drive for consistency between attitudes, behaviours and actions (Abrahamse & Matthies, 2019; Blackstock et al., 2010; Du et al., 2018; Iturriza et al., 2020; Messmer et al., 2021; Sari et al., 2023; Whitmarsh et al., 2021). However, understanding consumer attitudes and behaviours, particularly concerning sustainable water consumption, is far from straightforward, as it involves a complex interplay of

factors. These include consumer awareness of water crises, social and cultural narratives shaping perceptions and valuations of water, as well as environmental concerns and perceived barriers to change (CCW, 2023; Du et al., 2018; Griffiths, 2015; Overdevest & Christiansen, 2013; Salem & Ertz, 2023).

In order to delve into this complex subject, this section first offers a review of the fundamental concepts of attitude and behaviour (Section 2.3.2). Subsequently, Section 2.3.3 delves into the core ideas surrounding attitudes and behaviours pertaining to water conservation and WCC. Given that this research seeks to promote resilience through communication, it becomes crucial to shift individuals from unawareness to active engagement in water conservation, as proposed by Howarth and Butler (2004). Consequently, Section 2.3.4 will examine behavioural change and intention, aligning with the central focus of this study. Finally, Section 2.3.5 will delve into the significance and relevance of the findings, providing a comprehensive understanding of the implications derived from the review of relevant attitudes and behaviours.

2.3.2 Basic Concept of Behaviours and Attitudes

Psychology, although describing itself as "the study of behaviour" (McLeod, 2019) has not to date arrived at any consensus on the matter of what the concept of "behaviour" actually means (Uher, 2016). Behaviour encompasses the dynamic interplay between actions, cognition, and emotions (Farnsworth, 2023). In essence, it refers to the potential and expressed capacity for physical, mental, and social activities throughout different stages of human life (Bornstein et al., 2023). Behaviour can be defined as the ongoing events of an organism that can be observed externally, representing a changing state of affairs (Faßnacht, 2000). Each behaviour can be considered as an individual's endeavour to influence a given set of circumstances, either by transforming one situation into another or by maintaining an existing one (Ossorio, 2006).

An attitude refers to a set of emotions, beliefs, and behaviours toward a particular object, person, thing, or event (Cherry, 2021). Previously, attitudes were defined in a broad manner taking an account "what you see is what you get". For example, attitude can be defined as the mental and neural state of preparedness, shaped by experiences that influence an individual's response to all objects and situations associated with it (Allport, 1935). Attitude can also be defined as a lasting organisation of motivational, emotional, perceptual, and cognitive processes that pertain to an

individual's perception of the world (Krech & Crutchfield, 1948). However, the definition of attitudes became simpler in the post-1950s era. Attitudes can be defined as the probability that a person would display a specific behaviour in a given situation (Campbell, 1950); or simply as likes and dislikes (Bem, 1970). Furthermore, in a similar concept to Bem (1970), attitudes are defined in a highly influential textbook as a psychological evaluation to express some degree of favour or disfavour (Eagly & Chaiken, 1993). These definitions highlight the close relationship between attitudes and individual experiences, influencing their behaviour (Nuojua et al., 2003), despite occasional previous contradictory evidence (LaPiere, 1934; Wicker, 1969).

The ABC model of attitude (Table 2.1), originally developed by Ostrom (1969), serves as a framework for understanding attitudes (Drew, 2023; Nadeau, 2022). The model encompasses three components: affective, behavioural, and cognitive, which collectively contribute to one's attitude (Ostrom, 1969). Affect refers to emotions or feelings in response to a particular situation such as happiness, anger, fear, or sadness. Behaviour refers to actions or observable responses in a given situation which encompasses how humans physically and outwardly respond to emotions. Cognition refers to thoughts, beliefs, and interpretations about a situation or event, which involves perceptions, judgments, assumptions, and internal dialogue (Drew, 2023; Nadeau, 2022). ABC model proposed that it is not the events themselves that directly cause our emotional and behavioural reactions but rather our interpretations and beliefs about those events (Ostrom, 1969).

Table 2.1. ABC model of attitude. Adopted from McLeod (2019).

A	**Affective component:** The affective component considers how a person, an issue, or an event affects feelings. This involves emotions about the attitude object. **Example:** "*I do not like this picture*".
B	**Behavioural component:** This component describes how the attitude influences behaviour; and how we act or behave. Example: "*I will scroll up the screen faster if I see the picture on Instagram*".
C	**Cognitive component:** This component involves a person's belief or knowledge about an attitude object. In other words, this component takes an account of people's thoughts and beliefs about the subject. Example: "*I believe that the picture makes me cringe tremendously*".

Within the environmental context, attitudes assume a crucial role defined as a psychological inclination expressed through evaluating the natural environment with varying degrees of favour or disfavour (Milfont & Duckitt, 2010; Miller et al., 2022). This facet, however, has encountered a diversity of measures due to differing perspectives and inherent ambiguity (Milfont & Duckitt, 2010; Miller et al., 2022), yet environmental values stand out as the fundamental element. Environmental values, acting as precursors to beliefs, attitudes, and subsequent behaviours, reveal significant correlations with attitudes in various studies (Dietz et al., 2005; Gifford, 2014; Liu & Chen, 2020; St John et al., 2019; Stern, 2000). Notably, environmental social value emerges as a pivotal driving force, effectively mediating the influences of environmental knowledge and concern on pro-environmental behaviour (Foroughi et al., 2022; Foster et al., 2022)

Environmental behaviour encompasses a spectrum of actions with far-reaching implications, ranging from the alteration of material resources and energy to the transformation of ecosystems and the biosphere (Stern, 2000). Distinguishing from this broader category, pro-environmental behaviour represents a conscious endeavour to minimise negative environmental impact and, ideally, contribute positively to ecological welfare (Steg & Vlek, 2009). It signifies a proactive attempt to reduce one's ecological footprint, resonating with the concept of conscious stewardship towards the natural and built environments (Kollmuss & Agyeman, 2002). Pro-environmental behaviour manifests in direct actions aimed at environmental improvement, with a deliberate focus on problem-solving, guided by the intentions of those prepared to execute the actions (Gatersleben, 2013; Jensen, 2002). Importantly, it is worth noting that pro-environmental behaviour can occur unintentionally, either out of habit (such as routinely turning off the tap while brushing teeth) or driven by secondary objectives (like minimising water usage to reduce costs) (Gatersleben, 2013).

2.3.3 Exploring Attitudes and Behaviours in Water Conservation

Central to promoting sustainable water usage practices is a thorough understanding of individuals' attitudes and behaviours towards water conservation (Addo et al., 2018b; Boylu & Gunay, 2017; Dean et al., 2016; do Paço & Laurett, 2019; Gilbertson et al., 2011; Hassell & Cary, 2007; Hunt & Shahab, 2021; Koop et al., 2019; Koutiva et al., 2016; Moncaleano et al., 2021). Within this

framework, attitudes emerge as a central driver fuelling effective conservation efforts (Gilbertson et al., 2011; Rumble et al., 2017). Acting as guiding principles, attitudes mould behaviours, influencing how people understand, value, and engage with important matters (Byrne & O'Regan, 2014; Kousar et al., 2022; Maio & Olson, 1994). This interaction means that attitudes drive actions and form the foundation of sustainable water management, creating a landscape of mindful awareness and responsible stewardship.

Scholarly literature extensively acknowledges water conservation as a fundamental pro-environmental behaviour (Clark & Finley, 2007; Grilli & Curtis, 2021; Iwasaki, 2022; Kumar et al., 2023; Lange, 2023). These decisions are subject to a multitude of factors, including demographic aspects such as age, gender, and income, which interact with socio-economic elements including education, family size, house type, and tenancy (Abu-Bakar et al., 2023; Addo et al., 2018a; Addo et al., 2018b; Dietz et al., 1998; Fielding et al., 2012; Grilli & Curtis, 2021; Russell & Knoeri, 2020; Saurí, 2013; Sedegah et al., 2023). Hence, understanding attitudes and these influences is critical in crafting effective strategies for household water conservation, enabling targeted strategies for nurturing a water preservation culture.

In recent years, there has been a growing emphasis on gaining deeper insights into how people perceive and engage with water consumption, as well as the effectiveness of water conservation campaigns (Reddy et al., 2023; Russell & Knoeri, 2020; Singha et al., 2022; Singha et al., 2023; Thakur et al., 2022a). Factors such as attitudes, norms, perceived behavioural control, and habits play a significant role in influencing people's intention to conserve water (Gibson et al., 2021; Maduku, 2021; Reddy et al., 2023; Russell & Knoeri, 2020; Savari et al., 2023; Singha et al., 2022). Among these factors, are habits (Akram et al., 2023; Gardner et al., 2020; Gregory & Di Leo, 2003; Maduku, 2021; Russell & Knoeri, 2020; Singha et al., 2022) and awareness (Boylu & Gunay, 2017; Hunt & Shahab, 2021; Koop et al., 2019; Pankhania & Jenkins, 2018; Syme et al., 2000) often emerge as the most influential in shaping pro-environmental intentions.

A positive attitude towards water conservation begins with awareness and understanding of the importance of water as a limited resource (Barzian et al., 2023; Brownlee et al., 2014; Flack & Greenberg, 1987; Hunt & Shahab, 2021). When individuals recognise the significance of water scarcity and its potential consequences, they are more likely to take action to conserve water (Howarth & Butler, 2004; March et al., 2015; Verma et al., 2023; Zietlow et al., 2016). This

awareness fosters a sense of personal responsibility and a willingness to take action, ultimately influencing individual behaviours and choices regarding water consumption (Dean et al., 2016; Syme et al., 2000). Embracing a positive stance towards sustainability and the environment prompts individuals to prioritise water conservation and consciously reduce consumption. This intricate interplay of environmental understanding, awareness, and concern weaves into the emotional fabric of environmental attitude and value, a significant driver of pro-environmental behaviour.

2.3.4 Behavioural Change and Intention

Behavioural change programs hold a significant role in facilitating personal transformation and growth by offering well-structured frameworks and interventions that aim to modify behaviours and cultivate positive change (Browning & Thomas, 2005; Domegan, 2021; do Canto et al., 2022). These meticulously designed programmes serve as guides, furnishing individuals with evidence-based techniques and resources. By combining elements of education, goal setting, self-reflection, and consistent support, these initiatives nurture self-awareness, resilience, and self-efficacy (Anda et al., 2013; Bryant, 2012; Kaiser, 2011; Lal et al., 2023). This process empowers individuals to make informed choices, establish sustainable routines, and ultimately enhance their overall quality of life (Browning & Thomas, 2005; Domegan, 2021; do Canto et al., 2022; Ramallo-González et al., 2022).

Behaviour change encompasses the complex process of modifying an individual's behaviour, actions, attitudes, and habits (Behaviour Change, 2017; Fitoussi, 2023). This transformative journey involves understanding human attitudes and decision-making (Sutton, 1987), to enhance personal performance, productivity, and overall well-being (Fitoussi, 2023). It delves into the realm of self-instructions, capturing the underlying motivation and commitment to take action (Conner & Norman, 2022; Sheeran & Webb, 2016). Behavioural change and intention both align with the goal-oriented nature of human psychology, seeking to answer fundamental questions about what people do and why they do it (Canter, 2023). As such, the exploration of behavioural change and intention unveils the intricate interplay between human cognition, motivation, and purposeful action.

The comprehension of psychological mechanisms underpinning household water demand is paramount for managing water consumption and conservation efforts (Russell & Fielding, 2010). In the realm of water conservation, several driving forces influence behavioural change. These encompass attitudes towards water conservation, perceived behavioural control, normative influence, personal involvement, environmental context, technology, and actions (Clark & Finley, 2007; Fielding et al., 2012; Lamm et al., 2016; Lu et al., 2019; Maduku, 2021; Singha et al., 2022; Thakur et al., 2022a; Thakur et al., 2022b). Moreover, normative influence, personal involvement, and social norms also play pivotal roles, where peer perceptions and activities are taken into consideration (Lamm et al., 2018; Sarabia-Sánchez et al., 2014; Lapinski et al., 2007). This shows that behaviour change gauges a campaign's effectiveness (The Freedom Fund, 2019), although it can be challenging to track and measure (Bethell, 2021).

Several conceptual models of water conservation have been proposed (e.g., Clark & Finley, 2007; Dehdari & Dehdari, 2018; Liyanage & Vishwanathan, 2020; Warner & Diaz, 2020; Yazdanpanah et al., 2012; Yazdanpanah et al., 2014; Zhong et al., 2019), but they still lack a comprehensive understanding of the relationship between psychological behaviour and actual water consumption. The Theory of Planned Behavior (TPB) (Ajzen, 1985), offers a unique paradigm by considering attitudes, perceived behavioural control, and subjective social norms in influencing behavioural intent. According to the TPB, attitudes perceived behavioural control, and subjective social norms influence one's behavioural purpose (Ajzen, 1991). Extending TPB, studies have delved into various variables that impact water conservation intention and behaviour, contributing to a better understanding of the driving factors behind sustainable actions. These variables include environmental attitudes and concern about future shortages (Clark & Finley, 2007), a person's connection to water (Warner & Diaz, 2020), moral norms, self-identity, and subjective myths of nature as general beliefs (Yazdanpanah et al., 2012; Yazdanpanah et al., 2014).

2.3.5 Relevances

Within the intricate landscape of consumer attitudes and behaviours, particularly concerning sustainable water consumption, a complex interplay of factors comes into play efforts (Gilbertson et al., 2011; Rumble et al., 2017). While awareness of water crises serves as a foundational element, its impact is moulded by an array of social and cultural narratives (Clark & Finley, 2007; Grilli &

Curtis, 2021; Iwasaki, 2022; Kumar et al., 2023; Lange, 2023). These narratives shape how individuals perceive and assign value to water, influencing their willingness to adopt water conservation practices. Moreover, this section acknowledges that environmental concerns and perceived barriers to change, whether logistical or psychological, further contribute to the nuanced realm of consumer behaviour (Addo et al., 2018b; Boylu & Gunay, 2017; Dean et al., 2016; do Paço & Laurett, 2019; Gilbertson et al., 2011; Hassell & Cary, 2007; Hunt & Shahab, 2021; Koop et al., 2019; Koutiva et al., 2016; Moncaleano et al., 2021). It is this intricate interplay of factors that underscores the multifaceted nature of attitudes and behaviours related to sustainable water consumption. Understanding these factors is essential for designing targeted and effective strategies that can genuinely drive and sustain behavioural change.

The research delves into the transformative potential of shifting individuals from a state of unawareness to active participation in water conservation efforts. While raising awareness about pressing environmental challenges is undoubtedly crucial, fostering tangible, proactive engagement is equally, if not more, vital. By encouraging individuals to transition from a passive acknowledgement of challenges to active commitment and participation, the research aligns with Howarth and Butler's (2004) proposition. This shift in awareness and engagement becomes fundamental to the broader goal of promoting resilience. It advocates for a population that not only comprehends environmental issues but is also empowered to take concrete and meaningful steps to address them, thereby enhancing overall environmental resilience.

Central to the pursuit of resilience is the exploration of behavioural change and intention. In achieving environmental resilience, the use of public commitment approaches emerges as a critical and impactful strategy (Aitsi-Selmi et al., 2015; Bruzzone et al., 2021; Norris et al., 2008). These approaches engage individuals in making explicit pledges to adopt specific behavioural changes that align with sustainable practices (Bathaiy et al., 2021; Dressler et al., 2019; Taberna et al., 2020). By investigating the motivations, triggers, and barriers that influence behavioural shifts, the research provides insights into key levers that can facilitate sustainable practices. This exploration aligns closely with the central focus of the study, offering a comprehensive understanding of the processes that underlie the transition from holding positive attitudes towards sustainable practices to actively engaging in them. Such insights hold significant potential for shaping effective strategies and interventions aimed at driving meaningful and lasting behavioural change in support of environmental resilience.

To such an extent, recognising the intricate and diverse factors that shape individual attitudes and behaviours is paramount to designing effective communication strategies. Gender, age, habits, and awareness levels (Abu-Bakar et al., 2023; Addo et al., 2018a; Boylu & Gunay, 2017; Gibson et al., 2021; Hunt & Shahab, 2021; Koop et al., 2019; Pankhania & Jenkins, 2018; Reddy et al., 2023; Russell & Knoeri, 2020; Saurí, 2013; Sedegah et al., 2023; Singha et al., 2022; Syme et al., 2000) are key variables as they reflect the unique and varied perspectives and experiences of individuals. Tailoring messages to resonate with specific motivations and concerns within these demographics ensures that interventions are not one-size-fits-all but, instead, are finely tuned to address the group dynamics. Additionally, billpayer status, while somewhat understudied, represents a crucial yet underexplored variable in understanding the dynamics of environmental behaviour. Exploring its influence is essential, as it holds potential insights that can contribute to the refinement and consistency of communication.

2.4 Chapter Summary

This chapter delved into the pivotal elements of effective communication, including the art of persuasion, as powerful tools to mobilise public support and engagement for water conservation efforts. The integration of informativeness (Cahyani & Artanti, 2020; Hamouda, 2018; Logan et al., 2012; Mir, 2012; Murillo, 2017; Shareef et al., 2019) and credibility (Chambers et al., 2023; Filieri et al., 2023; Frewer, 2004; Kristan & Suffoletto, 2015; Maddux & Rogers, 1980; Stoddard et al., 2023; Wiener & Mowen, 1986) in communication strategies are proposed to effectively engage individuals and drive behavioural changes. Furthermore, while previous studies have explored the effective role of emotions in marketing communication (Burman et al., 2017; Fu & Chen, 2012; Mattila, 1999; Mattila, 2001; Nysveen & Breivik, 2005; Stafford & Day, 1995; Wang et al., 2017; Zhang et al., 2014a), the current developments in social media advertising and communication for water-resilient communities lack a comprehensive understanding. There is a need to investigate the role of emotional appeal in facilitating viewers' decision-making processes and how to effectively evoke these emotions. Additionally, it is crucial to explore the underlying bases of these emotional connections and how they can be harnessed to drive positive behavioural change in water conservation efforts. Hence two research gaps have been identified: Effective WCC video communications on social media platforms for water-resilient communities; and the role of emotion in effective WCC communication.

As the section concludes, it emphasises the broader implications that emerge from the analysis of relevant attitudes and behaviours. Thus, an investigation into attitudes and behaviours towards water usage was undertaken to uncover the intricate interplay between individual choices and broader conservation objectives. The literature review delved into the transformative potential of individuals, as highlighted by Howarth and Butler (2004), who described the shift from unawareness to active participation in water conservation efforts. This transformation aligns with the overarching aim of promoting resilience and empowering individuals to effectively address environmental challenges through meaningful actions, as emphasised by Aitsi-Selmi et al. (2015) and Bruzzone et al. (2021).

The chapter also highlighted the importance of understanding motivations, triggers, and barriers that influence behavioural shifts, offering insights for effective strategies and interventions to drive lasting behavioural change in support of environmental resilience (Addo et al., 2018b; Boylu & Gunay, 2017; Dean et al., 2016; do Paço & Laurett, 2019; Gilbertson et al., 2011; Hassell & Cary, 2007; Hunt & Shahab, 2021; Koop et al., 2019; Koutiva et al., 2016; Moncaleano et al., 2021). By recognising the intricate and diverse factors that shape individual attitudes and behaviours, communicators can tailor their messages to resonate with specific motivations and concerns. Hence it is imperative to validate the efficacy of the proposed framework across various demographic segments including gender, age, habits, awareness level and billpayer status.

3 CONCEPTUAL FRAMEWORK, RESEARCH QUESTIONS AND HYPOTHESES

3.1 CHAPTER INTRODUCTION

Building upon the groundwork laid in the preceding literature review, a distinct emphasis emerges on unravelling the intriguing role of emotional appeal, as the main element of effective communication in WCC, alongside the role of informativeness and credibility. This includes the art of evoking emotions through multimedia elements and leveraging creativity within the domain of social media. This may also lead to a comprehensive understanding of how these aspects synergistically drive engagement and influence behaviour. Therefore, the focus of this chapter is to bridge critical gaps within the realm of effective social media water conservation video communication.

Furthermore, recognition is granted to the pivotal role behavioural change and persuasion play in effective communication. As such, two influential theories, the Theory of Planned Behaviour (TPB) and the Elaboration Likelihood Model (ELM), are seamlessly integrated, forming the basis of the study. This integration delves deeper into the psychological underpinnings of persuasive messaging and behavioural transformation, thus furnishing a comprehensive framework for exploration.

In the following sections, Section 3.2 explores the dual facets of emotion evocation and persuasion theories. It delves into the use of creativity and multimedia effects to evoke emotions, while also examining the persuasive frameworks of the TPB and ELM to guide communication strategies. Section 3.3 unveils a robust conceptual framework, serving as a guiding light for this research.

Within this framework, research questions (RQs) and hypotheses are developed, establishing the foundation for empirical investigation. Ultimately, Section 3.4 distils the essence of this chapter into a succinct summary.

3.2 Additional Background Theories

The preceding chapter (Chapter 2) introduces the concept of effective communication as a basis of resilience-building, delving into the significance of attitudes and behaviours within this framework. However, a query pertains to the means of eliciting emotions and their underlying foundations. This extends to the inquiry of how these emotions can be evoked, including predicting behavioural shifts resulting from persuasive elements. Consequently, this section provides supplementary context that remained unaddressed in the preceding chapter, with the aim of presenting a comprehensive effective communication framework in the context of this study. The initial section (Section 3.2.1) focuses on invoking emotions through multimedia influences (Section 3.2.1.1) and creativity (Section 3.2.1.2). Both of these aspects are relevant to the social media landscape. The subsequent section (Section 3.2.2) is dedicated to the exploration of psychological theories governing individuals' conduct in diverse scenarios: the Theory of Planned Behaviour (TPB) (Section 3.2.2.1) and the Elaboration Likelihood Model (ELM) (Section 3.2.2.2). These theories may have ramifications for how persuasion works.

3.2.1 Evoking Emotions

The widespread use of the Internet in marketing has led to a big change in how advertisements work over the past twenty years (Infante & Mardikaningsih, 2022; Purwanti et al., 2023; Theintactone, 2020). In today's new media era, content marketing is becoming more dominant (Barbosa et al., 2023; Du Plessis, 2015). Similar to television advertisements in which multimodal are possible, it only makes sense to consider multimedia effects and creativity (Ben Amor & Mzoughi, 2023; Chidiac & Bowden, 2021; Hsieh et al., 2012; Lee & Hong, 2016). Consistently, an emotional response can be evoked by, generated, or shaped by specific feelings as well as by specific exteroceptive stimuli, cognitions or cognitive processes (Pace-Schott et al., 2019). Thus, the choice of creativity and multimedia effects is rooted in their potential to engage viewers on

social media platforms and elicit emotional responses, which, in turn, can drive proactive water conservation behaviours.

3.2.1.1 *Effect of Multimedia*

Technological advancements have significantly reshaped multimedia advertising, making diverse interactive formats that extend beyond traditional print ads. In order to effectively engage target audiences and promote products, employing multimedia tools has become indispensable. Multimedia encompasses a range of media forms, including text, graphics, images, video, audio, and digital content. By combining these elements, information can be conveyed efficiently and communication can be enhanced, ultimately boosting intention and sales (Pavithra et al., 2015; Schweppe et al., 2015). In this context, the use of multiple channels enables the transmission of rich information, while engaging multiple senses enhances communication and improves learning outcomes (Alamäki et al., 2019; Cai et al., 2023; Choi et al., 2020; Han et al., 2022; Hasim et al., 2020; Hui et al., 2023; Mayer, 2003; Noetel et al., 2022; Potter, 2012).

Exploring the realm of multimedia effects and their impact on human perceptions involves delving into cue summation theory and dual-coding theory (Cui & Wang, 2022; Li et al., 2023; Meyerhoff et al., 2023). These theories focus on multimedia learning, where students use the information presented in multiple formats. Applied to online learning, research shows that computer-based multimedia instruction can significantly enhance learning (Rieber et al., 2004). Cue-summation theory posits that more available cues or stimuli lead to more effective learning (Albers et al., 2023; Cui & Wang, 2022; Kinzinger et al., 2022; Li et al., 2023; Severin, 1967; Skoric et al., 2022). Dual-coding theory suggests that processing information verbally and nonverbally concurrently improves comprehension (Maniar, 2012). To such an extent, the dual-coding theory asserts that information can be processed through both verbal and nonverbal systems, with additive effects on human comprehension (Clark & Paivio, 1991; Kanellopoulou et al., 2019; Mayer & Sims, 1994; Paivio, 1991; Paivio, 2014).

In an advertising context, critical success factors, such as audio content (including sound saturation, background music, and sound effects), visual aspects (such as the number of cuts, visual effects, imagery intensity, speed, and colours), content attributes (like enactment, unexpected formats, and surprise elements), and message appeals, significantly contribute to advertisement

success (Appiah, 2006; Cook & Coupey, 1998; Gupta et al., 2016; Hsieh et al., 2012). All of these contribute to campaign virality (Akpinar & Berger, 2017) and the product's marketability. It also influences consumers' reactions (Nathan & Yeow, 2011), users' motivation and behavioural intent (Ibrahim et al., 2015), thereby, boosting sales and enhancing the market impact and popularity (Aduloju et al., 2009; Potter, 2012; Zhao et al., 2013).

Distinct types of media exert varying effects on attitudes (Otondo et al., 2008; Sung & Cho, 2012). Empirical data suggest that emotional responses to imagery influence the conceptualisation of pro-environmental science and policy (Cass & Walker, 2009; Sleenhoff et al., 2014). This is due to the ability of images to affect people's connection to the communication message before cognitive processing (Bornstein et al., 1987; Flynn, 2019; Park & Park, 2020). Additionally, images fulfil various functions, including evoking emotional reactions (Domke et al., 2002; Hunter, 2006; Jarreau et al., 2015) and influencing user behaviour (Cyr et al., 2009; Ritterband et al., 2009). Perhaps because of this, using pictures to elicit strong emotions in the audience is a common communication tactic (Schultz et al., 2018).

Moving images, like movie clips, are a long-standing stimulus for emotional elicitation experiments in psychology and have shown success in evoking emotional responses (Fernández-Aguilar et al., 2019; Ferrer et al., 2015; Korpad, 2020; Siedlecka & Denson, 2018). Online video with more multimedia effects provides more cues or stimuli for recipients (Hsieh et al., 2012) and tends to drive more engagement than plain images (Dopson, 2021). Moreover, videos are more suited for sharing ideas, stories, and information about products and services while images, being straightforward, provide a clear visual representation of the product (Dimova, 2019). Hsieh et al. (2012) also contend that online videos with greater multimedia effects offer more cues or stimuli, fostering positive attitudes towards them and increasing forwarding intentions. This overall combination of media is part of "design quality" which increases content attractiveness and consumer intimacy (Cheung et al., 2022; Sokolova & Kefi, 2020).

There has been research on the connection between visuals and perceptions of the environment (Hart & Feldman, 2016; Park & Park, 2020; Van den Berg et al., 2006). Hart and Feldman (2016) found that texts highlighting climate change solutions and photos of solar panels enhance perceptions of efficacy, positively influencing behaviour change. However, viewing visuals of climate consequences or pollution does not negatively impact perceived efficacy or positively affect perceived issue importance. To such an extent, Greenpeace activists have effectively garnered

public support for international whaling treaties by employing emotionally moving images of activists confronting whaling boats (Mathiesen, 2015). Similarly, Meijnders et al. (2001) used the elaboration likelihood model of persuasion to examine how watching a brief movie about the effects of climate change affected viewers' support for using energy-efficient lightbulbs. Their research revealed that increased fear caused people to comprehend the accompanying textual information more thoroughly, which led to a more favourable attitude toward the use of energy-efficient lightbulbs (Meijnders et al., 2001).

3.2.1.2 Creativity

The concept of advertising creativity is deeply intertwined with the novelty and unexpectedness that underlie an advertisement's effectiveness (Bruner, 1962; Das et al., 2023; Haberland & Dacin, 1992; Lee & Hong, 2016). Central to the understanding of advertising creativity are the notions of divergence and relevance, elucidated by Smith et al. (2007). While divergence denotes the incorporation of novel and unique elements in an advertisement, relevance underscores the necessity of crafting content that resonates with the audience's values, needs, and aspirations (Smith et al., 2007). In this manner, advertising creativity combines the innovative and the pertinent, not only standing out but also fostering meaningful connections with consumers (Blasko & Mokwa, 1986; Mercanti-Guerin, 2008).

Creativity is not bound by a single facet but pervades the entirety of the advertising process (Wisker et al., 2019). In the digital landscape, marketers' creativity is showcased through the fusion of artistic elements such as colours, narratives, and content meaning, hence "design quality" (Casaló et al., 2021; Cheung et al., 2022; Zhou et al., 2021). This also leverages visuals and storytelling (Wardhani, 2022). All these converge to the same goals, which are to effectively capture the viewer's attention through its distinctiveness, provide unique value (de Almeida Ferreira et al., 2020) and heighten engagement and brand awareness (Wardhani, 2022).

As the marketing landscape continues to evolve, creativity remains important, ensuring that brands connect effectively with their audience and stay relevant in an ever-changing environment. This is because consumers are important judges of creativity (Dahlén et al., 2008; Modig & Dahlen, 2020). In the dynamic landscape of marketing, creativity assumes a central role in shaping the trajectory of businesses (Alfred-Joachim, 2023; Dahlén et al., 2008; Roggeveen et al., 2021). Creativity

influences customer attitudes, perceptions, brand associations and intentions (Ameen et al., 2022; Darley & Lim, 2023; Hashem, 2020; Jin et al., 2019; Lee & Hong, 2016; Lies, 2021; Reinartz & Saffert, 2013; Shen et al., 2020; Smith et al., 2007). For example, creative advertisements generated stronger shifts in attitudes toward the advertisement, attitudes toward the brand, and behavioural intentions (Southgate et al., 2010).

In the contemporary marketing landscape, marked by ever-evolving trends and technologies, maintaining relevance and resonance requires a constant embrace of creativity (Kokemuller, 2020). This is particularly true in the context of capturing the attention of target audiences, where fresh and innovative methods are essential (Ho & Lam, 2019). At the core of effective advertising creativity lies its ability to evoke emotions that deeply connect with the audience (Cheung et al., 2022; Janssens & De Pelsmacker, 2005; Rosengren et al., 2020). The work of Zhao and Ji (2019) illuminates the pivotal role of emotional reinforcement in advertisements, where emotions can be artfully crafted and conveyed to elicit precise consumer responses. This attests to the power of creative strategies in embedding genuine and pertinent emotions within an advertisement, thereby enhancing its impact on the target audience (Zhao & Ji, 2019). The design quality, which generates aesthetic experiences, fulfils consumers' yearning for self-enhancement and possesses the potential to fortify emotional attachments (Cheung et al., 2021; Faisal et al., 2020; Hudders et al., 2021).

3.2.2 How does Persuasion Work?

3.2.2.1 Theory of Planned Behaviour (TPB)

Theory of Planned Behaviour (TPB) involves the psychological theory that assumes the intention to perform desired behaviour is governed by "motivational factors" (Ajzen, 1985). TPB is one of the most widely used and well-supported social psychological theories of behavioural decision-making (Fielding et al., 2008). TPB is considered a persuasion theory because it focuses on understanding and predicting human behaviour by examining the factors that influence a person's intentions to perform a certain action (Ryan & Worthington, 2021). This theory has been widely applied to various fields, including health, tourism, environmental issues, and sustainable practices (Asare, 2015; Cahigas et al., 2023; Djafarova & Foots, 2022; Li & Zhang, 2023; Liddelow et al., 2023; Yuriev et al., 2020), including water conservation communication (Lam, 2006; Lam, 1999;

Fu & Wu, 2018). It suggests that behavioural intentions are influenced by three key factors: attitude towards the behaviour, subjective norms, and perceived behavioural control (Figure 3.1).

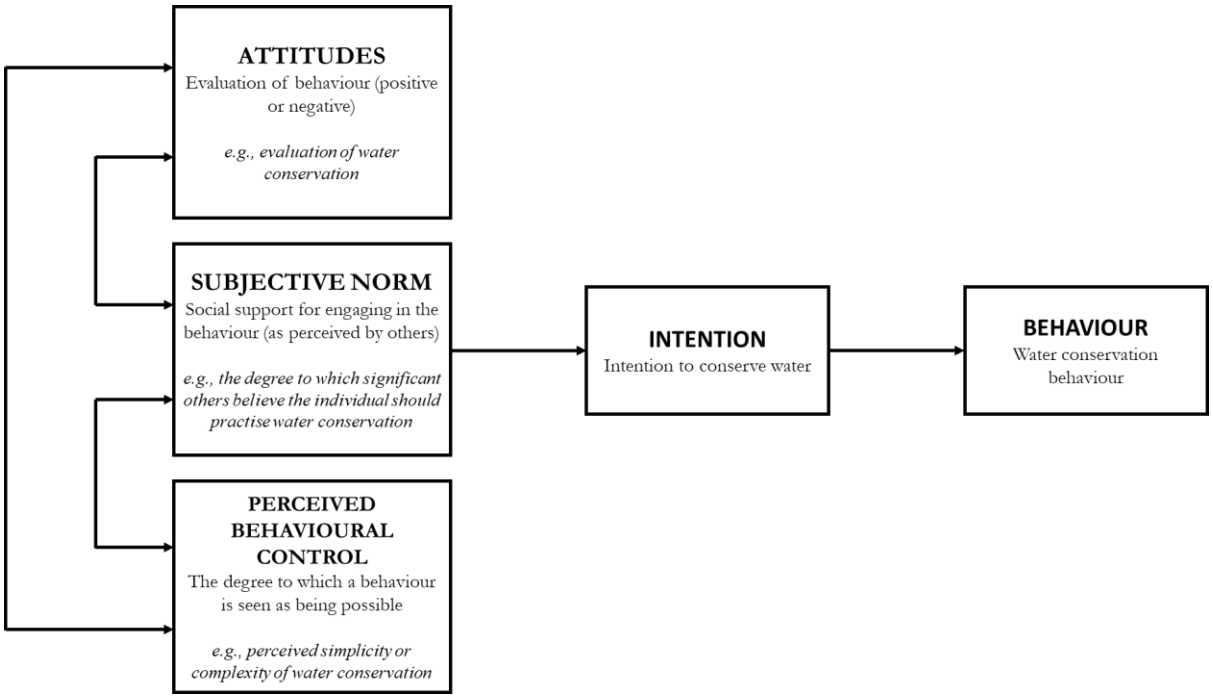

Figure 3.1. Ajzen's Theory of Planned Behaviour (TPB). The TPB states that a person's intentions to engage in behaviour are the most immediate driver of that behaviour. In turn, attitudes, subjective norms, and perceived behavioural control are all three of which influence behavioural intentions.

Attitude towards behaviour pertains to an individual's comprehensive assessment of a particular behaviour (Ajzen, 1991). This assessment is considered to be influenced by easily accessible beliefs concerning the potential consequences of the behaviour, known as "behavioural beliefs" (Ajzen, 2020). A behavioural belief represents an individual's likelihood estimation that engaging in a specific behaviour will result in a particular outcome or provide a specific experience (Anuar et al., 2017; Erdmann et al., 2023; Giles & Cairns, 1995). For instance, in the context of health research, a belief may encompass the notion that using a condom during sexual intercourse (the behaviour) can effectively prevent sexually transmitted diseases (the outcome) or may be inconvenient (the experience) (Asare, 2015). Another example from the realm of tourism involves the decision to revisit Siargao after Typhoon Rai (Odette) (the behaviour), which is believed to offer substantial opportunities (the outcome) or might not justify the cost (the experience) (Cahigas et al., 2023). Taken together, the positive or negative evaluation of each anticipated outcome or experience

contributes to the overall attitude proportionally to the personal likelihood that the behaviour will lead to the mentioned outcome or experience (Ajzen, 2020).

In understanding subjective norms, it is important to distinguish between two types of normative belief: injunctive and descriptive (Ajzen, 2020; Cialdini et al., 1991). An injunctive normative belief is the expectation or subjective probability that a given referent individual or group such as friends, family, spouse, or co-workers, approves or disapproves of performing the behaviour under consideration (Ajzen, 2020; Heinicke et al., 2022). For example, the beliefs of friends or family support the individual to use car sharing (Li & Zhang, 2023). Descriptive normative beliefs, on the other hand, are beliefs as to whether important others themselves perform the behaviour (Ajzen, 2020; Heinicke et al., 2022), such as beliefs that many people are trying to reduce their energy use (Dixon et al., 2015). Both types of beliefs contribute to the overall perceived "social pressure" to engage in the behaviour, thus the "subjective norms" (Ajzen, 2020).

The Perceived Behavioural Control component reflects how confident an individual feels about doing a certain action (Ajzen, 1985; Ajzen, 1991). Similar to how attitudes are based on what individuals think about behaviour and subjective norms are based on what others believe, perceived behavioural control is linked to what individuals believe about having control (Ajzen, 1985; Ajzen, 1991; Ajzen, 2020). These beliefs relate to things that can make it easier or harder to do the action, termed "control beliefs" (Flammer, 1995). A control belief is defined as a person's subjective probability that a given facilitating or inhibiting factor will be present in the situation of interest. Hence, it includes thoughts about things that make the action easier or harder (Premkumar et al., 2008). Control factors include skills and abilities needed, having enough time, money, and other resources, and getting help from others (Ajzen, 2020). For example, the high costs of adopting a healthy diet make it impossible to change behaviour (Sogari et al., 2023).

From a water conservation perspective, TPB variables are good predictors of water conservation intentions (Azaki & Rivett, 2020; Chaudhary et al., 2017; Clark & Finley, 2007; Fielding et al., 2012; Lam, 2006; Lamm et al., 2016; Lynne et al., 1995; Perren & Yang, 2015; Russell & Fielding, 2010; Warner & Diaz, 2020), although more and more research tried to extend the variables. Moreover, individuals' intentions to save water are stronger when they feel social support from significant others (Clark & Finley, 2007; Lam, 2006; Trumbo & O'Keefe, 2005; Kantola et al., 1983). There is however little evidence that the intention to conserve water is actually carried out (Fielding et

al., 2012). To such an extent, self-reports of water-saving behaviour are also frequently weakly correlated with actual household water consumption (Beal et al., 2013; De Oliver, 1999).

3.2.2.2 *Elaboration Likelihood Model (ELM)*

Persuasion, as described in Section 2.2.3, aims to influence the message recipient's attitude or behaviour toward the presented item. The field of persuasion and communication has long been a subject of fascination for scholars, advertisers, and marketers (DellaVigna & Gentzkow, 2010; El Hedhli & Zourrig, 2023; Jorgensen, 1996; Miles, 2013; Petty & Briñol, 2015). The Elaboration Likelihood Model (ELM) has significantly contributed to the understanding of how persuasion works (Hoffman, 2020; Hopper, 2019; Petty & Cacioppo, 1986; Petty & Cacioppo, 1981). This model provides a comprehensive framework for examining the factors that influence the effectiveness of persuasive messages and the cognitive processes that individuals undergo when evaluating these messages (Hoffman, 2020; Kitchen et al., 2014). The ELM is built upon the idea that there are two primary routes through which people process persuasive messages: the central route and the peripheral route (Hopper, 2019; Petty & Cacioppo, 1986; Petty & Briñol, 2015) as shown in Figure 3.2 below.

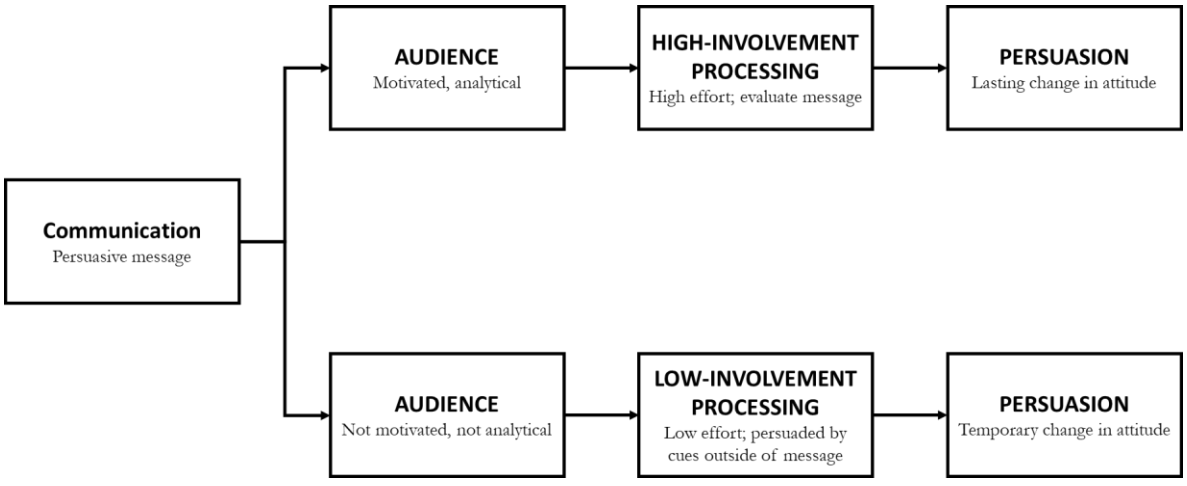

Figure 3.2. ELM dual route explanation. The ELM posits that the two processing routes lead to different outcomes in terms of attitude change and persuasion. When the central route is taken, attitudes formed or changed are likely to be more enduring, resistant to counter-arguments, and predictive of behaviour. On the other hand, attitudes formed through the peripheral route are often more transient and susceptible to change when exposed to alternative information.

The central route involves deep, thoughtful processing of the message content. It requires individuals to critically evaluate the arguments presented and consider the information's relevance and coherence. The central route persuades viewers mainly with rational, reasonable, and sound messages. This route involves careful, thoughtful, logical, conscious, and deliberate thinking. Hence, this requires the individual to have the ability to process the message to allow counterarguments, resulting in increased involvement (Petty & Cacioppo, 1981; Petty & Cacioppo, 1986). Here, individuals will think about any issue-relevant information, for instance, water issues, how to conserve water, and the benefits of water conservation. Attitudinal changes via this route are more often permanent but difficult to achieve (Petty & Cacioppo, 1981).

On the other hand, the peripheral route relies on superficial cues such as the source's credibility or the emotional appeal of the message. The peripheral route is mainly based on emotional appeal. Hence, it is sometimes termed the "emotional route to persuasion" (StratoServe, 2021). As opposed to the central route, viewers make a decision simply using their hearts rather than their brains. Individuals taking the peripheral route to persuasion are influenced by some simple cue independent from the information presented. For example, advertisers may use images or background music to evoke emotional appeal. Individuals may also use the peripheral route when experiencing trouble understanding the message and thus, be less motivated to do central processing (Petty & Cacioppo, 1986). Additionally, individuals may also be diverted to this route if they have little time available to think about the message and decide not to elaborate further on the decision. At times, the receiver decides to agree with the message simply because the source appears to be an expert. Unfortunately, attitude changes in the peripheral route tend to be temporary (Petty & Cacioppo, 1981).

The ELM does four essential things as highlighted by Petty and Briñol (2012). First, people's attitudes can be modified by either side of the "elaboration continuum": high or low degree of thought. Secondly, a high degree of thought is regarded as the "central route" while the opposite is the "peripheral route". It is also important to note that persuasion can be determined by the mixture of these processes. Third, although a mixture of processes is more common and probably easier to argue, it is however important to recognise if the process route taken is via a central or peripheral route. This will help to predict whether change is permanent or temporary. Lastly, cues and predictors used in the ELM may not be exhaustive (e.g., argument quality, source attractiveness, emotions).

When examining attitudinal change, which is believed to be the mechanism by which externally induced persuasion occurs, the model is most frequently utilised by advertising researchers (e.g., Kitchen et al., 2014). ELM also has been used in various disciplines such as health (e.g., Hinyard & Kreuter, 2007), tourism (e.g., Kim & Chung, 2015), transport (e.g., Wu et al., 2019), products (e.g., Sugiantari et al., 2018) and water conservation communications (e.g., Gonzalez et al., 2021; Maduku, 2021; Rumble et al., 2017) For instance, Rumble et al. (2017) concentrate on message framing, especially on socially- and personally-framed messages. The results suggested that audiences are more favourable towards societal advantages of water conservation than personal ones. Hence, Rumble et al. (2017) recommend that future campaigns to encourage water conservation should emphasise the social advantages to encourage greater change. Moreover, in order to understand attitudes about water conservation and intention, Maduku (2020) explored the roles of argument quality (central route) and source credibility (peripheral route). WCC delivered via radio, newspapers, social media, and television are used in the study. The result found that argument quality predicts consumers' attitudes toward water conservation positively, but source credibility predicts consumers' attitudes negatively.

3.2.3 Relevances

The previous chapter delves into the intriguing realm of persuasion, particularly the pivotal role that emotional appeal plays in capturing audiences' attention. One important question was raised in terms of how can emotions be effectively evoked within the context of the WCC video. In this context, a natural alignment emerges with the landscape of social media's audiovisual communication. Within this dynamic arena, two key factors, namely the multimedia effect (Fernández-Aguilar et al., 2019; Ferrer et al., 2015; Korpad, 2020; Siedlecka & Denson, 2018) and creativity (Janssens & De Pelsmacker, 2005), come to the forefront as promising avenues for eliciting emotions in an impactful manner. The synergy between the multimedia effect and creativity in the realm of social media's audiovisual communication offers a compelling strategy for bridging the gap between communication and emotional engagement. By adeptly utilising these channels, communicators can harness the immense potential for eliciting emotions, thereby fostering deeper and more meaningful connections with their audiences.

In the context of social media WCC video communication, the convergence of the ELM and the TPB introduces a comprehensive strategy for enhancing community resilience and awareness. By

bridging the insights of these psychological frameworks, this research not only taps into cognitive and the elements of effective communication but also expands the scope of attitudes and behaviours to create a more tailored and relatable approach within this research context.

The ELM underscores the significance of engaging viewers through both cognitive and emotional avenues (Hoffman, 2020; Hopper, 2019; Petty & Cacioppo, 1986; Petty & Cacioppo, 1981). This approach aligns harmoniously with the notion of attitudes, as defined within the TPB, focusing primarily on an individual's evaluations of specific behaviours (Ajzen, 1985; Ajzen, 1991). However, to make this research more contextually relevant and effective, it's imperative to broaden the concept of attitudes to encompass more than just attitudes toward the desired behaviour. Recognising the unique dynamics of social media communication, this research introduces an expanded view of attitudes that includes attitudes towards empathy expression. While TPB traditionally centres on attitudes solely in relation to behaviour, this innovative adaptation acknowledges the role of empathy expression in the context of likes, shares, and engagement with water conservation videos.

3.3 Development of Research Questions and Hypotheses

Building upon insights gleaned from existing knowledge and literature, this research identifies two pivotal research gaps. The first pertains to the need for effective water conservation campaign video communications on social media platforms, aimed at amplifying positive responses from users and fostering community resilience. The second gap revolves around the significance of emotion in steering impactful water conservation communication. In response to these gaps, relevant RQs emerge and are subsequently translated into research hypotheses. This section thus serves to present the research questions and hypotheses.

The initial section is dedicated to developing a comprehensive conceptual framework, rooted in the focal research gaps (Section 3.3.1) and presenting the framework (Section 3.3.2). Moving forward, the subsequent section delves into the interplay of emotional appeal, elucidating its mediating role in the intricate web of relationships involving informativeness, creativity, multimedia effects, and attitudes (Section 3.3.3). The fourth section examines the framework's

effectiveness across a spectrum of variables, encompassing gender, age, habitual behaviour, awareness levels, and billpayer status (Section 3.3.4).

3.3.1 The Foundation of the Framework

The formulation of the framework is guided by the identified research gaps, which centre on two crucial aspects: first, the need for impactful water conservation campaign video communications on social media platforms to foster positive responses among users and enhance community resilience, and second, the exploration of the role played by emotion in effective water conservation communication. These research gaps lay the foundation for crafting relevant RQs and subsequently constructing hypotheses that underpin this research's trajectory.

GAP 1. Effective WCC video communications on social media platforms for water-resilient communities.

There is a need for further research that focuses on effective communication to build and support water-resilient communities. There is also a lack of studies that have taken a comprehensive and combined practical approach, in the hope of increasing positive social media users' responses and promoting communities' resilience. This raises the main research question (RQ 1) of this study.

RQ 1. How can a persuasive message be communicated effectively to enhance positive viewer responses and promote resilience?

Informativeness. A review of the related literature indicates that informativeness is the main element recognised as effective. Accordingly, the first four hypotheses are proposed:

H1. The informativeness of a water conservation campaign video will be significant and positively associated with attitude toward water conservation.

H2. The informativeness of a water conservation campaign video will be significant and positively associated with the attitude toward empathy expression.

H3. The informativeness of a water conservation campaign video will be significant and positively associated with perceived behavioural control.

H4. The informativeness of a water conservation campaign video will be significant and positively associated with subjective norms.

Credibility. The credibility factor is also crucial in an effective communication framework. Therefore, this study hypothesises the following:

H5. The credibility of a water conservation campaign video will be significant and positively associated with attitude toward water conservation.

H6. The credibility of a water conservation campaign video will be significant and positively associated with the attitude toward empathy expression.

H7. The credibility of a water conservation campaign video will be significant and positively associated with perceived behavioural control.

H8. The credibility of a water conservation campaign video will be significant and positively associated with subjective norms.

GAP 2. The role of emotion in effective WCC communication.

Effective communication through audio-visual means holds the power to reshape audiences' decision-making processes. When strategies are employed to intensify viewers' emotional responses to video content, the potential for influencing consumers becomes significantly more effective. These marketing campaigns intentionally aim to create compelling, emotionally resonant messages, known as "emotional marketing", establishing personal connections with their audience. However, despite its effectiveness in various domains, a noticeable gap exists in the realm of water conservation social media communication. There is a paucity of research that delves into the role of emotional appeal within the context of building and nurturing water-resilient communities. This gap underscores the need for further investigation into the potential of emotional marketing to not only engage but also mobilise individuals toward active participation in water conservation efforts.

Emotional Appeal. Emotional appeal serves as the main element of effective communication in this study. Based on the literature review, informativeness and credibility are two important factors of persuasiveness. It is however imperative to question if these two factors stand alone on their own or do they affect the audiences' emotions. To further answer RQ 1, the following hypotheses are developed:

H9. The emotional appeal of a water conservation campaign video will be significant and positively associated with attitude toward water conservation.

H10. The emotional appeal of a water conservation campaign video will be significant and positively associated with the attitude toward empathy expression.

H11. The emotional appeal of a water conservation campaign video will be significant and positively associated with perceived behavioural control.

H12. The emotional appeal of a water conservation campaign video will be significant and positively associated with subjective norms.

Advancing the examination of intention prediction within the framework of the TPB, it is crucial to pause and consider the effective utilisation of the previously mentioned emotional appeal. This contemplation leads to the following research question (RQ 2). Addressing this research query is essential, as it hones the investigation into the intricate relationship between emotional appeal and three essential elements: informativeness, creativity and multimedia effects. Informativeness is included in this examination due to the understanding that specific information has the potential to evoke emotions. Moreover, information, although undeniably important, often falls short of leaving a lasting impact without other external elements. This inquiry aims to illuminate the dynamic interplay of these factors, enhancing the comprehension of how emotional appeal influences viewers and motivates them toward water conservation actions.

RQ 2. How can emotions be effectively evoked within the context of the WCC video?

Informativeness, Creativity and Multimedia Effects. Informativeness, video creativity, and multimedia effects affect emotion by simulating reality and creating illusions. Thus, the following hypotheses are developed:

H13. The emotional appeal will be significant and positively associated with the informativeness of the WCC video.

H14. The emotional appeal will be significant and positively associated with the creativity of the WCC video.

H15. The emotional appeal will be significant and positively associated with the multimedia effects of the WCC video.

Creativity and multimedia effects are powerful tools that can significantly impact the success of communication. By combining compelling visuals, engaging audio, and creative storytelling techniques, both creativity and multimedia effects will capture consumers' attention, driving them to express their affective evaluation of the advertisement. Therefore, the following hypotheses are formulated:

H16. The creativity of a WCC video will be significant and positively associated with attitude toward water conservation.

H17. The creativity of a WCC video will be significant and positively associated with the attitude toward empathy expression.

H18. The multimedia effects of a WCC video will be significant and positively associated with attitude toward water conservation.

H19. The multimedia effects of a WCC video will be significant and positively associated with the attitude toward empathy expression.

Behavioural change measures the success of any campaign. Similar to the decision to stop smoking or start exercising, behaviour change in water conservation is a process that involves individual decision-making and attitudes which is often difficult to monitor and measure. In a water conservation campaign, providing information and educating water consumers are expected to be necessary, however, this is insufficient to promote behavioural change (Cary, 2008). This is because behavioural change requires decision-making, and decision-making is affected by "internal" factors such as attitudes and habits and "external" factors such as environment and social norms (Cary, 2008).

The idea of intention, which is characterised as the driving force behind an individual's decision to participate in a certain action, lies at the foundation of the TPB. In this research, four primary components affect intention: attitudes to water conservation, attitudes to empathy expressions, subjective norms, and perceived behavioural control. Thus, this study further hypothesises the following:

H20. Consumers' intention to conserve water will be significant and positively predicted by their attitude toward water conservation behaviour.

H21. Consumers' intention to conserve water will be significant and positively predicted by the attitude toward empathy expression.

H22. Consumers' intention to conserve water will be significant and positively predicted by social norms.

H23. Consumers' intention to conserve water will be significant and positively predicted by their perceived behaviour control.

Crucially, this research extends the four components mentioned above to the role of emotional appeal that would better predict the intention. Recent studies have suggested that emotional appeals may play an important role in predicting attitudes and behaviours beyond the TPB variables (Berki-Kiss & Menrad, 2022; Londono et al., 2017). Emotional appeals may be an important missing variable in the TPB (Brookes, 2023; LaMorte, 2022). Hence, the research also hypothesises that:

H24. Consumers' intention to conserve water will be significant and positively predicted by emotional appeal.

3.3.2 Developing the Framework

These hypotheses were built based on a collection of concepts and a construct in which each concept plays an integral role. This will provide a series of causal relationships as an interpretative approach to social reality. This section gathers and integrates the previously unrelated notions into a single new model.

The current research combines principles from TPB and ELM to investigate effective communication in the context of the study. While ELM organises a framework for persuasion, TPB predicts an individual's intention to engage in the behaviour. TPB and ELM have been combined to make use of the ELM framework's multiple processing pathways and integrate TPB's decision-making approach (Miller et al., 2019; Wilson, 2014). ELM and TPB have not yet been investigated together in an experimental design-based study to explain behavioural intention through exposure to advertising messages (Steenburg & Spears, 2021). Despite the fact that these two ideas are frequently discussed together, this study empirically combines these two theories and expands the attitude construct to suit the social media environment. None of the previous research

in persuasive communication explores the effectiveness of social media WCC by combining ELM and TPB, including the effects of social media involvement with the video content. Thus the purpose of this framework is to empirically model the relationship between ELM and TPB in social media WCC video content setting. According to the theoretical foundations of ELM, higher levels of elaboration should influence the TPB antecedents of behavioural intentions (Miller et al., 2019). Combining ELM and TPB will help balance the goal of effective communication as presented in Figure 2.2 (on page 40). This could result in the desired behaviour modification when situated within ELM and TPB integration as illustrated in Figure 3.3.

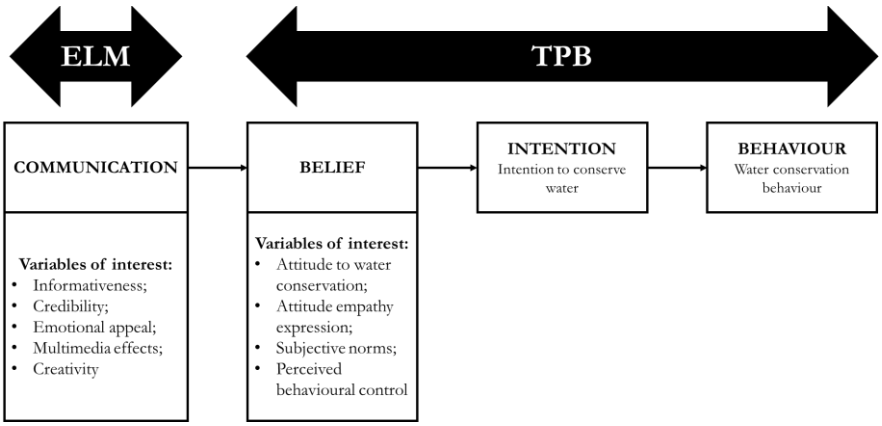

Figure 3.3. Integration of ELM and TPB. Graphical abstract of Theory of Planned Behaviour (TPB) and (Elaboration Likelihood Model (ELM) integration. Adopted from Wilson (2014).

The proposed conceptual framework is shown in Figure 3.4. According to the TPB component, the intention to perform the intended behaviour is influenced by a favourable attitude toward the behaviour, social norms and a high level of perceived behavioural control. Since the goal of the communication is to encourage resilience and positive WCC responses, the attitude variable in the TPB is further separated into two categories: the attitude toward empathy expression and the attitude toward water conservation. Attitude toward empathy expression can be defined as the tendency to react favourably or unfavourably to the message (Lee & Hong, 2016). Empathy is expressed through a social plug-in after it has been felt on an online social network including clicking the Like button on a post and sharing a post. In other words, the likelihood of a behavioural change will increase if the individual thinks they can handle water conservation, acts favourably toward the advertisement, thinks water conservation is a good idea, and thinks everyone else does as well. The likelihood of changing behaviour will consequently be lower if one of those determinants is unfavourable.

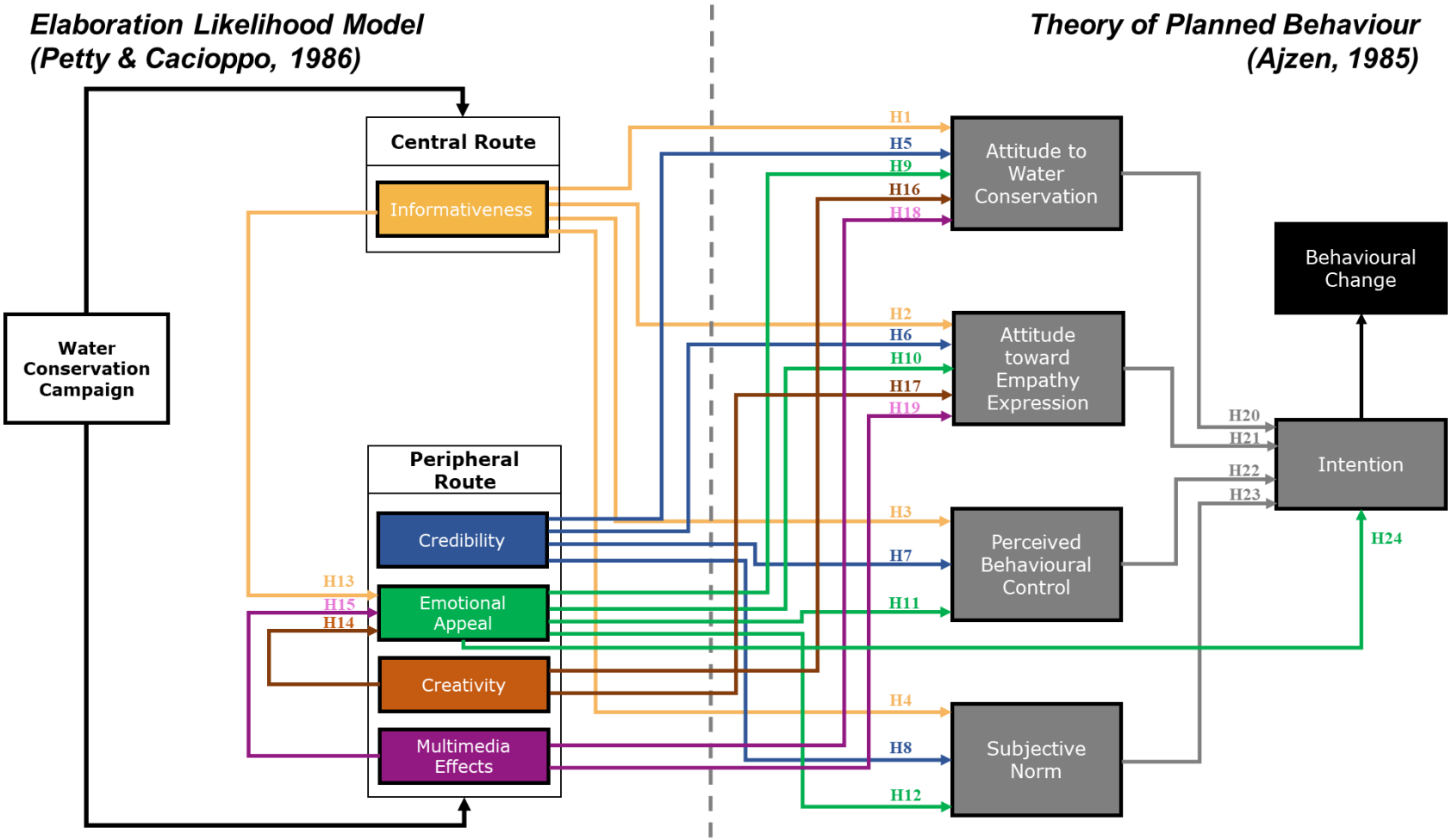

Figure 3.4. Proposed conceptual framework. A socio-psychological water conservation conceptual framework for use on social media platforms. Colour-coded representation of relationships within the model: yellow denotes informativeness, blue signifies credibility, green represents emotional appeal, brown indicates creativity, and purple highlights multimedia effects. Additionally, a line boundary delineates the separation between the Elaboration Likelihood Model (ELM) and the Theory of Planned Behaviour (TPB).

Informativeness, credibility and emotional appeal are regarded as the factors of effective communication that will significantly influence how the audiences behave. As often proposed, the element of informativeness (Cyr et al., 2018; Moradi & Zihagh, 2022; SanJosé-Cabezudo et al., 2009) would push viewers toward the central route, while credibility (Maduku, 2021) and emotional appeal would push the audiences through the peripheral route of ELM. For instance, a water consumer is more likely to start conserving water if they find the video informational and relevant. This will favourably affect how viewers perceive water conservation behaviour, empathy expression, subjective norms, and attitude towards water conservation. Emotional appeal through the peripheral route can be further generated by other microelements including multimedia effects and creativity.

Individuals' intentions to save water are stronger when they feel social support from significant others (Clark & Finley, 2007; Lam, 2006; Trumbo & O'Keefe, 2005; Kantola et al., 1983). In this research, the continued relevance of informativeness, credibility, and emotional appeal to subjective norms, despite their external nature, lies in the dynamic interplay between the communication content and individuals' perceptions. These factors, while external to the subjective norms themselves, play a vital role in shaping how audiences perceive and respond to these norms. Informativeness and credibility may contribute to the perceived legitimacy and importance of adhering to a norm (Maduku, 2021). Given that subjective norms are not solely dictated by external pressures but are internalised by individuals, the communication's content serves as a pivotal bridge.

3.3.3 Emotional Appeal as a Mediator

It was hypothesised that informativeness, creativity, and multimedia effects may all influence attitudes towards water conservation and empathy expression. Thus, the researchers propose that emotional appeal may serve as a mediator in these relationships. Hence the RQ 3.

RQ 3. What role does emotional appeal play as a mediator in the relationships between informativeness, creativity, multimedia effects, and attitudes?

Mediation analysis is important because it helps researchers understand the underlying mechanisms that explain the relationship between two variables. This research is particularly

interested in the relationship between informativeness and attitudes toward water conservation; creativity and attitudes toward water conservation; multimedia effects and attitudes toward water conservation; informativeness and attitudes toward empathy expression; creativity and attitudes toward empathy expression; and multimedia effects and attitudes toward empathy expression. This mediation analysis can help the researcher develop a more effective intervention. Hence to perform this analysis, the following hypotheses are formulated:

H25a. Emotional Appeal mediates the relationship between informativeness and attitude to water conservation.

H25b. Emotional Appeal mediates the relationship between creativity and attitude to water conservation.

H25c. Emotional Appeal mediates the relationship between multimedia effects and attitude to water conservation.

H25d. Emotional Appeal mediates the relationship between informativeness and attitude to empathy expression.

H25e. Emotional Appeal mediates the relationship between creativity and attitude to empathy expression.

H25f. Emotional Appeal mediates the relationship between multimedia effects and attitude to empathy expression.

3.3.4 Effectiveness of the Framework Across Socio-demographic Groups

Upon the development of the framework, it prompts the essential query: "Does it adhere to a one-size-fits-all approach?". Consequently, rigorous assessment of the model's effectiveness becomes imperative. To delve deeper, it is vital to examine whether the proposed model exhibits variations across distinct subgroups within the population, such as gender, age, prior water conservation behaviour, awareness levels, and bill-paying status. This comprehensive analysis not only aids in discerning potential divergences in the relationships of interest but also enriches the understanding of the framework's applicability to diverse demographic segments. Hence, RQ 4.

RQ 4. Does the effectiveness of the proposed model differ across gender, age, habit, level of awareness, and billpayer status?

This particular RQ will also be useful in a way that it allows the researcher to test for subgroup differences in the model, which can help identify potential moderators of the relationships between variables. This can lead to a better understanding of how the model works for different groups and can help policy-makers tailor interventions or programs to be more effective for specific subgroups. The subsequent hypotheses to answer RQ 4 are summarised in Table 3.1 below.

Table 3.1. Hypotheses to support RQ 4. Grouped by age, gender, habit, awareness level, and billpayer status.

Group	Hypotheses	If the hypothesis is supported, the following hypotheses will be tested:
Gender	**H26.** The proposed model differs across different genders (male and female).	**H26a.** Gender moderates the relationship between informativeness and emotional appeal. **H26b.** Gender moderates the relationship between creativity and emotional appeal. **H26c.** Gender moderates the relationship between multimedia effects and emotional appeal. **H26d.** Gender moderates the relationship between emotional appeal and intention.
Age	**H27.** The proposed model differs across different ages (younger and older).	**H27a.** The age group moderates the relationship between informativeness and emotional appeal. **H27b.** The age group moderates the relationship between creativity and emotional appeal. **H27c.** The age group moderates the relationship between multimedia effects and emotional appeal. **H27d.** The age group moderates the relationship between emotional appeal and intention.
Habits	**H28.** The proposed model differs across different habits (good water conservation habits and poor water conservation habits).	**H28a.** Existing habit moderates the relationship between informativeness and emotional appeal. **H28b.** Existing habit moderates the relationship between creativity and emotional appeal. **H28c.** Existing habit moderates the relationship between multimedia effects and emotional appeal. **H28d.** Existing habit moderates the relationship between emotional appeal and intention.

Awareness	**H29.**	The proposed model differs across different levels of awareness (high-level awareness and low-level awareness of water issues).	**H29a.**	Awareness level moderates the relationship between informativeness and emotional appeal.
			H29b.	Awareness level moderates the relationship between creativity and emotional appeal.
			H29c.	Awareness level moderates the relationship between multimedia effects and emotional appeal.
			H29d.	Awareness level moderates the relationship between emotional appeal and intention.
Billpayer	**H30.**	The proposed model differs across bill payer status (billpayer and non-billpayer).	**H30a.**	Bill paying moderates the relationship between informativeness and emotional appeal.
			H30b.	Bill paying moderates the relationship between creativity and emotional appeal.
			H30c.	Bill paying moderates the relationship between multimedia effects and emotional appeal.
			H30d.	Bill paying moderates the relationship between emotional appeal and intention.

3.4 CHAPTER SUMMARY

This chapter first provides additional background study to review the effects of multimedia and the role of creativity in effective communication. Since audio-visual WCC content is the main focus, it is important to consider the effect of multimedia and creativity and whether or not these two cues predict emotional appeal. This will help the research to unveil what emotional appeal could be based on.

Building on the evidence drawn from the existing literature, this chapter then presented a social media water conservation framework that is capable of developing an emotional connection with the target audience to spark new behaviours and actions, capture the viewer's attention and reach wider audiences. This research suggests that the conjunctive use of informativeness, credibility factors and emotional appeal offers more effective communication. A particularly promising application of such an integrative approach is the use of the element of emotional appeal. While all three elements (informativeness, credibility and emotional appeal) may persuade viewers, the element of emotional appeal pushes the target audiences to the ELM's lower end of the continuum to engage with the advertisement and affect their decision-making (summarised in Figure 3.5

below). This chapter thus laid the groundwork by constructing a robust framework that serves as the conceptual underpinning for this research effort. By delineating the key variables and their interrelationships, the proposed framework will not only provide clarity but also serve as a guiding structure for the study.

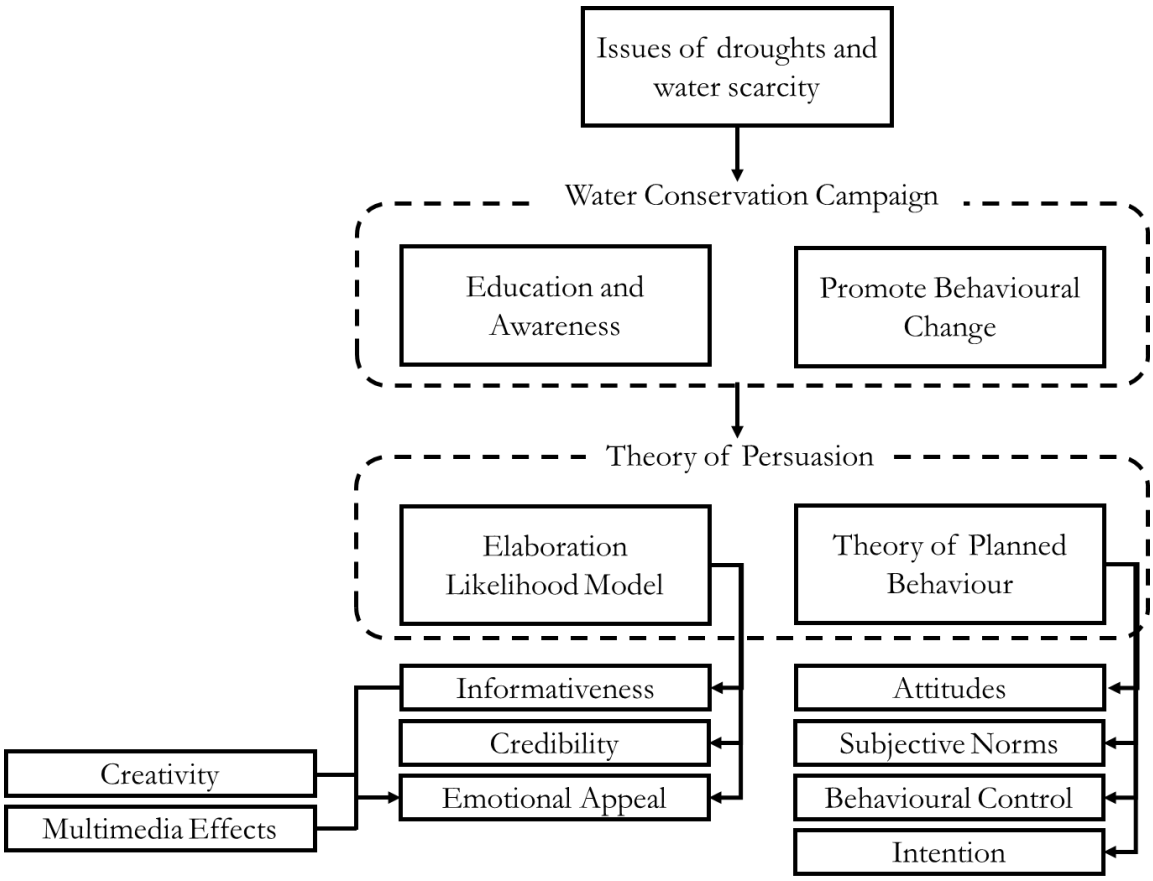

Figure 3.5. Bridging the themes. The study addresses the pressing global issues of water scarcity in the UK. WCC aims to inform and educate the public water consumers, thereby enhancing awareness and promoting sustainable behaviour as a part of resilience. This involves persuasion and other socio-psychological processes that influence outcomes. The study utilises two models, the Elaboration Likelihood Model (ELM) and the Theory of Planned Behaviour (TPB), to predict intention based on persuasion cues and routes.

In this chapter, a comprehensive exploration unfolded, guided by four essential RQs. RQ 1 delved into the meticulous process of crafting impactful social media water conservation video content, addressing the vital query of developing effective communication strategies in this realm. RQ 2 shifted the focus towards the potent realm of emotional appeal and how to evoke it within the

WCC video. With RQ 3, the inquiry ventured deeper into the intricate dynamics of this context, particularly the mediating role that emotional appeal plays in the framework. RQ 4 focuses on testing the framework's robustness across various variables, underlining the need for an adaptable and comprehensive approach to the complex landscape of social media water conservation video communication.

4 METHOD(OLOGY)

4.1 CHAPTER INTRODUCTION

In the previous chapter (Chapter 3), the research problems were carefully delineated. Following the establishment of the framework and hypotheses, the subsequent progression involves delving into the methodology that will facilitate the achievement of research objectives. The methodology serves as a vital link between theoretical foundations and empirical investigation, offering a roadmap for the collection and analysis of data to test the hypothesis. This chapter thus aims to outline the procedures and techniques selected, ensuring the research's transparency, reliability, and robustness.

This critical phase necessitates the researcher's choices regarding the aspects of what, where, when, how much, and how the study will be conducted (Rockinson-Szapkiw, 2012). The goal is to balance the pragmatic feasibility of the study and the research objectives (Kothari, 2004). In essence, careful considerations are required to ensure that the gathered data not only effectively addresses the RQs but also remains firmly grounded in practicality.

Central to the research design phase is the methodical selection and integration of various research components (Kothari, 2004). This integration is executed with utmost coherence and logical flow. The conceptualisation of Saunders et al.'s (2019) "research onion" model (depicted in Figure 4.1) becomes instrumental in presenting a visual representation of the multifaceted research component choices. Consequently, the organisation of this chapter draws inspiration from this metaphorical onion, layer by layer.

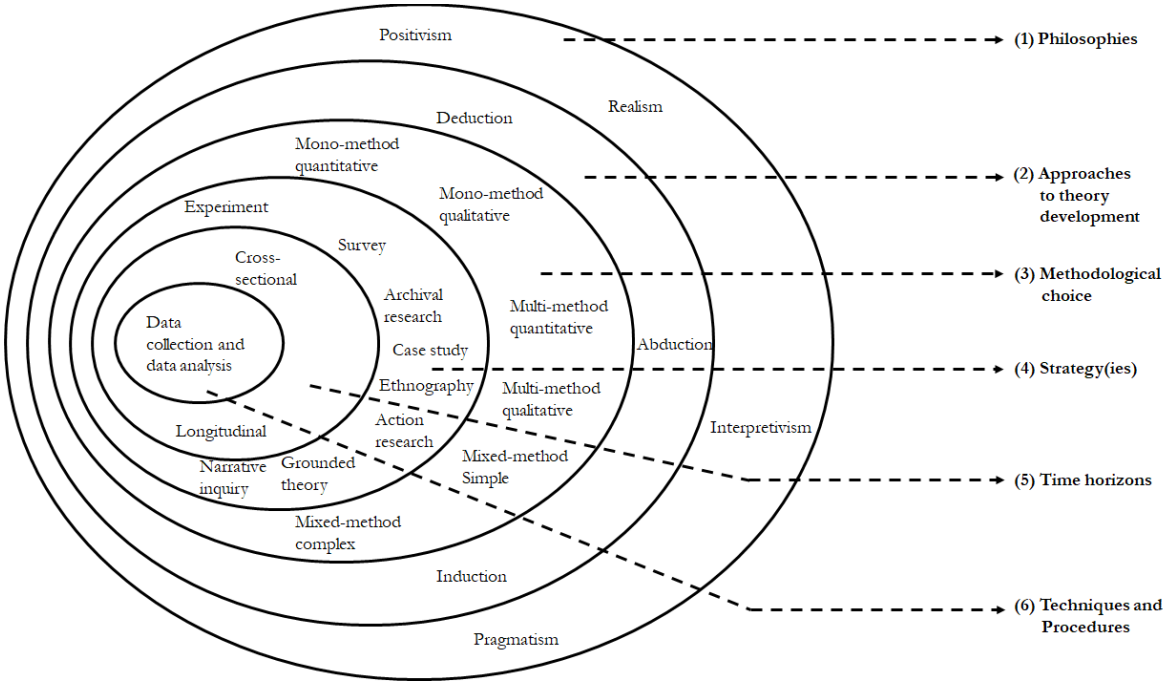

Figure 4.1. The research onion. Adopted from Saunders et al. (2019)

To delve into specifics, Section 4.2 focuses on the philosophical foundation that underpins the research. The subsequent Section 4.3 explains the intricate process of theory development. Building on this foundation, Section 4.4 meticulously expounds the selection of the research methodology, while Section 4.5 focuses on the chosen research strategy. Section 4.6 assumes the role of elucidating the chosen time horizon. Section 4.7 serves as a comprehensive repository, offering intricate insights into the techniques and procedures to conduct this study. This sequential exploration of the research onion's layers ensures a methodical and well-coordinated exposition of the research design's components. Finally, in Section 4.8, a summary of this chapter will be provided.

4.2 Research Philosophy: Ontological and Epistemological Positions

In relation to research philosophy, the terms "ontology" and "epistemology" are fundamental core beliefs that guide the direction of the research. Ontology pertains to the nature of reality and what can be considered real or existent (Saunders et al., 2019). Epistemology, on the other hand, deals with how knowledge is acquired and what constitutes valid knowledge (Saunders et al., 2019). Since

the study focuses on social media water conservation communication, a conscious choice is made to adopt the positivist research philosophy. This selection is motivated by its alignment with the belief in an objective and measurable reality. Positivism asserts that social phenomena, such as emotional appeal, perceived credibility, and perceived informativeness within social media content, can be comprehended as distinct and observable variables subject to systematic investigation. This choice is deliberate over other philosophical stances due to its inherent ability to elucidate correlations, which stands as a central point of investigation in this research (Park et al., 2020). This approach underscores the pursuit of uncovering the fundamental principles governing human behaviour, facilitating the formulation of broader patterns of understanding - essentially capturing the essence of positivism (Alharahsheh & Pius, 2020).

4.3 Approaches to Theory Development

In terms of the "approaches to the theory development" layer, this study primarily adheres to a deductive approach. It aligns with designing a theory through hypotheses, which stem from a comprehensive literature review, and seeks to test them through quantitative analysis (Bradford & Weisberger, 2022; Crossley & Jansen, 2021; Saunders et al., 2019). This study begins with theoretical constructs related to the impact of the identified elements of effective communication on viewers' attitudes and behaviours (as presented in Chapter 3) and systematically evaluates their relationship based on empirical data (Bradford & Weisberger, 2022; Saunders et al., 2019). By adopting a deductive approach, this study ensures a structured and hypothesis-driven exploration of the relationships among the variables of interest, ultimately contributing to evidence-based recommendations in the domain of water conservation communication on social media (Zait & Zait, 2009).

4.4 Methodological Choice

The chosen deductive approach, in line with positivist philosophy (Crossley & Jansen, 2021), guides the researcher towards employing quantitative methods in order to uncover relationships among variables within the framework (Bryman & Bell, 2011; Park et al., 2020). Hence, a mono-quantitative approach is adopted to construct knowledge with widespread relevance. Achieving

this requires thorough planning and conducting studies under controlled conditions. In this instance, the focus centres on observing variables in a controlled manner through exposure to online WCC content. The assessment of responses hinges on a specialised tool (detailed in Section 4.5) that indirectly measures effects. This instrument enhances precision, allowing participant reactions to be captured.

4.5 RESEARCH STRATEGY

As the study is interested in comprehending how social media WCC content influences the attitudes and behaviours of water consumers, a questionnaire survey has been selected as the research method. This approach allows direct participant responses, highlighting how their perceptions shape their actions (Brown et al., 2010b; Lee & Hong, 2016; Maduku, 2021; Otaki et al., 2017; Sun et al., 2019). Additionally, it permits the investigation of specific aspects, such as attitudes and behaviours pertaining to water consumption. It is a practical and cost-effective method for collecting data from a considerable number of participants (Cohen et al., 2007; Dawson, 2007; Kothari, 2004; Oppenheim, 1992; Saunders et al., 2019). Notably, to ensure the validity and comprehensibility of the questionnaire, it underwent rigorous scrutiny by a panel from the Consumer Council for Water (CCW). This external review process by experts in the field helps enhance the quality of the questionnaire, ensuring that it accurately captures the desired information.

The questionnaire comprises different sections to gather relevant information. The initial part provides important information for the participants (https://fahmiabubakar9.wixsite.com/be-resilient) and the inclusion of a consent form and ethical considerations. Prior to exposing participants to the WCC video, questions adopted from Gilg and Barr (2006) are posed concerning their current attitudes and behaviours regarding water use. This establishes a baseline before any potential influence stemming from the video exposure. The questionnaire also encompasses inquiries about participants' awareness of water-related concerns, adopted from Corral-Verdugo et al. (2003). Utilising statements derived from earlier studies, responses gauge the extent of agreement or disagreement with these statements. This furnishes insights into their awareness levels and perspectives on water-related matters.

In assessing water conservation habits, the researcher adopted measures developed by Gilg and Barr (2006). Although their study covers both water and energy habits, the researcher concentrated specifically on water-related habits deemed pertinent to the current research context. The selection of measures was deliberate, aiming to capture habits directly relevant to the focus of the study. Notably, the exclusion of "*using a sprinkler less in the garden*" from the chosen measures was justified by its potential lack of relevance for all study participants. This tailored approach ensures a more focused and meaningful evaluation of water conservation habits within the parameters of Gilg and Barr's (2006) framework.

The modified awareness measures, drawing inspiration from the framework developed by Corral-Verdugo et al. (2003) and tailored to the UK context, serve as valuable tools for capturing individuals' cognitive perceptions and beliefs concerning water availability and scarcity. In adapting these measures, particular attention was paid to ensuring relevance and alignment with the unique sociocultural and environmental landscape of the UK. The revised measures include several dimensions such as the belief that abundant rainfall in the UK precludes the possibility of water shortages, confidence in technological advancements as a solution to potential water scarcity issues, and recognition of water scarcity claims as potential justifications for shortcomings in the performance of water companies. These adapted measures not only reflect the UK perspective but also offer valuable insights into individuals' awareness regarding water-related beliefs, integrating utilitarian and ecological considerations into the assessment framework (Corral-Verdugo et al., 2003).

Following participants' viewing of the WCC video, post-exposure questions follow suit. These questions draw inspiration from prior research but are contextualised to the study's specific focus. They prompt participants to express their opinions using a six-point scale. This particular scale choice is deliberate, encouraging participants to articulate clear viewpoints instead of adopting a neutral stance (Hunter, 2021). Furthermore, two additional questions are included to ascertain whether participants viewed the entire video. This ensures that their responses are grounded in a genuine comprehension of the video's message and content. Additionally, considering that the questions within this section of the questionnaire entail lengthier descriptions, a strategic inclusion of two statements has been implemented to discern the level of respondents' engagement with the questions. This approach serves to gauge participants' attentiveness and ensures their thorough consideration of the questions posed. As an illustration, one of the statements reads as follows:

"*Please choose 'moderately disagree'*". These additions function as a tool to monitor participants' dedication to responding accurately and attentively to the survey, enhancing the reliability of their answers.

In order to assess the level of informativeness conveyed in water conservation videos, this study strategically utilised established measurement scales from Ducoffe (1996) and Lee and Hong (2016). While Lee and Hong (2016) primarily focused on evaluating informativeness in the context of social media advertising, this research adapted their measures to the specific domain of water conservation videos. This adaptation was driven by the necessity to tailor the metrics to the unique characteristics of video content, ensuring the relevance and applicability of the assessment within this context. Recognising the concise nature of Lee and Hong's (2016) scale, the study made a deliberate decision to combine measures from both sources. By doing so, it not only broadened the scope of evaluation but also adhered to the recommended practice of employing at least four measures per variable (Hair et al., 2019), thus enhancing the robustness of the informativeness assessment.

In evaluating the credibility of water conservation videos, this study utilised credibility measures developed by Bhattacherjee and Sanford (2006), originally formulated for Document Management System (DMS) training contexts. The selection of these measures from Bhattacherjee and Sanford (2006) was grounded in their established prominence within the literature on source credibility studies, thereby ensuring a comprehensive and reliable evaluation of credibility in this study. The adaptation process involved modifying the terminology "*Person providing the DMS training…*" to "*The person providing the video…*" to better align with the subject matter of water conservation. In addition, a strategic modification was implemented for the measure "*The person providing the DMS training appeared to be an expert on this topic*" to suitably reflect the context of water conservation. In this adaptation, the measure was reversed to state that "*The person providing the video (content creator) appears to be a non-expert on this topic*", allowing for a precise assessment of credibility within the study's framework.

In the domain of emotional appeal, the researcher synthesised measures from Alessandri et al. (2006) and Lee and Hong (2016) to construct a comprehensive framework. While these established measures provided a foundational basis, their direct applicability to the specific context of the study required refinement. Recognising this contextual misalignment, the researcher conducted a

rigorous process of combination and adaptation to ensure that the measures effectively captured the subtle aspects of emotional appeal as observed in the WCC video. This strategic combination sought to bridge the theoretical constructs with the unique emotional triggers inherent in content related to video.

In examining the multimedia effects depicted in water conservation videos, the study drew upon the insights of Hsieh et al. (2012). The decision to utilise their measures stemmed from its thorough coverage, particularly its attention to the richness and sufficiency of multimedia effects, emphasising aspects of audio and visuals. By adopting these measures, the research aims to provide a comprehensive analysis of both auditory and visual components, thereby enhancing the understanding of multimedia dynamics inherent in WCCs. As for measuring creativity, this study integrated measures from Lee and Hong (2016) and Mercanti-Guerin (2008). The decision to merge these measures was driven by a deliberate effort to achieve a comprehensive understanding of creativity, encompassing both the dimensions emphasised by Lee and Hong (2016) and the Aesthetic Dimension highlighted by Mercanti-Guerin (2008). While Lee and Hong's measures laid a solid foundation, the inclusion of Mercanti-Guerin's perspective was deemed essential for ensuring a holistic evaluation of creativity within the specific context of this research. This approach facilitates a better examination that transcends conventional measures, thereby providing a more thorough and relevant assessment of creativity in the study.

Moreover, the study employed a diverse set of measures to assess the TPB constructs within the context of this study. To gauge the attitude toward water conservation, the study utilised measures proposed by Clark and Finley (2007). Additionally, the measures for perceived behavioural control and subjective norms were drawn from the work of Gibson et al. (2021). Intention, a pivotal element in the TPB framework, was measured using the approach outlined by Fielding et al. (2012). Notably, the study extended the TPB to encompass attitude toward empathy expression. To capture this extension comprehensively, measures from Lee and Hong (2016) and Hsieh et al. (2012) were incorporated. While Lee and Hong's (2016) measures focused on the "like" intention, Hsieh et al. (2012) honed in on the "share" intention, ensuring a detailed examination of these crucial components within the framework. Table 4.1 provides a summary of the variables, measures, and sources.

Table 4.1. Measure items. Measures of Habits (HAB1-7), Awareness (AWR1-6), Informativeness (INF1-4), Credibility (CRD1-4), Emotional Appeal (EA1-4), Creativity CRE1-4), Multimedia Effects (MME1-4), and TPB Constructs (Attitudes towards Water Conservation (AWC1-4), Attitudes towards Empathy Expressions (AEE_L1-3 and AEE_S1-3), Perceived Behavioural Control (PBC1-4), Subjective Norms(SN1-4), and Intention(INT1-4)) in WCC video.

Variables	Definition	Measure Items		Source
Habits	The consistent and automatic behavioural patterns individuals exhibit in their daily routines related to water usage. It implies the repeated and ingrained actions people take without conscious effort or deliberate decision-making in adhering to water-saving practices.	HAB1	Turn off the tap when soaping up.	Gilg and Barr (2006)
		HAB2	Reduce the number of baths/showers.	
		HAB3	Reduce toilet flushes.	
		HAB4	Turn the tap off when cleaning teeth.	
		HAB5	Turn off the tap when washing dishes.	
		HAB6	Use a shower rather than a bath.	
		HAB7	Wait until there's a full load for washing.	
Awareness	Individuals' perceptiveness and comprehension of various facets related to water dynamics in the UK. It encapsulates a holistic understanding of the intricacies surrounding water availability, consumption, and the need for conservation in the UK.	AWR1	It rains so much in the UK that water shortages can't be possible.	Corral-Verdugo et al. (2003)
		AWR2	If the water becomes scarce in the UK, technology will fix this.	
		AWR3	Drinkable water is an unlimited resource in the UK.	
		AWR4	Water scarcity in the UK is an excuse made by water companies for poor performance.	
		AWR5	Drinkable water will be limited very soon if we do not save it.	
		AWR6	A way of preventing water shortages in the UK is by using it only when necessary.	
Informativeness	The extent to which online advertisement provides complete, relevant and up-to-date information (Ducoffe, 1996)	INF1	Information obtained from the water conservation video would be useful.	Ducoffe (1996); Lee & Hong (2016)
		INF2	The video provides relevant information.	
		INF3	The video is a good source of updated information.	
		INF4	I think the information obtained from the video would be helpful.	

Emotional appeal	The extent to which emotional responses are triggered when exposed to the video (Lee & Hong, 2016).	EA1	After seeing this water conservation video, I had intense feelings.	Alessandri et al. (2006); Lee & Hong (2016)
		EA2	I found the key message about water-saving emotionally engaging.	
		EA3	The emotional aspect of this ad leads me to appreciate the video.	
		EA4	There is a strong emotional tie between me and the video.	
Credibility	The extent to which an information source is perceived to be believable, competent, and trustworthy by information recipients (Sussman & Siegal, 2003).	CRD1	The person providing the video (content creator) was knowledgeable on the topic.	Bhattacherjee & Sanford (2006).
		CRD2	The overall video was trustworthy.	
		CRD3	The person providing the video (content creator) was credible.	
		CRD4	The person providing the video (content creator) appears to be a NON-expert on this topic.	
Multimedia effects	The extent to which multimedia provides rich and sufficient effects, particularly on sound and visuals (Hsieh et al., 2012).	MME1	The video is rich in sound effects (e.g., music, water sound).	Hsieh et al. (2012)
		MME2	The video is rich in visual effects.	
		MME3	The video is rich in multimedia effects (e.g., images, video footage, texts).	
		MME4	The overall media used in the video produced sufficient effects.	
Creativity	The extent to which a video is original, unique, out of the ordinary, artistic and intriguing (Lee & Hong, 2016; Mercanti-Guerin, 2008).	CRE1	This video is original and unexpected.	Lee & Hong (2016); Mercanti-Guerin (2008)
		CRE2	The video is really out of the ordinary.	
		CRE3	This video is artistic.	
		CRE4	The video is intriguing.	
Perceived behavioural control	Perception of the extent to which the behaviour is under volitional control (Ajzen, 2020)	PBC1	I am confident that I could save water around the house and in my home landscape if I wanted to	Gibson et al. (2021)
		PBC2	The decision to save water around the house and in my home landscape is in my control	
		PBC3	Whether or not I save water around the house and in my home landscape is entirely up to me	
		PBC4	I am certain that I could save water around the house and in my home landscape if I wanted to	

Attitudes to water conservation	Psychological evaluation to express some degree of favour or disfavour regarding water conservation (Clark & Finley, 2007)	AWC1	I believe it is important to conserve water; it is important to always conserve water to avert water shortages	Clark & Finley (2007)
		AWC2	If each household reduces the amount of water it uses by just a little, it will make a big difference to the community	
		AWC3	People should use no more water in the home than is necessary	
		AWC4	I feel a moral obligation to use water carefully	
Subjective norms	Perceived social pressure to comply with the new behaviour (Lee & Hong, 2016).	SN1	I feel like there is a social pressure to save water around the house and in my home landscape	Gibson et al. (2021)
		SN2	The people who are important to me want me to save water.	
		SN3	Most people in my life whose opinions I value would approve of me saving water.	
		SN4	The people that I am close to would approve if I explored ways to reduce my water use.	
Attitude to empathy expression	Predisposition to respond favourably or unfavourably about clicking "like" for and "share".	AEE_L1	I feel good about clicking "Like" for this water conservation video.	Hsieh et al. (2012); Lee & Hong (2016)
		AEE_L2	I feel positive about clicking "Like" for this water conservation video.	
		AEE_L3	I feel favourable about clicking "Like" for this water conservation video.	
		AEE_S1	I will recommend this video to others on social media.	
		AEE_S2	I think this video is worth sharing with others on social media.	
		AEE_S3	I will NOT share this video with my friends through social media.	
Intentions	The perceived likelihood that the audience will engage in the behaviour (Lee & Hong, 2016).	INT1	I plan to save or conserve water in the next six months.	Fielding et al. (2012)
		INT2	I expect I will engage in everyday actions to save water in the next six months.	
		INT3	I intend to engage in everyday actions to save water in the next six months.	
		INT4	I DO NOT want to engage in everyday actions to save water in the next six months.	

4.6 TIME HORIZON

When selecting a suitable time horizon, it becomes crucial to consider the study's nature alongside its research goals and objectives (Saunders et al., 2019; Saunders & Tosey, 2013). This consideration extends to practical constraints, including the available time for research activities (Kosow & Gaßner, 2008; Melnikovas, 2018). Given the limitations imposed by time and resources, conducting longitudinal or experimental research approaches - though preferable for predicting behavioural changes - becomes less feasible. Consequently, a cross-sectional study approach emerges as a more viable alternative.

The key advantage of the cross-sectional design lies in its ability to be executed within natural settings and its allowance for the use of random probability samples (Cohen et al., 2007; Saunders et al., 2019). This approach seeks to maintain the authenticity of the research environment, minimising interference with the study itself. The chosen online survey format permits participants to engage from anywhere, given an internet connection. This inherent flexibility facilitates a more genuine experience of social media interactions within natural settings. Consequently, this methodology is conducive to a broader and more representative sample population, enabling the findings to be extrapolated to real-life scenarios.

4.7 TECHNIQUES AND PROCEDURES

The research process is a series of organised steps taken by a researcher in order to develop knowledge (Villegas, 2022). Typically, the research process starts with identifying a research problem and ends with the generation of findings. Ideally, the research process involves phases of processes from conceptualising, to planning, conducting, and communicating the study (Arthur, 2009). All the activities in Figure 4.2 form part of the research process. It shows a series of steps necessary to carry out the research effectively. This section serves to describe how the researcher carried out data collection and analysis.

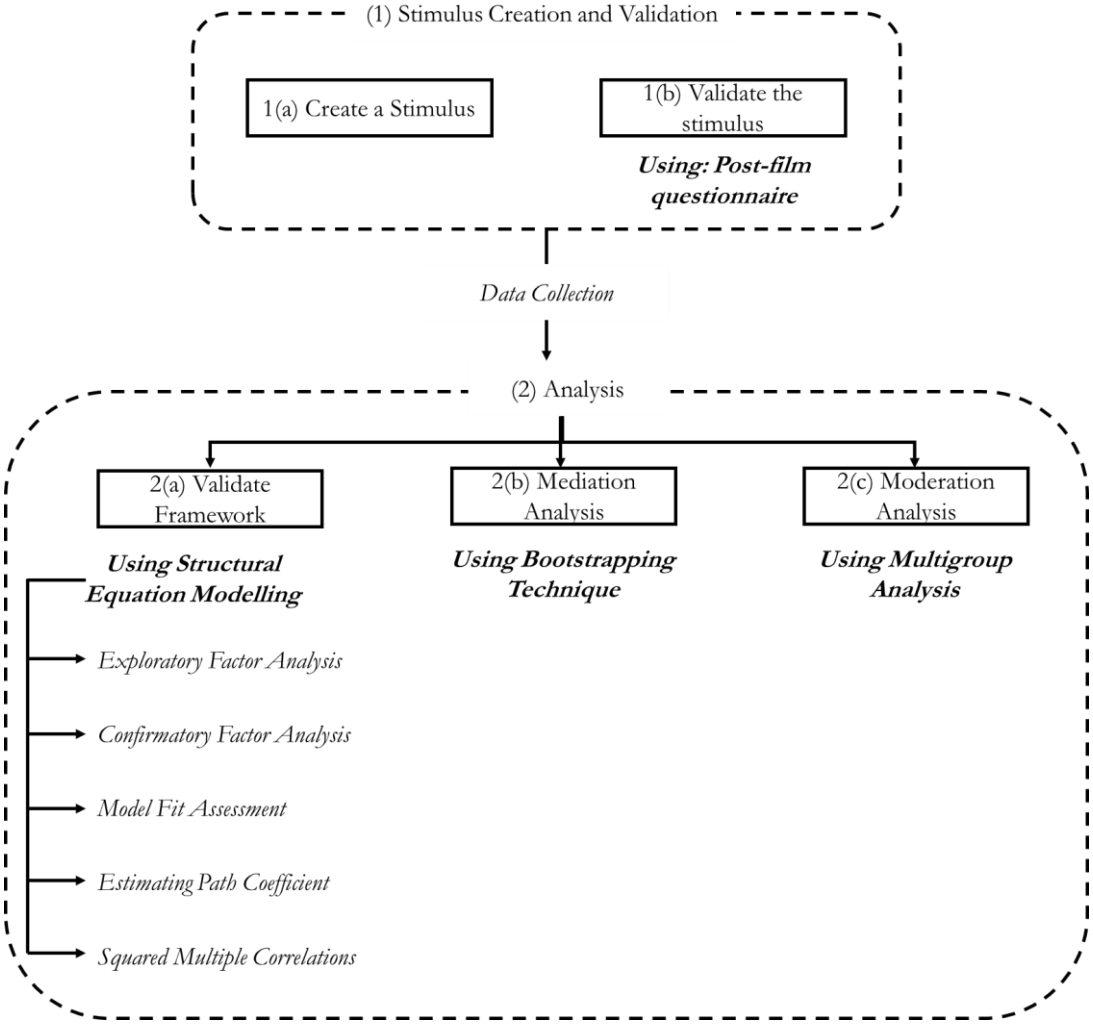

Figure 4.2. Research analyses. This chart depicts the main research procedures.

4.7.1 Stimulus Creation and Validation

The creation and validation of the water conservation social media video were guided by the proposed framework, which served as a foundation for shaping the storyline and content. This approach ensured that the video's narrative was not only pertinent to the study context but also relatable to the intended audience. Additionally, Appendix A includes the detailed video production proposal, documenting the creative and technical considerations that shaped the final product.

In navigating the challenges of budget constraints, limited internal resources, and varying skill levels (Savitt, 2016), a strategic decision was made to collaborate with an external content creator. This collaboration ensured a fusion of creative expertise and technical proficiency, resulting in a video that effectively conveyed the intended message while maintaining visual and emotional impact.

For a comprehensive assessment of the video's emotional content, the Post-film Questionnaire developed by Rottenberg et al. (2007) was employed. This validated tool enabled the systematic collection of viewer responses, gauging emotional engagement, and identifying specific emotional triggers within the video. These insights not only affirmed the alignment of the video with its intended emotional goals but also allowed for the identification of potential improvements. The culmination of this effort will be the utilisation of the final video content as a stimulus in the main research. Further elaboration on this stage will be provided in the subsequent chapter (Chapter 5), which will offer a comprehensive analysis of the research methodology and results.

4.7.2 Pilot Study

In social science research, there are two alternative ways to refer to a pilot project. It may apply to either 'feasibility studies' or 'pre-testing' (van Teijlingen & Hundley, 2001). In this study, a pilot study was conducted mainly as a preparation for the main study (feasibility) and to try out a particular research instrument (pre-testing). A pilot study becomes essential as this study deals with a large number of variables and measure items. Conducting a pilot study is crucial to determine the applicability of the measures and to make sure they are in line with the study's objectives, even when employing measures that have been adapted from earlier studies (Oppenheim, 1992).

4.7.3 Data Collection

4.7.3.1 Sampling Considerations

To achieve a representative sample, the researcher paid particular attention to the sampling strategy. The population under investigation comprises individuals aged 18 years and above, who

are water consumers and active users of social media. Participation in the study was open to anyone fitting these criteria, without any additional prerequisites based on gender, competence, or specific behaviours related to sustainability. Diversity was prioritised, particularly in terms of age, ethnicity, and geographical distribution across the UK. Sampling factors encompassed minimum sample size considerations and the chosen sampling strategy, which are outlined below.

Statistical power. The term "statistical power" refers to the likelihood of detecting an effect if it exists (Bhandari, 2023). To ensure accurate inferences about a population from sample data, sufficient statistical power is essential. Finding the right balance in sample size requires considering various factors such as statistical inference requirements, guidelines, previous studies, and test-specific power analysis. The sophisticated multivariate technique of SEM demands careful consideration to avoid either insufficient power or overfitting of data, leading to results that lack generalisability. Commonly accepted criteria stipulate alpha levels of at least .05 with 80% power for studies (Cohen, 1988). Achieving these power levels necessitates balancing alpha levels, sample size, and effect size.

Sample size. The size of the sample directly influences the outcomes of various analyses, particularly Multigroup Analysis, which involves respondent groups. Given the utilisation of SEM in this study, the analysis sample's composition was a crucial aspect for accurate interpretation. For SEM analysis, a minimum of 50 observations is generally recommended, with an ideal sample size of 100 or more (Hair et al., 2019; Wolf et al., 2013). As the number of variables increases, larger samples are suggested. A common guideline is a 5:1 ratio of observations to variables, with a more desirable ratio of 10:1 (Hair et al., 2019). In this study, a power analysis was also conducted to determine the adequacy of the sample size for the SEM analysis. The researcher assumed a significance level (alpha) of .05 and a desired statistical power of .80. The estimated effect size for the SEM model was derived from previous research (effect size = .30). The power analysis recommended a minimum sample size of 190 to achieve the desired power level. Considering this study's 10 variables, a minimum sample size was established.

Sampling strategy. Due to resource constraints and recruitment challenges, a non-probability sampling approach was chosen, through convenience sampling. This approach targeted active social media users, aligning with the study's focus on social media-based water conservation campaigns.

4.7.3.2 Ethical Consideration

Before proceeding with the study, approval was obtained from the BCU institutional ethics board. The corresponding certificate can be found in Appendix B. All parties involved were given comprehensive information about the research, including what to expect, guarantees of confidentiality and anonymity. Participants were made aware that their involvement was entirely voluntary and that they retained the right to withdraw consent at any point. A debriefing segment was included at the end of the survey to ensure participants were fully informed. Clear explanations of the research's objectives and the safeguarding of participants' privacy were conveyed. Each respondent also provided informed consent before participating.

4.7.3.3 Survey Distribution and Participant Recruitment

In order to gather the necessary information for this study, the researcher employed an online survey tool, specifically Jisc (see Appendix C). The selection of this data collection tool was driven by its reputation for reliability, user-friendliness, and the capability to reach large and diverse populations promptly (Ha, 2022; Lefever et al., 2007). The online environment allowed participants to respond at their convenience, contributing to the accessibility and inclusivity of the study.

Initially, the survey was posted randomly in various social media groups consisting of UK members, such as "Geocaching by Bikes" and "Pokemon Go Leeds". Additionally, random posts were made on the researcher's personal page. Participants were offered the chance to win a £25 gift card as an incentive for their voluntary participation. The incentive was introduced to express gratitude for their time and contribution to the study. It is important to note that participation remained entirely voluntary, and individuals could choose to engage in the survey without any obligation.

However, due to limitations in the number of responses and a slower-than-expected rate of participation, the researcher opted to utilise the SurveyCircle platform (SurveyCircle, 2023). SurveyCircle proved beneficial in reaching a targeted audience. Participants recruited through this platform were required to meet specific criteria, including being aged 18 and above, actively engaged on social media, and residing in the UK. This platform's capability to pinpoint individuals

who met predetermined criteria enhanced the precision of participant recruitment. This strategic shift aimed to ensure a more focused and representative sample. Figure 4.3 illustrates the sample invitation posters crafted for distribution across different social media channels, extending invitations to individuals across the UK.

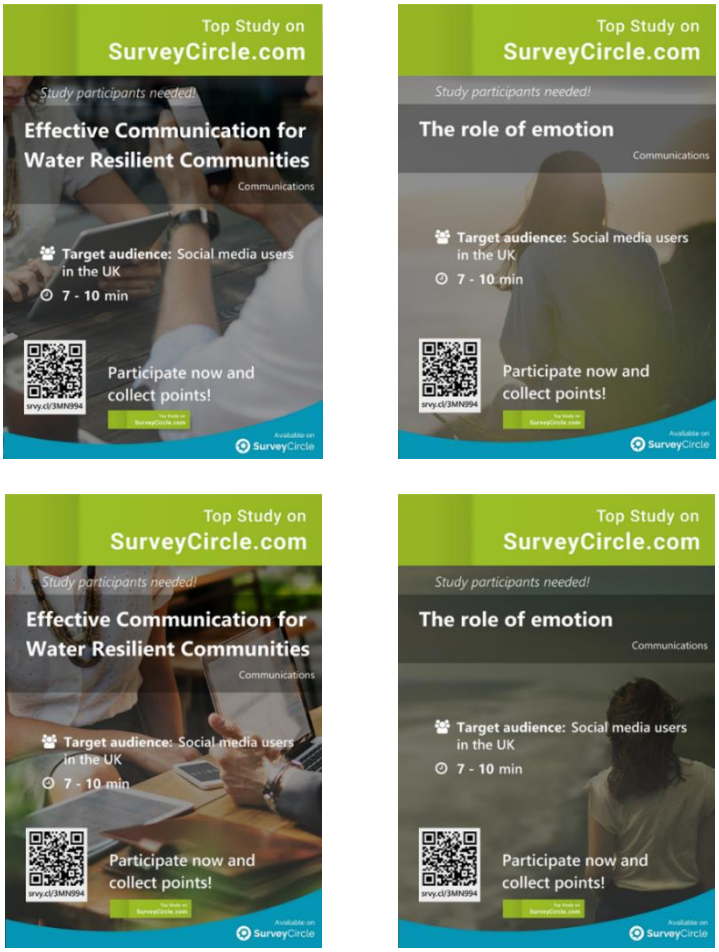

Figure 4.3. Sample social media posts. This poster welcomes anyone from the UK to participate in the survey.

In total, participant recruitment for this study resulted in 213 responses from the initial outreach on various social media platforms. Recognising the need to further enhance the sample size, the researcher strategically introduced the SurveyCircle platform, which proved to be instrumental in reaching an additional 250 participants. The combination of responses from both social media and SurveyCircle culminated in a robust dataset of 463 participants, forming the foundation for the subsequent phases of analysis and interpretation in this study.

4.7.4 Analysis

The analysis, as outlined in Figure 4.2 earlier, involves three key phases, preceded by the prerequisite data-cleaning process (as detailed in Section 4.7.4.1). By diligently traversing these three phases of analysis, a comprehensive understanding of the research questions and hypotheses can be achieved. Each step contributes to the robustness of the findings and adds depth to the overall interpretation of the results. The first phase of analysis centres on the validation of the framework and the testing of the initial 24 hypotheses. This is accomplished through the utilisation of Structural Equation Modeling (SEM) in AMOS. It is a method of multivariate statistical analysis that combines regression and factor analysis to investigate the causal links between a group of variables (Streiner, 2006). SEM is a powerful tool that enables researchers to examine complex relationships and test theories about how different variables interact with each other. SEM also involves testing theories, developing and validating measurement instruments, and examining causal relationships between variables. In this study, SEM is used to investigate the underlying theoretical framework and test hypothesised relationships (presented in Chapter 3) between variables. The main analysis is conducted using specialised software - AMOS 24.0. The output provides information on the strength and significance of the relationships between variables, as well as the overall fit of the model and the nature of mediator and moderator variables.

Executing this analysis entails a series of vital steps, each contributing to the overall integrity of the results. Exploratory Factor Analysis (EFA) is the initial step, aimed at uncovering underlying factors in observed variables. It assists in reducing the data's complexity while maintaining essential information (Section 4.7.4.2). Next, Confirmatory Factor Analysis (CFA) involves assessing the reliability and validity of the measurement instruments. Reliability ensures consistent results, while validity confirms that the measurement tools accurately reflect the constructs under investigation (Section 4.7.4.3). Model Fit Assessment (Section 4.7.4.4) focuses on the fit of the model to the data and is evaluated using goodness-of-fit indices. This step ensures that the model accurately represents the relationships within the data. As for Section 4.7.4.5, path coefficients are calculated to assess the strength and direction of relationships between variables. The hypotheses formulated are rigorously tested against the collected data. Lastly, Squared Multiple Correlation assesses how well the variables in the model predict the dependent variable. This will be explained in Section 4.7.4.6.

4.7.4.1 Ensuring Data Integrity: Cleaning and Preprocessing

The process of cleaning the data plays a pivotal role in guaranteeing the accuracy and reliability of the gathered information (Chu et al., 2016; Rahm & Do, 2000). It involves a sequence of stages aimed at readying the data for analysis while addressing various factors that might impact the validity of outcomes.

The initial step involves identifying and eliminating instances where participants did not fully engage in the study. These cases, often termed "reluctant", might comprise responses rushed or inconsistent in nature. An effective way to identify reluctant cases is through the inclusion of additional questions specifically designed to confirm whether participants watched the entire video. Additionally, to gauge the level of participants' engagement with the questions posed, two statements have been incorporated. These statements serve as indicators of participants' involvement and the extent to which they consider the questions. An additional method employed is the examination of scoring patterns. By observing if all ratings are uniform or if they follow distinct patterns, such as a zig-zag trend, reluctant cases can be identified.

Moreover, missing data has the potential to introduce bias and compromise the overall integrity of the analysis. This phase entails recognising the extent and pattern of missing data. Depending on the frequency and pattern of missing data, a decision is made either to exclude cases with missing data or employ techniques of mean substitution.

Lastly, multivariate outliers can also distort statistical results. By utilising methods like Mahalanobis distance or scatterplots, outliers that disproportionately influence multiple variables are pinpointed. Based on the context, outliers may either be eliminated or their values transformed to mitigate their impact.

4.7.4.2 Exploratory Factor Analysis (EFA)

In this study, the researcher has pre-defined the variable "attitude to empathy expression" as the likelihood to like and share content on social media platforms, despite the possibility that audiences may like the content without the intention to share. EFA is a powerful tool in this regard as it allows the researcher to identify the underlying dimensions or factors that may exist within the

data (Hair et al., 2022). Hence, it allows the researcher the chance to fine-tune the data collection procedure, evaluate the applicability of the measures, and check whether the data are appropriate for factor analysis. As a result, the researcher will be more confident that the data are of high quality.

The process of conducting Exploratory Factor Analysis (EFA) followed a systematic approach that aimed to unravel underlying patterns within the collected data. In this study, EFA is performed using IBM SPSS Statistics 28.0.0.0. Principal Component Analysis was chosen as the initial technique, supplemented by varimax rotation. A critical step in this process was establishing factor loadings. To ensure robustness, a minimum factor loading threshold of .50 was set in accordance with established guidelines (Costello & Osborne, 2005; Field, 2013), although some may accept as low as .30 (Columbia University, 2016).

In addition to this, a crucial assessment of the correlation matrix's overall significance was performed using the Bartlett Test of Sphericity. This step aimed to ensure that the variables in the dataset indeed exhibit meaningful intercorrelations, validating the appropriateness of the EFA approach. Furthermore, the Kaiser-Meyer-Olkin (KMO) measure played a pivotal role in guiding the EFA process. The KMO statistic estimates the degree of shared variance among variables, providing insights into the suitability of the dataset for factor analysis. A higher KMO value suggests that the variables are sufficiently correlated, making them suitable for EFA. A KMO value above 0.5 is often considered acceptable for factor analysis (Latif, 2020), indicating that the data exhibits a reasonable degree of intercorrelation among variables.

4.7.4.3 Confirmatory Factor Analysis (CFA)

The proposed framework in this research involves specifying a theoretical framework that postulates the existence of latent factors which subsequently serve as the foundation for the observed variables (decided during questionnaire design). Although the researcher adopted questions from existing literature that were then adjusted to the context of the current investigation, it is still important to determine how well the created items represent their underlying construct (Awang, 2015), even after EFA is conducted. Confirmatory Factor Analysis (CFA) is used to perform the analysis. CFA is a way of testing how well a prespecified measurement theory composed of measured variables and factors fits reality as captured by data (Hair et al., 2019).

In this study, CFA is conducted using AMOS 24.0. The aim is to test the degree to which a hypothesised measurement model (also known as a factor model) fits the observed data. Here, the researcher examines the measurement model for each construct and the measurement model will then specify the relationships between the latent factors and their corresponding observed indicators. Since this research uses a questionnaire survey as a means of data collection, CFA is also a useful tool for evaluating the reliability and validity of such measurement instruments and subsequently, the problems of construct validity and reliability would be dealt with during the CFA process (Awang, 2015).

In the CFA, a pooled measurement model is created by the researcher on the AMOS graphical interface. This also involves defining the latent constructs (factors) and their indicators (observed variables), based on EFA output. There are four main processes in this phase: model estimation; model fit assessment; re-specification of the model; and assessment of reliability and validity.

Model estimation. Firstly, model estimation is the process of fitting a theoretical model to the data. In AMOS, Maximum Likelihood Estimation (MLE), which entails identifying the set of parameter values that maximise the likelihood of the observed data given the stated model, is used to compute the algorithm. The main focus is to inspect the value of factor loading for every item. Factor loading refers to the measure of the degree to which an observed variable is associated with a latent variable. Low factor loading items would result in poor fitness indices for the construct and ought to be removed from the measurement model. Factor loadings below .50 should be removed (Awang, 2015; Blunch, 2013), although some may accept as low as .30 (Hair et al., 2019).

Model fit assessment. Secondly, model fit assessment involves the process of evaluating how well the theoretical model fits the data. In AMOS, this is typically done using a combination of goodness-of-fit (GoF) indices such as the Comparative Fit Index (CFI), Incremental Fit Index (IFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), Standardised Root Mean Squared Residual (SRMR) and Chi-Square divided by the Degrees of Freedom (χ^2/df) to reflect diverse criteria (Kline, 2005; Meyers et al., 2005; Sharif & Nia, 2018). In this study, GoF was tested using these six common model-fit measures using the proper recommended thresholds (Bentler, 1990; Hair et al., 2019; Hooper et al., 2008; Kline, 2005; Meyers et al., 2005; Tucker & Lewis, 1973).

Re-specification of model. Thirdly, if the model does not fit the data well, it may be necessary to respecify the model by modifying the measurement model, typically by covariate error terms as suggested by AMOS software. This involves examining the factor covariances, and error variances estimated by the model, and making inferences about the underlying latent factors and their relationship to the observed variables. The researcher improved the model fitness as suggested by AMOS 24.0

Reliability and validity assessment. AMOS provides several extensions for assessing the reliability and validity of measures. The Average Variance Extracted (AVE) for measuring internal consistency and convergent validity, as well as discriminant validity for determining if measurements of various constructs are distinct, are some of the extensions offered by AMOS for evaluating the reliability and validity of measures.

In SEM, assessing construct reliability and validity holds significance. Construct reliability gauges the consistency of a variable or variables in accurately capturing what they intend to measure (Straub et al., 2004). It also indicates convergent validity. Construct validity pertains to how well-measured items mirror theoretical latent constructs (Hair et al., 2019; Hair et al., 2022).

Convergent validity confirms that items reflecting a specific construct are consistent and share a substantial portion of the variance (Hair et al., 2019; Hair et al., 2022). Discriminant validity ensures the uniqueness of a construct, demonstrating its distinctiveness from others. Correlations within SEM models must be accurate. For instance, observed variables tied to emotional appeal should not link to a latent variable concerning creativity.

During the CFA phase, it is paramount to establish convergent and discriminant validity, along with reliability. Neglecting this step renders the testing of causal models futile ("garbage in, garbage out"). Composite Reliability (CR), maximal reliability, Omega, and Cronbach's Alpha are commonly reported for construct reliability in SEM. These measures should exceed the threshold of .7. For convergent validity, the Average Variance Extracted (AVE) should surpass .5, and CR should exceed AVE. Discriminant validity is assessed using the Heterotrait-Monotrait ratio of correlation (HTMT) value, which should exceed .9. Fornell-Larcker (1981) and Maximum Shared Squared Variance (MSV) criteria dictate that MSV is less than AVE. Fortunately, AMOS provides extensions for easy calculation of these metrics.

Common Method Bias (CMB). Response styles are a source of contamination in questionnaire assessments, threatening the validity of marketing research conclusions (Baumgartner & Steenkamp, 2001). While surveys are one of the most widely used methodologies in the social sciences, they also offer the risk of Common Method Bias (CMB), which can undermine the reliability and validity of empirical data (Baumgartner & Steenkamp, 2001). CMB occurs when estimations of the relationships between two or more constructs are biased due to the fact that they are measured using the same method (Podsakoff & Organ, 1986). Method bias may occur for a variety of reasons. One of the main causes is the social desirability tendencies, dispositional mood states and inclination to respond (Jordan & Troth, 2019). It is attributed to the measurement method such as using self-reported measures or a single data source, using similar response scales, or asking questions in a leading or suggestive manner. Moreover, when the same method is used to measure both the independent and dependent variables, the correlation between them is often exaggerated.

The data used for this study was gathered based on the self-reported perceptions of the respondents. There is potential for common method bias for all self-report data. In order to reduce CMB in this study, the researcher used several strategies, including collecting data from multiple sources, using a combination of different measurement methods, and reducing ambiguity by keeping questions as simple and specific as possible. In addition, a guarantee of anonymity for survey respondents and explanations that there are no correct or incorrect responses has been explained on the introduction page of the questionnaire to help diminish respondents' reluctance. Scale items are diverse using six Likert item scales and some wordings were also reversed.

Before examining the hypothesised model, CMB was assessed. To assess the severity of CMB, Harman's single-factor test (Podsakoff & Organ, 1986) was performed. For Harman's single-factor test, all the variables data in the model were entered into an unrotated exploratory factor analysis.

4.7.4.4 Framework Model Fit Assessment

A structural model demonstrates a mathematical representation of the inter-relationships among the variables of interest, typically based on theoretical or conceptual considerations (Awang, 2015). The constructs are first assembled in the structural model by the researcher based on how the

variables are organised in the proposed conceptual framework. The main aim is to determine whether the model provides a good fit for the data (Byrne, 2010).

The assessment of a structural model typically involves comparing the predicted values from the model with the actual data, using various GoF indexes such as χ^2/df, CFI, IFI, TLI, RMSEA and SRMR to reflect diverse criteria (Kline, 2005; Meyers et al., 2005; Sharif & Nia, 2018). These GoF indexes were tested using the recommended thresholds (Bentler, 1990; Hair et al., 2019; Hooper et al., 2008; Kline, 2005; Meyers et al., 2005; Tucker & Lewis, 1973).

4.7.4.5 Estimating Path Coefficient

Estimating path coefficients in AMOS is a fundamental aspect of SEM, allowing the researchers to quantify the strength and direction of relationships between latent and observed variables in order to answer RQ 1 and RQ 2. This process involves assigning values to the paths connecting variables in the model, which represent the hypothesised causal connections. AMOS employs various techniques to estimate the path coefficients that best fit the data to the model. The method used is Maximum Likelihood Estimation (MLE), which attempts to maximise the likelihood of observing the data given the model's parameters. AMOS will display the estimate, standard error (S.E), critical ratio (C.R) and p-value for each path.

Estimating the path coefficient implies the estimation of the strength and direction of the relationships between latent variables in the model. This also includes the assessment of the p-value. Path coefficients are standardised coefficients that represent the magnitude of the direct effects of one variable on another (Byrne, 2010). The estimate is often known as the beta coefficient or the path coefficient. It indicates the standardised regression weight, which is the magnitude of an effect that a predictor variable has on the outcome variable, after controlling for all other variables in the model. It illustrates the change in the dependent variable corresponding to a one-unit change in the independent variable while keeping other variables constant. Standardised estimates are useful in terms of comparing the relative strength of various predictors within the same model (Hair et al., 2019). The S.E. estimates the standard deviation of the sampling distribution of a statistic (in this case, the regression weight). A smaller standard error indicates that the estimate is more precise (Sharaai, 2015). The C.R. is a standardised measure of the significance of the regression weight. A C.R. value greater than 1.96 (or 2.58) indicates that the

regression weight is statistically significant at the 5% (or 1%) level (Sharaai, 2015). Lastly, the p-value measures the statistical significance of the regression weight. If the regression weight has a p-value of below .05, it is statistically significant at the 5% level.

4.7.4.6 Estimating Squared Multiple Correlation (R^2)

Estimating R^2 refers to the determination of the proportion of variance in a dependent variable that can be explained by the independent variables in the model (Byrne, 2010). It is a statistical technique that helps assess how well a set of predictor variables can explain a single outcome variable (Hair et al., 2019). R^2 values are estimated for endogenous variables, and they represent the proportion of the variance in the endogenous variable that is explained by the exogenous variables in the model. In other words, the R^2 represents the proportion of variance in the outcome variable that is accounted for by the predictor variables collectively. This is typically done by squaring the correlation between the observed outcome variable and the predicted values from the model. A value closer to 1 indicates that the predictor variables collectively account for a larger portion of the variance in the outcome, suggesting a better-fitting model (Blanthorne et al., 2006). On the other hand, a lower R^2 suggests that the predictor variables do not explain much of the variance in the outcome. This estimation will indirectly explain the answer to RQ 1 and RQ 2.

4.7.5 Analysis 2: Mediation Analysis

This study is also interested in examining how the influence between two constructs may take an indirect path through a third variable called a "mediator". The mediation analysis conducted using AMOS followed a systematic approach to investigate the hypothesised relationships among variables. The primary objective was to ascertain whether the influence of the independent variable on the dependent variable was partially or fully mediated by one or more intermediary variables. To answer RQ 3, this study is interested in seeing the possibility that emotional appeal intervenes on the influence between two constructs:

- Informativeness → Attitude towards water conservation
- Credibility → Attitude towards water conservation

- Multimedia effects → Attitude towards water conservation
- Informativeness → Attitude towards empathy expression
- Credibility → Attitude towards empathy expression
- Multimedia effects → Attitude towards empathy expression

In order to perform mediation analysis, it is important to examine the direct effect, indirect effect, and total effects. As shown in Figure 4.4 below, c in the relationship between X and Y is the total effect.

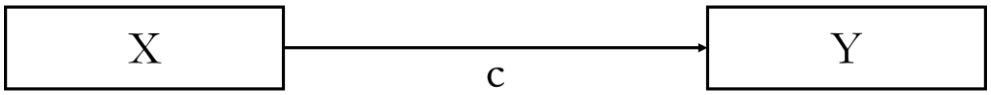

Figure 4.4. The relationship between X and Y. The total effect is denoted as c.

Figure 4.5 below depicts the concepts of the direct effect, indirect effect, and total effects. A direct effect is simply a direct relationship between an independent variable and a dependent variable in the presence of the mediator (c'). An indirect effect is a relationship that flows from an independent variable to a mediator and then to a dependent variable (a*b). The term total effect is the combined influence of the direct effect between two constructs and the indirect effect flowing through the mediator (c = c' + a*b) (Latif, 2022; Ringle et al., 2022).

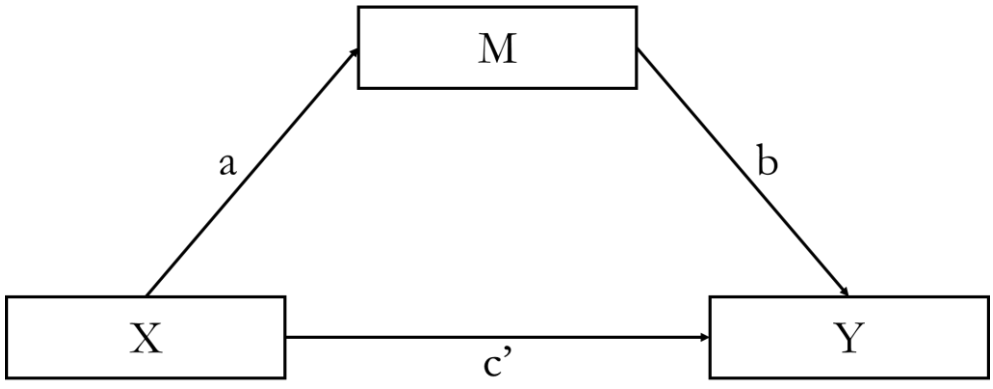

Figure 4.5. The relationship between X and Y with the presence of mediator M. Direct effect = c'; indirect effect = a * b; total effect = c' + (a * b).

The decision tree in Figure 4.6 below is used to establish and understand the type of mediation and non-mediation.

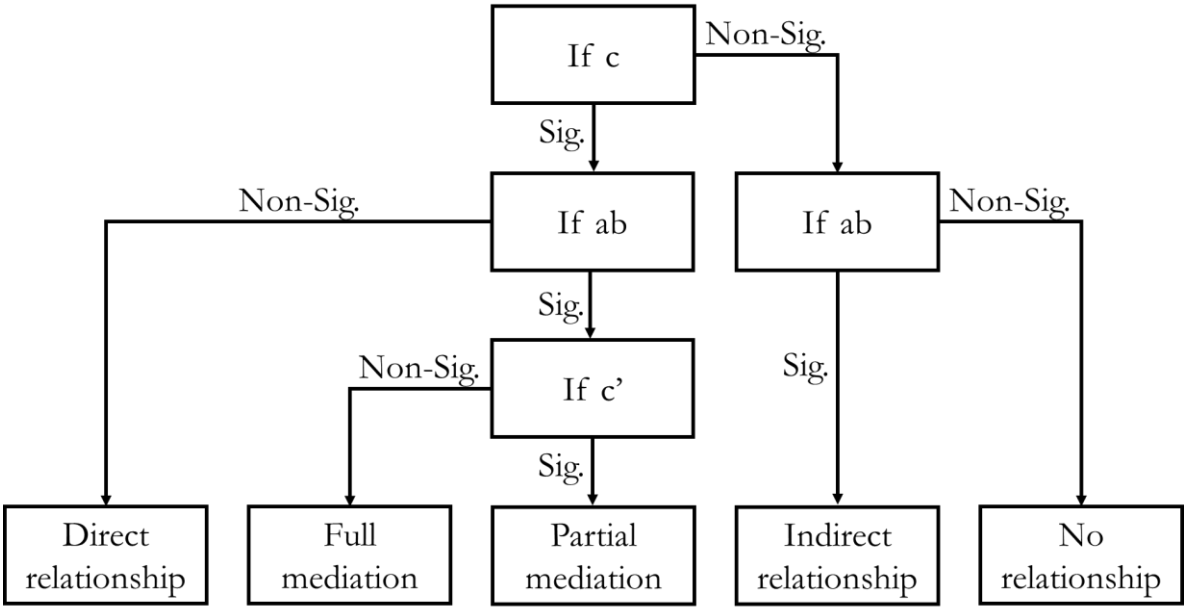

Figure 4.6. Decision tree to conceptualise mediation and non-mediation. This decision tree (adapted from Zhao et al. (2010)) helps to conceptualise types of mediation and non-mediation.

In the mediation analysis, the research examined the indirect effects of an independent variable on a dependent variable through one or more intermediate variables. AMOS SEM allows for the estimation of mediation effects using the path analysis approach. This involves estimating the total, direct, and indirect effects of the independent variable on the dependent variable, and testing the significance of the indirect effect using the bootstrap resampling method (Awang, 2015). In order to address concerns regarding the stability and reliability of parameter estimates, a bootstrapping procedure was adopted. This method involved resampling the data (in this case, 2000 times) to generate a distribution of estimates. Bias-corrected confidence intervals were then derived from this distribution, offering a more accurate range within which the true population parameter values were likely to fall (this study uses a 95% confidence interval). By applying this approach, the analysis accounted for potential fluctuations in estimates due to sampling variability.

4.7.6 Analysis 3: Multigroup Analysis (MGA)

In an MGA conducted using AMOS, the primary objective is to assess whether the relationships of interest in the structural model differ significantly across different groups defined by categorical variables, hence answering RQ 4. Specifically, in this research, categorical variables such as gender, age, level of awareness, existing water usage habits, and bill-payer status are being examined to understand how they potentially impact the relationships within the model.

The Multigroup Analysis (MGA) involves comparing the structural model's parameters (such as path coefficients and variances) across the various groups. By doing so, the researcher can determine whether these relationships differ in a statistically significant manner between the groups. In the context of this research, the relationships of interest include informativeness to emotional appeal, creativity to emotional appeal, multimedia effects to emotional appeal, and emotional appeal to intention. The MGA proceeds as follows:

Group formation. The researcher would create different groups based on the categorical variables, such as dividing participants by gender, age groups, awareness levels, usage habits, and bill-payer status. In this research, the evaluation of water usage habits and awareness was undertaken through a carefully designed questionnaire. Subsequently, the gathered responses underwent a systematic analysis using the K-means cluster technique. This method serves to categorise participants into distinct groups based on their water-saving behaviours and awareness levels regarding water-related concerns.

The survey initially divided age into six groups: 18-24; 25-35; 35-44; 45-54; 55-64; and 65 and over. However, for the MGA, participants were regrouped into two categories: 24 and below; and 25 and above. This decision was made for two reasons. Firstly, the analysis was focused on categorical variables. Secondly, the distribution of responses among the age groups was skewed towards younger participants. The rationale for using an age cutoff of 24 years is also to define younger and older groups based on the developmental changes that occur in the brain, specifically in the prefrontal cortex, during this period of life (Arain et al., 2013). Furthermore, individuals below 24 years old are typically students, while those above 24 years old may be in the working age group. As students, individuals may have different motivations, attitudes, and behaviours related to water conservation compared to those who are working. This suggests that individuals below 24 years

old may have different attitudes and behaviours related to water conservation compared to those above 24 years old.

Model specification. For each group, the structural model with the specified relationships (informativeness to emotional appeal, creativity to emotional appeal, etc.) is set up in AMOS.

Parameter estimation. AMOS estimates the model parameters for each group separately, producing path coefficients and other relevant values.

Model comparison. The estimated parameters from the different groups are compared to assess if they are statistically different. If the model parameters vary significantly across groups, it suggests that the relationship in question is moderated by the categorical variable. In other words, the impact of one variable on another may differ depending on the group being analysed.

The assessment of further analysis follows Hair's (2012) (as cited in Ramadani et al., 2012) criteria to determine whether the relationship between the following is stronger for the categorical variables of interest: informativeness and emotional appeal; creativity and emotional appeal; multimedia effects and emotional appeal; emotional appeal and intention. The criteria for moderation for individual paths are: (i) if the beta value for one group is significant, the beta value for the other must be non-significant; and (ii) if the beta values for both groups are significant, one value must be positive while the other must be negative (Ramadani et al., 2022).

Invariance. The approach first examines whether the model differs significantly between the groups. If there is a significant difference, then, the focus is primarily on comparing the path coefficients of the interested relationships. It is also important to note that when performing a multi-group analysis, the researcher needs to ensure that the measurement and structural models are equivalent across the two groups (Horn & McArdle, 1992). This means that the same measurement items and structural paths should be used for both groups.

Although this study uses a single data collection method, the researcher came across instances where the respondents can be grouped into various categorical groups (gender, age, level of awareness, existing water usage habits and bill-payer status). It is therefore possible that the survey groups and the survey items are slightly altered because of these group dynamics. Hence, the purpose of invariance analysis is to ensure that the construct being measured (measurement

models) yields consistent and equivalent representations across all groups or contexts (Hair et al., 2019). In order to make sure that both groups perceived and understood the indicators in a similar manner, the researcher needs to perform Measurement Model Invariance (MMI). The researcher seeks to establish measurement model invariance to determine if the factor structure of the CFA is equal across groups and to ensure that the findings are robust and applicable to all groups. A lack of invariance indicates that there will be a shift in how the indicators are understood when the groups change.

The fit indices of the unconstrained and constrained models can be used to understand the outcomes of an invariance analysis, which in this case, is performed using AMOS. The construct being assessed can be thought of as being invariant across the various groups if the constrained model fits well and is not considerably poorer than the unconstrained model. However, if the constrained model has a poor fit, or is noticeably worse than the unconstrained model, the construct may not be invariant.

There are five potential invariance tests to assess (1) Configural Invariance; (2) Metric Invariance; (3) Scalar Invariance; (4) Factor Variance Invariance; and (5) Error Variance Invariance. However, in this study, only the two most common tests were performed: Configural Invariance and Metric Invariance.

Configural Invariance is the first level of invariance analysis which examines if the overall structure of the measurement model is equivalent across groups. Essentially, this entails evaluating whether the same number of factors adequately captures the data for each group. The researcher determines to what extent the data for both groups are best represented by the same set of factors. Hence, if the measurement model is similar across the groups, this establishes Configural Invariance. To accomplish this, the researcher needs to set up a two-group analysis, which will examine if model fit is established across the groups. If a strong model fit is present across both groups, then it has established Configural Invariance.

After completing the Configural Invariance analysis, one can proceed to the Metric Invariance analysis. Metric Invariance establishes the equivalence of the basic "meaning" of the construct via the factor loadings across the groups. To conduct Metric Invariance analysis using AMOS, a researcher must test whether the factor loadings for each item in the measurement model are

equivalent across the groups. This can be done by constraining the factor loadings to be equal across the groups and then comparing the fit of the constrained model to the unconstrained model.

With the MGA, the researcher will constrain the factor loadings for each group to be equal. The researcher then looks at the change in chi-square (from the unconstrained model) to the constrained model of factor loadings across the groups to see if there is a significant difference. If it is significant, then the meaning of the unobservable constructs is different across the group (hence the researcher is looking for non-significance).

Configural and Metric Invariance are important levels of invariance analysis that help ensure that the measurement of a construct is consistent across different groups or contexts. By conducting these types of invariance analyses using AMOS and interpreting the results carefully, researchers can be confident that their measurement instruments are measuring the same latent variable and have the same relationship between items and the latent variable across all groups, which is crucial for making valid comparisons and drawing accurate conclusions.

4.8 CHAPTER SUMMARY

This chapter unfolds in accordance with the layers of the research onion (Saunders et al., 2019), commencing with the foundational philosophical assumptions. Positivism, as the chosen philosophical stance, underscores the objective examination of the social world through empirical evidence and verifiable observations, aligning with the pursuit of objective reality (Alharahsheh & Pius, 2020; Park et al., 2020).

Building upon this philosophical underpinning, the approach to theory development adopts a deductive strategy. This approach facilitates the systematic derivation of hypotheses from established theories, guiding the structured exploration and empirical testing of research propositions (Bradford & Weisberger, 2022; Saunders et al., 2019).

Within the methodological choice layer, this research adopts a mono-quantitative method. This emphasis on numerical data collection and analysis offers precision in measuring variables and establishing statistical relationships mainly through SEM.

At the strategy layer, an online survey questionnaire emerges as the primary data collection approach. This method optimises data acquisition, ensuring a wide-ranging participant pool that spans geographical distances (Cohen et al., 2007; Dawson, 2007; Kothari, 2004; Oppenheim, 1992; Saunders et al., 2019). The online survey format, noted for its convenience, encourages higher participation rates.

The research's time horizon aligns with a cross-sectional design, capturing data at a single point in time. This temporal approach aids in investigating relationships among variables within a specific temporal frame, in harmony with the research's objectives.

The methodology's techniques and procedures encompass critical steps. First, the creation of a stimulus video, meticulously crafted to elicit emotional responses, constitutes a foundational element. Subsequent validation of the emotional content via a post-film questionnaire ensures the accurate elicitation of intended emotions. Secondly, the research's core analyses are divided into three key dimensions:

1. The validation of the research framework unfolds through SEM in AMOS, encompassing both Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). The assessment of model fit aligns the framework with the collected data, while path coefficient estimation quantifies inter-variable relationships.

2. Performing mediation analysis using bootstrapping techniques in AMOS, to examine emotional appeal's role as a mediator. This analysis provides better insights into the extent to which emotional appeal mediates relationships among variables.

3. Performing moderation analysis through the application of MGA on AMOS to explore the potential variance in relationships between variables of interest across distinct groups.

5 CONTENT DEVELOPMENT AND VALIDATION

5.1 CHAPTER INTRODUCTION

In the modern landscape of new media, videos have emerged as a paramount tool for effective communication (Han, 2022; Hasyim & Arafah, 2023; Zhang, 2023). The significance of videos becomes even more pronounced, especially with the rapid growth of online platforms and the prevalence of smartphones. The visual and auditory engagement that videos offer surpasses traditional text-based methods, making them a compelling choice for conveying messages (Fernández-Aguilar et al., 2019; Uhrig et al., 2016). Visual and auditory stimuli have been proven to evoke stronger emotional responses and engagement compared to static visuals or textual content (Bartolini, 2011; Eder et al., 2019; Gilman et al., 2017; Kring & Gordon, 1998). Thus, leveraging the potential of stimulus video can provide valuable insights into audience perceptions and reactions.

This chapter delivers the video production and validation process, which involves creative content design, development, and validation research. Section 5.2 goes into detail about creative content design and development, which includes defining, developing, and editing phases. Section 5.3 focuses on the validation study, which aims to ensure that the video content properly elicits the desired emotions in the intended audience. The section covers the additional background study, materials and procedures to assess the content's effectiveness in terms of emotion elicitation. Chapter 5.4 highlights the main points of the chapter and provides an outline of the key takeaways. It underlines the significance of the video development process and the relevance of validation in ensuring that the video content accomplishes its goals.

5.2 CREATIVE CONTENT DESIGN AND DEVELOPMENT

In the pursuit of crafting emotionally appealing narratives within the water conservation context, a rigorous desk study laid the foundational framework. Following the design thinking principles advocated by Rodriguez (2020), the study was carefully designed to comprehend the emotional needs and effective communication strategies essential for developing impactful social media water conservation content. Exploring various aspects of emotional evocation, engagement and communication tactics, the desk study aimed to gain valuable information that could design the stimulus of the study.

5.2.1 Desk Study for Emotional Narrative Design: Methodology and Outcomes

The desk study involved an extensive exploration of existing literature, academic research, and case studies related to emotional appeals in environmental communication and specifically in water conservation campaigns. By delving into the works of Becheur and Valette-Florence (2014), Brennan and Binney (2010), Coulter et al. (1999), Graton et al. (2016), and Wang et al. (2021), among others, the researcher aimed to identify emotions that have proven to be significant catalysts for pro-environmental behaviour. This process allowed for the identification of emotions strategically aligning with the campaign's goals, including altruistic behaviour, attractiveness, and positive attitudes towards water conservation.

Furthermore, the study focused on the environmental relevance of emotions, drawing an understanding from Landmann (2020). This exploration focused on understanding how emotions such as calm, guilt, and sadness can be strategically incorporated to promote the desired behavioural outcomes. By combining together academic insights and empirical evidence, the desk study provided a nuanced understanding of emotional triggers and their environmental implications.

To enhance the creativity of the emotional narrative, an additional layer of depth was added to the desk study. The researcher extended the exploration to include a critical analysis of existing water conservation campaign videos in the UK. This broader investigation aimed to ensure that the

definition of creativity, as articulated by Lee and Hong (2016) and Mercanti-Guerin (2008) - encompassing originality, uniqueness, out-of-the-ordinary elements, artistic qualities, and intrigue - is met. By examining the creative dimensions of past campaigns, the study aimed to draw inspiration and enhance the creative elements integrated into the emotional narrative of the current water conservation campaign.

As part of the emotional narrative design for water conservation videos, the study embraced a comprehensive approach to multimedia effects, recognising their essential role in evoking emotions. Defined by Hsieh et al. (2012) as the extent to which multimedia provides rich and sufficient effects, particularly in terms of audio and visuals, the implementation of multimedia effects became a cornerstone in the endeavour to create impactful and emotionally resonant content. Furthermore, the incorporation of visuals played a crucial role in evoking specific emotions aligned with the campaign's objectives. Visuals of droughts in the UK, for instance, were strategically chosen to elicit feelings of guilt and sadness. By presenting the stark reality of environmental degradation and the potential consequences of water scarcity, the audience is prompted to reflect on personal responsibility, fostering a sense of accountability and emotional resonance (Gilbertson et al., 2011).

Additionally, visuals depicting water wastage were introduced to make the narrative more relevant to the audience (Nisbet & Gick, 2008). These visuals, intertwined with the slow-tempo music, aimed at invoking guilt. The deliberate juxtaposition of scenes showcasing water being wasted with a musical backdrop that sets a contemplative tone creates a powerful emotional impact. It not only informs but also prompts an emotional response, contributing to the effectiveness of the water conservation message. Towards the conclusion of the video, visuals portraying the beauty of nature with water bodies were strategically placed to evoke a sense of calm. This deliberate choice aligns with the campaign's goal of promoting a positive attitude towards water conservation. By showcasing the serene and aesthetic aspects of water bodies, the video aims to instil a connection between the audience and nature, fostering a sense of calm and appreciation (Li et al., 2021; Peng et al., 2018; Raja Mohd Nordin et al., 2021; White et al., 2010).

This strategic use of multimedia effects, blending visuals and sound, was carefully designed to elicit specific emotions at different points in the narrative. It reflects an understanding of the interconnectedness of auditory and visual elements in shaping emotional responses. The deliberate

orchestration of multimedia effects adds layers to the emotional narrative, making it a powerful tool in fostering a deep and lasting impact on the audience's perception and behaviour towards water conservation.

5.2.2 Content Design

During the defining stage, the researcher uses a design thinking process by Rodriguez (2020) as a problem-solving approach that focuses on understanding the user, creating innovative solutions, and iterating through feedback. In the context of video production, the design thinking process can be broken down into three phases as shown in Figure 5.1. By following the design thinking process, the researcher and content creator can create videos that better meet the needs of the research, as well as iterate on the ideas until a successful final product is agreed upon.

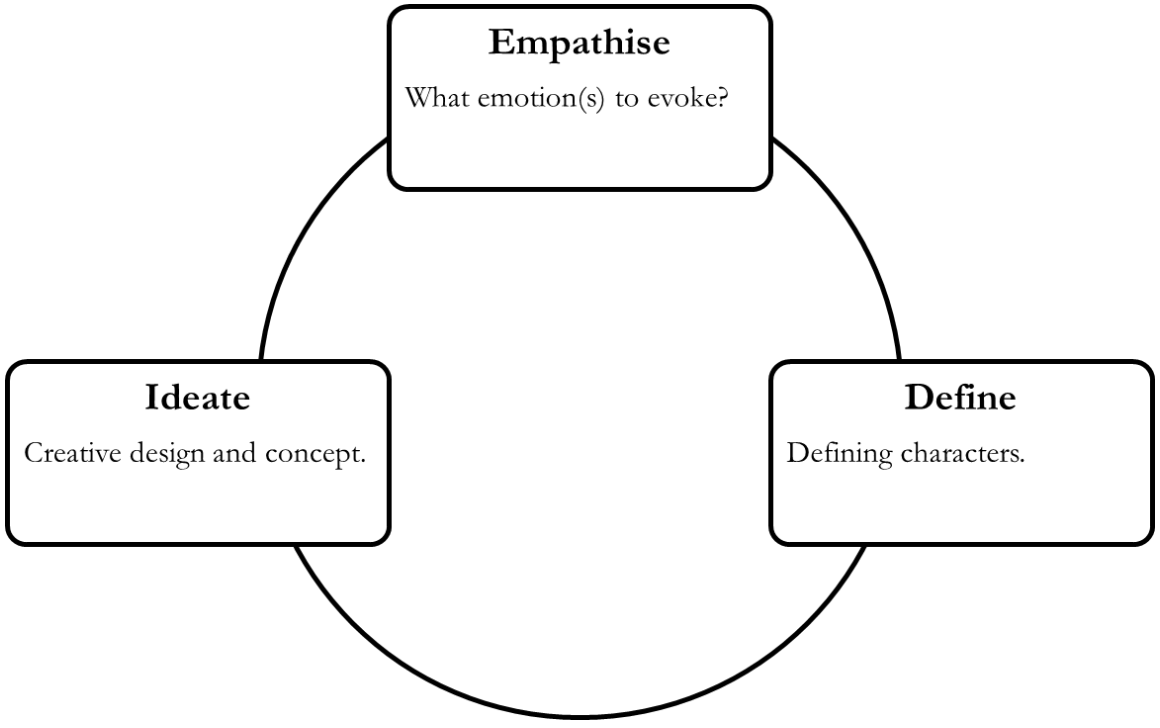

Figure 5.1. Design thinking applied to storytelling. Adopted from Rodriguez (2020).

5.2.2.1 Empathise

The first stage in design thinking principles is all about gaining an empathic understanding of the target audience in order to deliver a story that will make them have "all the feels" (Rodriguez, 2020). In this phase, the researcher needs to understand the needs and requirements of effective communication in the context of this research. In this study, the researcher conducted a desk study to understand what emotion to evoke and how emotion can be evoked.

In this research, the water conservation social media content focuses on mixed emotions to produce more altruistic behaviour under the condition of preventative orientation, improve attractiveness and promote a positive attitude toward water conservation. The combination of media in the content video should also evoke emotional affinity as a significant motivational force for sustainable action. The content video was designed to evoke three target emotions: calm, guilt, and sadness. These emotions are environmentally relevant (Landmann, 2020). While guilt and sadness are well-known to be significant for pro-environmental behaviour (Becheur & Valette-Florence, 2014; Brennan & Binney, 2010; Carlson & Miller, 1987; Coulter et al., 1999; Graton et al., 2016; Wang et al., 2021), the role of calm is still understudied. The decision to include these three emotions was based on the attempt to make the emotion within the content to be dynamic.

5.2.2.2 Define

The "define" phase revolves around meticulously defining the problem to be addressed, formulating a thematic essence, and setting the stage for the characters and plot that will weave the WCC. In the context of water conservation, this phase specifically tackles issues of scarcity, drought, and the lack of awareness. These challenges form the crux of the narrative, fostering an environment where the audience can empathise and resonate with the video's message. A pivotal tool in this phase is the Five Ps framework: People, Place, Pictures, Personal, and Platform summarised in Table 5.1 below.

Table 5.1. The Five Ps framework. The strategic deployment of these elements enriches the depth and resonance of the video content.

People	Relatable characters, like the protagonist, are introduced to personify the issues and struggles. Through their experiences, the audience forms a profound connection.
Place	Environments come to life through both internal (household) and external settings (water body environment and reservoir). These settings set the stage for narratives to unfold.
Pictures	Visual imagery, such as the depiction of droughts, reinforces the severity of the issues, invoking a visual narrative that lingers in the audience's mind.
Personal	This element humanises the video, presenting personal stories that evoke empathy, and inviting the audience to emotionally invest in the content.
Platform	The WCC video is designed to be viewed on various devices such as laptops, tablets, and monitors and is also optimised for smaller screens such as mobile phones. The length of the video should be around two minutes emphasising the importance of saving water while providing information to enhance awareness. The WCC video is designed to be shared on social media platforms.

5.2.2.3 Ideate

In the creative phase, the task at hand is to generate ideas and potential solutions to address the challenges identified earlier (Rodriguez, 2020). This phase operates in conjunction with the emotional appeal element through multimedia and creativity while embracing the proposed conceptual framework that underscores the significance of informativeness and credibility.

To seamlessly intertwine informativeness and credibility, it becomes imperative to furnish the audience with foundational background information concerning the current state of water resources and the potential ramifications of water scarcity. A key facet is the accurate selection of reputable sources such as government agencies and environmental organisations, substantiating the credibility of the WCC while ensuring the accuracy of the information presented. Table 5.2 summarises the integration of these vital elements within the WCC video content.

Table 5.2. Strategies to embed informativeness, credibility, multimedia effects, and creativity. The table summarises how each element can be embedded in the WCC.

Elements	Strategy
Informativeness	**1. Facts and figures:** • "*In the UK, each person uses, on average, more than 142 litres of water each day*" (DEFRA, 2018; Water UK, 2020a). • "*While some view the UK as having abundant water resources, some areas of the country could run out of water in the future*" (Environment Agency, 2021b; Laville, 2020). • Emphasise how individual behavioural changes can collectively make a significant impact on the community's water consumption (Gilbertson et al., 2011). **2. Imagining life without water:** • The goal is to evoke a sense of urgency and make people realise the significance of their actions. Thus, this helps the public make informed decisions by presenting the consequences of neglecting water conservation (Nisbet & Gick, 2008) and promoting social benefits (Rumble et al., 2017). • Motivate the audience to be competent and make positive contributions toward better conditions for all (Kaplan, 2000).
Credibility	**1. Credible references:** • Quote Sir James Bevan, Chief Executive of the Environment Agency, to reinforce the message. His endorsement could also add credibility and authenticity to the facts and insights being presented in the video (Metzger & Flanagin, 2013; Metzger & Flanagin, 2015; Rieh & Danielson, 2008). **2. Design excellence:** • Incorporate design principles (Fogg et al., 2003).
Multimedia effects	**1. Audio** • Feature the music "Waiting at the Airport" by Rhian Sheehan adding depth and emotional resonance to the visuals. **2. Visuals:** • Show images of recent droughts to help the audience empathise with the potential consequences of water scarcity (Gilbertson et al., 2011). • Showcase picturesque water scenery to highlight the beauty and value of water resources.
Creativity	**1. Original and unexpected:** • Implement unique and unexpected elements in the video, drawing inspiration from the concept of originality and surprise (Haberland & Dacin, 1992). **2. Artistic visualisation:** • Utilise unconventional storytelling techniques or visuals to capture audiences' attention. • Embrace artistic visualisation techniques to create visually stunning and captivating scenes.

While furnishing tips for reducing water consumption at home may be perceived as unnecessary due to their common knowledge status among individuals (CCWater, 2016; Gilbertson et al., 2011), integrating content about the facts surrounding water consumption in the UK could

substantially enhance comprehension. This move not only deepens understanding but also adds a unique dimension to the video, differentiating it from other existing water conservation campaigns and reinforcing its creative nature.

The role of emotion within water conservation campaigns can be addressed through two primary avenues: environmental emotions and emotions incited by communication. Environmental emotions, encompassing a sense of duty and belonging, exert significant influence over environmental behaviour (Raeisi et al., 2018). They foster adaptive benefits and a sense of responsibility toward the environment (Grob, 1995; Kalantari et al., 2015; Kals et al., 1999; Ulrich, 1983; Vining & Ebreo, 2002). Emotions induced by communication are woven through audio and visual elements. Music becomes a potent tool for triggering emotional responses and kindling emotional contagion (Baumgartner et al., 2006; Evans & Schubert, 2008; Fassbender et al., 2012; Fisher & Greenberg, 1972; Herget et al., 2017; Talamini et al., 2022; Zhou et al., 2022). Visuals, encompassing images and video footage, play a multifaceted role, evoking emotional responses (Domke et al., 2002; Jarreau et al., 2015; Zeng et al., 2022) and influencing behaviours (Clayton, 2021; Meenar & Mandarano, 2021; Sleenhoff et al., 2015; Zhu et al., 2021). Previous studies also argue that cognitive engagement with pro-environmental science and policy can be influenced by visual images (Cass & Walker, 2009; Meijnders et al., 2001; Sleenhoff et al., 2015). Here, risk communication may cause negative emotional reactions, either because of the risk being discussed or because of specific components of the communication, such as terrifying pictures or the worrying effect of climate change (Meijnders et al., 2001).

The focal endeavour of this research is to explore the integration of these multimedia effects and creativity, augmenting communication's capacity to invoke affective responsiveness toward sustainability challenges. The potency of emotion is harnessed to inspire individuals, catalyse positive actions, and enhance communication's impact. The visual representation in Figure 5.2 encapsulates the orchestration of emotions through environmental stimuli such as reservoir visuals, water wastage, and drought. Multimedia elements like music, background sound, lighting, colour, and graphics further contribute to emotional resonance.

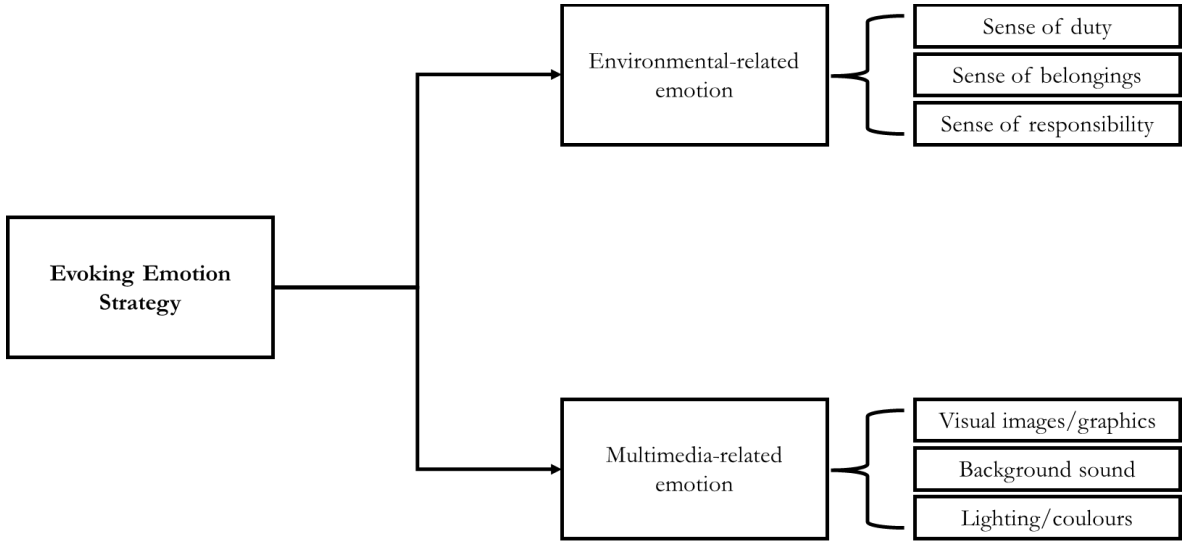

Figure 5.2. Emotion elicitation in environmental and sustainability and media communication. Emotion can be based on environmental emotions such as visuals of the reservoir, water wastage and drought; and, multimedia based such as music, background sound, lighting, colour and graphics.

To elicit guilt, content portrayal should emphasise the environmental repercussions of ignorance, incorporating images of droughts. This strategy aims to empower viewers with informed choices, triggering a sense of accountability (Nisbet & Gick, 2008). Inducing a sense of calm is achieved by spotlighting the intrinsic value of nature and water bodies (Li et al., 2021; Peng et al., 2018; Raja Mohd Nordin et al., 2021; White et al., 2010). Moreover, the content should be able to portray environmental values to provide a sense of relationship with nature (Nisbet et al., 2010; Schultz, 2000) and a sense of connectedness to the environment (Nisbet & Gick, 2008). This induces emotional appeal and eventually leads to disincentives for unsustainable actions (Nisbet & Gick, 2008).

Images of droughts wield immense emotional impact, evoking sadness and guilt. Audiences may react emotionally to these images due to the evident environmental degradation (Park & Park, 2020). Additionally, the realisation that one's actions may contribute to such crises can provoke guilt and prompt reflections on personal responsibility (Bamberg & Möser, 2007; Kaiser et al., 2008; Perrin & Benassi, 2009; Vining & Ebreo, 2002).

In the realm of filmmaking, the power of dark hues to evoke a myriad of emotions based on context and intended messages is truly remarkable. Employing these shades strategically can create a tapestry of feelings, such as drama and intensity (Gremillion, 2019). This technique becomes

particularly poignant when aiming to immerse audiences in a deep well of sadness and guilt (Jonauskaite et al., 2018; Madden et al., 2000). Beyond that, the allure of dark hues lies in their ability to not just captivate but to enrapture viewers within the narrative itself (Gremillion, 2019). Additionally, the WCC can be made to appear elegant, refined and unique by using dark hues. Low-saturation hues like grey and metallic tones are a good representation of unpleasant emotions (Yang & Min, 2014). Blue and green hues, as well as dull, light grey tones, connect to the calm. In order to convey the emotion's relaxation, the tone must be modified gradually (Yang & Min, 2014).

The final product of this phase is a script and storyboard (Appendix A). Storyboards are a visual representation of the written word and a means to communicate, through images, what those words describe (Torta & Minuty, 2018). Each storyboard displays a number of frames on the page that function as a window to the eye of the camera (Torta & Minuty, 2018). The researcher uses a series of photographs that convey a story or sequence of events in the WCC.

5.2.3 Developing and Editing Phase

Due to limitations in time and resources, the researcher enlisted the help of a content creator to make the WCC video. The content creator was responsible for filming certain scenes and assisting in the later stages of editing. Additional footage was sourced from Darren Winwood (AeroCapture) for reservoir shots and from Stephen Bolton for images of drought in the UK. All necessary copyright permissions have been obtained. Once filming is done, the next step is to edit the footage and create a polished final version. This involves cutting and combining footage, adding visual effects, and including any needed audio.

5.2.4 The Final Story

The video initiates with a compelling shot, capturing the essence through a person's eyes, and skillfully drawing the audience into the unfolding narrative (Figure 5.3a). Transitioning into the first scene, a man is portrayed heading to the sink, as an everyday action to brush his teeth (Figure 5.3b). The accompanying sound of running water serves to emphasise the commonplace nature of this act. Then, attention shifts to a shot where a shower is activated, visually emphasising the abundance of water often consumed during such routine activities. The following sequence

features the man pouring and consuming a glass of water, effectively accentuating the prevalent notion of water's inexhaustible availability.

(a) (b)

Figure 5.3. Sequential screenshots 1. (a) A close-up shot of an eye, representing awareness, awakening to the importance of water usage, and being conscious of environmental impact. (b) the everyday habits (represent thoughtless or excessive water use) that contribute to unsustainable water consumption in routine activities.

While portraying the man's activities alongside text provision regarding the statistics about water consumption, the video strategically amplifies the issue of overconsumption while accentuating the evident lack of awareness concerning the value of water resources. This message gains further traction through the integration of overlay text or narration, skillfully intensifying the urgency of the situation at hand. A swift transition introduces a futuristic scenario, predicting potential water shortages within the UK, thereby lending a tangible gravity to the impending crisis (Figure 5.4).

Figure 5.4. Sequential screenshots 2. Captured in 2018 by Stephen Bolton, this poignant image reveals the Ladybower Reservoir in a nearly depleted state. A stark reminder of the impact of water scarcity, it serves as a call to action for responsible water management. © Stephen Bolton. Used with permission.

Subsequent frames vividly contrast with prior depictions, featuring visuals portraying dry reservoirs and desolate landscapes. This acts as a reminder of the consequences of lack of action. However, as the visual transforms, the scene goes back to the initial shot of the eye. Here, the narrative takes a hopeful turn as the man enacts reverse actions, symbolised by the turning off of the tap during teeth brushing, adopting shorter showers, and adopting a more mindful approach

towards water use. Concluding with the eye once again, this time reflecting an awakened consciousness and commitment, the video captures the profound journey it has guided its audience through.

To reinforce the central message, the video ventures into a sequence showcasing the untouched splendour of water, capturing it in natural settings - flowing rivers, serene lakes, and majestic reservoirs (Figure 5.5). This cinematic interlude serves as a poignant reminder of water's intrinsic magnificence within its conservation. Overlaying the words "act in time" the video imparts an imperative of responsibility, compelling viewers to recognise the significance of immediate engagement.

Figure 5.5. Sequential screenshots 3. A moment of tranquillity and reflection. This image celebrates the calming influence of water's embrace, reminding us of the solace and serenity that can be found in nature's beauty. © Darren Winwood. Used with permission.

5.3 STIMULUS VALIDATION STUDY

Emotions in audiovisuals can be intended, induced, and expected, each playing a distinct role in the audience's experience. While intended emotions represent the content creator's goals, induced emotions are what audiences actually feel, and expected emotions are common reactions to the same stimulus (Baveye et al., 2015). The expected emotion may be thought of as objective, reflecting the more-or-less universal reaction of a wide audience to a specific stimulus, in contrast to the induced emotion, which is subjective and context-dependent (Hanjalic, 2006). Moreover, intended and expected emotions do not always match (Philippot, 1993; Gross & Levenson, 1995; Baveye et al., 2015).

The dynamic nature of audiovisual content complicates matters, as viewers may experience unanticipated mixed emotions and divergent responses beyond the intended ones (Gross &

Levenson, 1995; Philippot, 1993; Rottenberg et al., 2007). This means that despite proper planning and development of a video, evoking the intended emotion may still be unsuccessful (Baveye et al., 2015). For example, happiness and sadness may co-occur, providing evidence for mixed emotions (Larsen & Green, 2013).

Given the variability in individual emotional responses, the accuracy and efficiency of eliciting emotions from participants or audiences become paramount for both researchers and content creators (Malandrakis et al., 2011). Consequently, the validation of audiovisual stimuli emerges as a critical step. By rigorously assessing the emotional appeal and impact of these stimuli, researchers can enhance their ability to reliably evoke desired emotions, thus contributing to a more fulfilling and effective audiovisual.

In this section, a validation study is presented, aiming to establish the validity of the stimulus in evoking target emotions. The subsequent subsections delve into the comprehensive procedures starting with the validation measures (Section 5.3.1), sampling method (Section 5.3.2), validation procedures (Section 5.3.3), the participants involved (Section 5.3.4), the detailed analysis process (Section 5.3.5), and finally, an in-depth exploration of the results (Section 5.3.6) and discussions (Section 5.3.7). This structured approach ensures a comprehensive evaluation of the effectiveness in evoking targeted emotions.

5.3.1 Stimulus Validation Measures

The questionnaire design (Appendix D) was heavily based on the Post-Film Questionnaire (PFQ) by Rottenberg et al. (2007) to bring the benefit of being both highly effective and highly standardisable, enabling the analysis of the ratings for the targeted emotions.

5.3.2 Stimulus Validation Sampling

Due to the timeframe and resources, a simple random sampling strategy was adopted. An online questionnaire link was posted on a Facebook group with 21.9K members from March 2022 to May 2022. Using a Facebook group in this study is beneficial for several reasons. First, since the study focuses on social media video content, recruiting and interacting with group members

automatically selects all social media users. In this study, participants had to adhere to very specific criteria (social media users, age 18 and above, water consumers in the UK). Secondly, using a Facebook group is an efficient way to recruit diverse participants. Moreover, since the Facebook page is intended for a UK recreational activity community, the followers are mostly from the UK with a diverse demographic background. To incentivise participation, participants were offered a chance to win a gift worth £25. All participants were asked to provide their informed consent before participation.

5.3.3 Stimulus Validation Procedures

The participants were required to read the information and sign the consent form before proceeding with the survey. The video was embedded in the survey and participants were required to watch the video until the end and then asked to identify and rate the intensity of the emotions felt. Using a scale from 0 (not at all) to 8 (extremely), participants are required to rate the emotions listed in the survey. Participants were also instructed to report what they felt during the video, and not how they believed people should react.

Upon completion, the data on the count and percentage of emotion detected and the rating of emotional intensity for the video was recorded on Jisc Online Surveys and then transferred to SPSS Version 28.0.0.0 (190) to perform data cleaning and statistical analysis. Inconsistent responses for "Anger" (which came twice in the list) and/or nonsensical feedback in the open-ended questions are filtered out. The online survey procedure is illustrated in Figure 5.6 below.

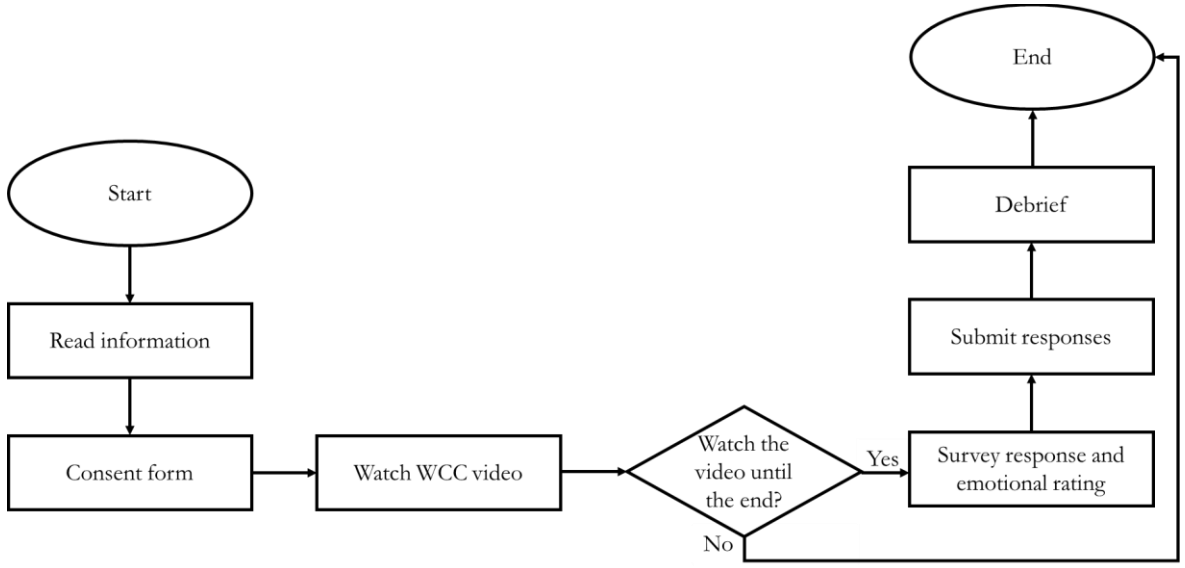

Figure 5.6. Online suvey procedure. The procedure used to conduct the validation study.

5.3.4 Stimulus Validation Participants

A total of 153 finalised participants consisting of 44.4% males; 51.6% females and 3.9% prefer not to say, with the age of 18-24 (20.9%); 25-34 (24.2%); 35-44 (17%); 45-54 (17.6%); 55-64 (14.4%) and 65 and over (5.9%) after data cleaning.

5.3.5 Stimulus Validation Analysis

In this study, the concept of emotional appeal is defined as the degree to which emotional responses are evoked upon exposure to the video, as established by Lee and Hong (2016). However, measuring "emotional appeal" presents a challenge due to the lack of an existing method capable of quantifying and validating them accurately. This complexity underscores the need for a meticulous approach to assessing emotional responses, given their multifaceted and subjective nature.

To assess if the water conservation campaign video content generated the targetted emotions and to what intensity, this study uses three success criteria based on earlier research (Bartolini, 2011; Gross & Levenson, 1995; Howard, 2014; Rottenberg et al., 2007): intensity, discreteness and low

"confusion" rating. Adopting the combination of the rating scales from previous studies was intended to bring the benefit of being both highly effective and highly standardisable, enabling the analysis of the ratings for the targeted emotions.

Firstly, the emotional intensity is computed based on the averaged participants' ratings on the emotions listed in PFQ in order to provide a strength score of discrete emotions (Bartolini, 2011; Gross & Levenson, 1995; Howard, 2014; Rottenberg et al., 2007). The intensity of emotion was measured on a scale of 0 (none) to 8 (extremely), hence, the higher the intensity score, the clearer the description of which emotions were elicited by video content. Participants were also given the option of stating other emotions that they may have felt that were not included in the questionnaire; nevertheless, there were insufficient responses to allow analysis, and responses varied. Secondly, discreteness refers to the degree to which subjects reported feeling the target emotion more intensely than all nontargeted emotions (Rottenberg et al., 2007). The discreteness is computed by deducting the second-highest mean emotional rating from the total average of the three target emotions (Bartolini, 2011; Howard, 2014). Thirdly, to make sure that participants comprehend the video content, the mean ratings of confusion must be low (Bartolini, 2011; Chen et al., 2021).

Because previous studies use video validation to create a database stimulus for eliciting human emotion, the criterion for selecting the most effective films is commonly based on intensity and discreteness (Bartolini, 2011; Gross & Levenson, 1995; Howard, 2014; Rottenberg et al., 2007). However, in this study, the success criteria require the intensity to reach 5 (Bartolini, 2011; Gross & Levenson, 1995; Howard, 2014; Rottenberg et al., 2007). Since there is more than one target emotion, at least one emotion that scores greater than 5 for intensity is enough to pass the success criteria for an emotionally appealing video as defined by Lee and Hong (2016). Although discreteness may be unnecessary, this study uses the average mean intensity for calm, sadness and guilt and a discreteness score of at least two indicates the target emotion experienced by the participants is without the interfering influence of any other emotions (Bartolini, 2011). Furthermore, mean ratings of confusion must not be higher than four to ensure that participants understand the video (Bartolini, 2011).

It is essential to consider other factors that may affect the emotion elicitation process, such as age, gender, personality, and cultural differences (Alghowinem et al., 2019; Gross & Levenson, 1995;

Hazer et al., 2015; Rottenberg et al., 2007; Rukavina et al., 2013; Sayed Ismail et al., 2021). For instance, the older age group felt higher valence/arousal (Hazer et al., 2015; Sayed Ismail et al., 2021), and women reacted with higher intensity (arousal) compared to men (Uhrig et al., 2016). Hence, it is important to systematically explore how these diverse factors interact with the emotional appeal of the presented audiovisual. This approach not only enhances the understanding of the emotional elicitation process but also provides better insights into how different groups respond to the same content, enriching the overall comprehension of emotional experiences in a broader context.

5.3.6 Stimulus Validation Results

In this study, the criteria for defining a "successful elicitation" of emotions within the video is based on achieving an average target emotion score of at least 5 for one of the specified target emotions. Figure 5.7 illustrates that sadness, guilt, and calm each exhibit an intensity level surpassing 5. The calculation of a discreteness score involves deducting the second-highest mean emotional rating from the targeted emotional rating. Utilising the average scores of calm, guilt, and sadness (AVG_CGS), the discreteness score is computed, resulting in a value of 0.78. This score reflects the lack of discrepancy between the average of these emotions and the second-highest score (shame), following all three target emotions. Additionally, it was anticipated that their mean confusion scores should not exceed four, as stipulated by Bartolini (2011). In this context, the recorded mean confusion score is 0.78.

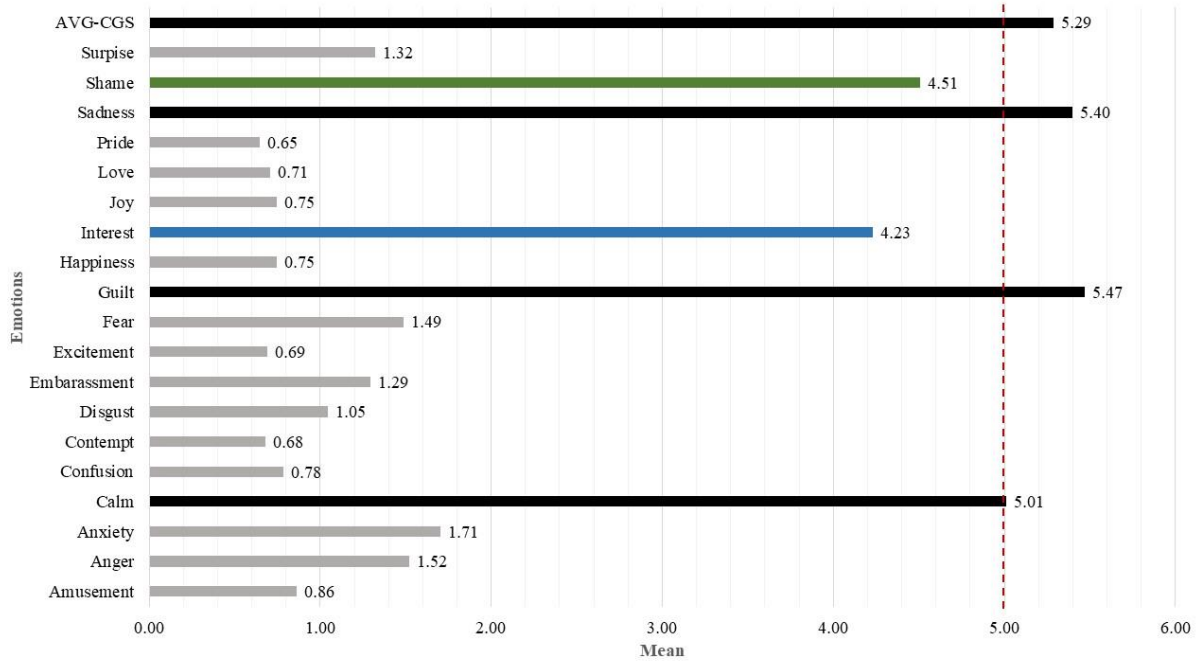

Figure 5.7. Mean emotional intensity. Note: Target Emotions are Calm, Guilt and Sadness. The average score for Calm, Guilt and Sadness (AVG-CGS) is the average intensity for the three target emotions. The discreteness score is 0.78. The target emotion(s) darkened for easier reading; the highest non-targeted emotion is coloured green; the second-highest non-targeted emotion is coloured blue; a dashed line at 5 indicates the minimum value for intensity.

To investigate the effect of gender on emotion ratings, the Mann-Whitney U Test was performed on ratings of the emotions across the video by gender. In this case, the independent variable focused on males and females while the dependent variables focused on the scale from 0 to 8. The results are summarised in Table 5.3 below. Only Calm approached significance at the .05 level with men rating calm slightly higher than women.

Table 5.3. Mann-Whitney test for gender versus emotion self-rating. Note: Only "calm" shows significance (bold).

Emotion	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
Amusement	2581	4927	-0.521	0.602
Anger	2549.5	4895.5	-0.576	0.564
Anxiety	2369.5	4715.5	-1.332	0.183
Calm	2116	5276	-2.252	**0.024**
Confusion	2596	4942	-0.426	0.67
Contempt	2539	4885	-0.73	0.465
Disgust	2597.5	4943.5	-0.401	0.689
Embarrassment	2661.5	5821.5	-0.11	0.912
Excitement	2602	4948	-0.458	0.647
Fear	2586	4932	-0.43	0.667
Guilt	2326	5486	-1.424	0.154
Happiness	2533	4879	-0.788	0.43
Interest	2313	5473	-1.478	0.139
Joy	2650	4996	-0.196	0.844
Love	2594.5	4940.5	-0.505	0.614
Pride	2633.5	4979.5	-0.28	0.78
Sadness	2432	5592	-1.013	0.311
Shame	2287.5	5447.5	-1.572	0.116
Surprise	2509	4855	-0.771	0.441

5.3.7 Stimulus Validation Discussions

The overarching purpose of this study was to examine the possibility of eliciting discrete emotional responses using video content. The goal of this study was to develop WCC video content which was then utilised as a stimulus to targeted emotions. In this study, calm, sadness, and guilt are the targetted emotions. The results indicate that all three emotions reached at least 5 mean intensities. This further suggests that the participants were able to correctly identify their own subjective emotional experiences with the Emotion-Response Scale items by Rottenberg et al. (2007) and that the content strategy is well planned and executed.

The gender differences in emotional responses have been explored and interestingly, the findings of this study showed no significant differences between the men and women in all the emotions listed in the study except for calm. Further analysis suggests that men rated higher for calm than

women and this may be reflected in Simon and Nath (2004). These results indirectly prompted the idea of designing and developing gender-neutral or gender-biased WCC video content that researchers or communicators may use (Simon & Nath, 2004).

Furthermore, although the video meets the intensity score for the target emotions, the analyses suggested the average ratings of the three target emotions demonstrated a lack of discreteness (AVG_GCS minus the highest non-targeted emotion (shame)). These findings are well expected because while the list of emotions was lengthy, several emotions such as guilt and shame may be confused with one another (Lagotte, 2014). It is possible that the emotions elicited by the content video may overlap with other targeted emotions, particularly guilt and shame. Evidence for this phenomenon comes from the high average ratings of 'shame'. It is however possible that participants find shame and guilt similar (Blum, 2008; Breugelmans & Poortinga, 2006) and that small discreteness scores suggest a blend between guilt and shame. In order to further analyse this possibility, a Spearman Correlation test was also undertaken as shown in Table 5.4, suggesting that there is a significant correlation at $p<.05$, however, the correlation coefficient is slightly less than 0.5 which indicates a less strong positive correlation.

Table 5.4. Spearman Correlation between guilt and shame. There is a significant correlation at $p<.05$.

			Guilt	Shame
Spearman's rho	Guilt	Correlation Coefficient	1.000	.480**
		Sig. (2-tailed)	.	<.001
		N	153	153
	Shame	Correlation Coefficient	.480**	1.000
		Sig. (2-tailed)	<.001	.
		N	153	153

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

Images, video footage, and audio in video content allow a variety of emotions to be evoked. For example, Rottenberg et al. (2007) highlight that fear films elicit a blend of other emotions such as interest and tension. This is relevant because the mean intensity of 'interest' is the second-highest for non-target emotions. Interestingly, this may be explained by the creative nature of the video, the design aspect and its originality. Silvia (2008) claims that viewers are more engaged in stimuli

that are both more complicated and more intelligible (Silvia, 2008). Additionally, the novelty and complexity of a stimulus may evoke interest (Sung et al., 2016). This anticipation may have captured the viewers' attention, which would account for quite a high level of 'interest'.

5.4 CHAPTER SUMMARY

In the evolving landscape of academia, where the influence of social media technology is on the rise, content videos have emerged as a potent tool for eliciting emotions. This trend has extended into fields such as environment and marketing, offering researchers a rich avenue to delve into the role of emotional appeal. As researchers craft stimuli for their investigations, one avenue is to focus on the video's capability to evoke precise emotional intensity. Within this framework, this chapter expands upon the development and validation of videos for research purposes.

The development process is meticulously designed to holistically integrate essential elements: informativeness, credibility, multimedia effects, creativity, and emotional appeal, all encapsulated within a concise 2-minute video. This amalgamation of factors ensures that the video captures the viewers' attention, leaving no stone unturned in conveying the desired emotions effectively.

Yet, the intricate landscape of emotions highlights a crucial caveat: intended emotions might not always align with induced or expected ones. This realisation necessitates a pivotal validation phase to ensure that the created videos evoke the intended emotional responses among diverse audiences. While a researcher's personal experience might be insightful, it may not mirror the reactions of the broader audience. Thus, the validation stage becomes an indispensable checkpoint, often overlooked in prior research investigating emotional appeal in communication contexts. This gap is mainly attributed to the absence of standardised metrics for validating emotional appeal.

Addressing this challenge, the present research introduces a straightforward technique for validating stimuli using Rottenberg's (2007) Post-Film Questionnaire (PFQ). By comparing predicted emotion ratings against other emotions, the study meticulously gauges emotional intensity and discreteness. It is worth noting that this study does not make assumptions about discretely identifiable facial, vocal, or body expressions; rather, it focuses on comprehending the holistic emotional response elicited by the "emotionally appealing" stimulus.

Despite a relatively lower value on discreteness, an aspect tangential to this study's focus, the current research demonstrates the applicability of the PFQ in validating emotionally appealing videos designed to elicit targeted emotions. In essence, this study showcases that the video is not only acceptable but also well-suited for use as a stimulus in subsequent research endeavours. Through a carefully orchestrated process, the video emerges as a potent tool, encapsulating a comprehensive blend of emotional appeal and purposeful content for multifaceted investigations.

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6 ANALYSIS AND RESULTS

6.1 CHAPTER INTRODUCTION

As the carefully designed WCC video is validated in Chapter 5, the next logical step is to incorporate it into the research strategy as a stimulus. Hence, the participants' reactions are centred around this thoughtfully designed WCC content, forming the foundation for the exploration of emotions and their elaborate effects. This research phase spanned from November 2022 to February 2023 for data collection. Now equipped with the collected data, the subsequent phase involves a rigorous analysis process. Consequently, this chapter serves to present the analysis and results, encompassing a thorough assessment of the gathered data.

A collection of 463 responses forms the raw data. A subset of the final respondents plays a pivotal role in the Exploratory Factor Analysis (EFA), a segment dissected in detail within Section 6.2. Section 6.3 then delves into this raw data presenting the data collection process, to cleansing, and ultimately leading to the preparation of the final dataset – presented in Section 6.4. In this study, the analysis phase, as delineated in Chapter 4, has three distinct segments, each contributing to the multifaceted understanding of the study's underpinnings:

1. Framework Validation;
2. Moderation Analysis;
3. Multigroup Analysis (MGA).

The first phase revolves around validating the conceptual framework using Structural Equation Modeling (SEM). This analytical approach involves the rigorous Confirmatory Factor Analysis (CFA) to assess reliability and validity (Section 6.5). Section 6.6 presents a comparative analysis of

measures derived from data collected through social media platforms and SurveyCircle. Following this, Section 6.7 delves into the common method bias analysis. In Section 6.8, the structural model assessment is detailed, including model fit assessment, path coefficient estimation, and squared multiple correlation estimation. These analyses collectively address RQ 1 and RQ 2 by validating the conceptual framework using Structural Equation Modeling (SEM).

The analysis proceeds into its second phase with a focus on mediation analysis, aimed at answering RQ 3. This phase employs sophisticated bootstrapping techniques via AMOS to illuminate the intricate role of emotional appeal as a mediator. The implications of this analysis are thoroughly examined in Section 6.9. The final phase of the analysis focuses on the Multigroup Analysis (MGA) to answer RQ 4 (Section 6.10). Within this segment, the influence of demographic variables particularly gender, age, habit, level of awareness, and billpayer status are observed, with a specific focus on the intricate relationship involving the emotional appeal variable. Finally, Section 6.11 provides the summary of this chapter.

6.2 Exploratory Factor Analysis (EFA)

The results show that all communalities were over .50 except for three items: CRD4 - *The person providing the video (content creator) appeared to be a NON-expert on this topic;* CRE1 - *This video is original and unexpected,* and AWC1 - *I believe it is important to conserve water; it is important to always conserve water to avert water shortages*. However, at this phase, the researcher decided not to proceed with any deletion as it did not seem to affect the expected results.

A further important step involved weighing the overall significance of the correlation matrix through Bartlett's Test of Sphericity, which provides a measure of the statistical probability that the correlation matrix has significant correlations among some of its components. The results were significant, $\chi^2(n = 153) = 11932.886$ $(p < .001)$, which indicates its suitability for factor analysis. The Kaiser–Meyer–Olkin's Measure of Sampling Adequacy (MSA), which indicates the appropriateness of the data for factor analysis, was .861. It is important to note that data with MSA values above .80 are considered appropriate for factor analysis. Finally, the factor solution derived from this analysis yielded ten factors for the scale, which accounted for 66.598 per cent of the variation in the data.

Nonetheless, in this initial EFA, one item, i.e.CRD4 -*The person providing the video (content creator) appeared to be a NON-expert on this topic*, has failed to load on any dimension significantly. Hence, the item may be considered to be removed from further analysis. The researcher then repeated the EFA with the exclusion of CRD4. The Kaiser–Meyer–Olkin MSA was .886 (Appendix E). The three dimensions explained a total of 67.778 per cent of the variance among the items in the study (Appendix F). Bartlett's Test of sphericity proved to be significant. The results show that all communalities were over .50 except for two items (Appendix G), however, at this phase, the researcher decided not to proceed with any deletion as it does not seem to affect the expected results. The ten factors identified as part of this EFA aligned with the theoretical proposition in this research (Appendix H).

6.3 DATA CLEANING

The data cleaning process was a crucial step in ensuring the quality of the study's dataset for analysis. The researcher began by identifying and addressing instances where participants might not have fully engaged with the study, known as "reluctant cases". These could include rushed or inconsistent responses, which the researcher partly tackled by asking additional questions to confirm participant engagement. The researcher also examined missing data patterns to prevent biases, deciding whether to exclude cases or use techniques like mean substitution based on the extent and distribution of missing data.

Furthermore, the researcher paid close attention to multivariate outliers, using methods like Mahalanobis distance to detect and manage them. Interestingly, the researcher found that reluctant cases often overlapped with instances of missing data and outliers. Through this process, the researcher removed 20 cases, mostly due to participant reluctance and inadequate engagement with the video content. Overall, the thorough data-cleaning approach ensured the reliability and validity of the findings for analysis in the study.

6.4 MAIN STUDY: DATA

A total of 443 responses were finalised for the analysis stage. Table 6.1 below summarises the socio-demographic background. From social media platforms, 206 respondents were obtained,

comprising 42.7% male, 52.4% female, and 4.9% others. In terms of age, the distribution was as follows: 47.6% aged 18-24, 20.9% aged 25-34, 18.9% aged 35-44, 8.3% aged 45-54, 3.9% aged 55-64, and .5% aged 65 and over. From SurveyCircle, 237 respondents were gathered, with 41.4% male, 56.5% female, and 2.1% others. The age distribution for SurveyCircle respondents was: 63.3% aged 18-24, 21.1% aged 25-34, 11.4% aged 35-44, 3.8% aged 45-54, and .4% aged 55-64, with no respondents aged 65 and over.

Table 6.1. Socio-demographic background. The table summarises the proportion of responses based on gender, age, ethnicity and language.

Gender	42 % male; 54.6 % female; 3.4 % others.
Age	• 56.0 % between 18 to 24 years old; • 21 % between 25 to 34 years old; • 14.9 % between 35 to 44 years old; • 5.9 % between 55 to 64 years old; • 0.2% 65 years old and over.
Ethnicity	• 50.6 % White: British • 2.7 % White: Irish • 21 % White: Any other White background • 0.9 % Mixed: White and Black Caribbean • 0.9 % Mixed: White and Black African • 2 % Mixed: White and Asian • 2.7 % Mixed: Any other Mixed background • 5.4 % Asian or Asian British: Indian • 3.4 % Asian or Asian British: Pakistani • 0.9% Asian or Asian British: Bangladeshi • 2 % Asian or Asian British: Chinese • 3.2 % Asian or Asian British: Any other Asian background • 0.9 % Black or Black British: Caribbean • 1.8 % Black or Black British: African • 0.5 % Black or Black British: Any other Black background • 1.1 % Other
Main language	English: 94.8 %; Chinese: 0.2 %; Arabic: 0.7 %; Other: 4.3 %

6.5 Confirmatory Factor Analysis (CFA)

6.5.1 Model Estimation

In this phase, the observed variables are modelled as indicators of one or more underlying latent factors, and the model is evaluated based on how well it explains the observed correlations between the indicators as shown in Figure 6.1 below.

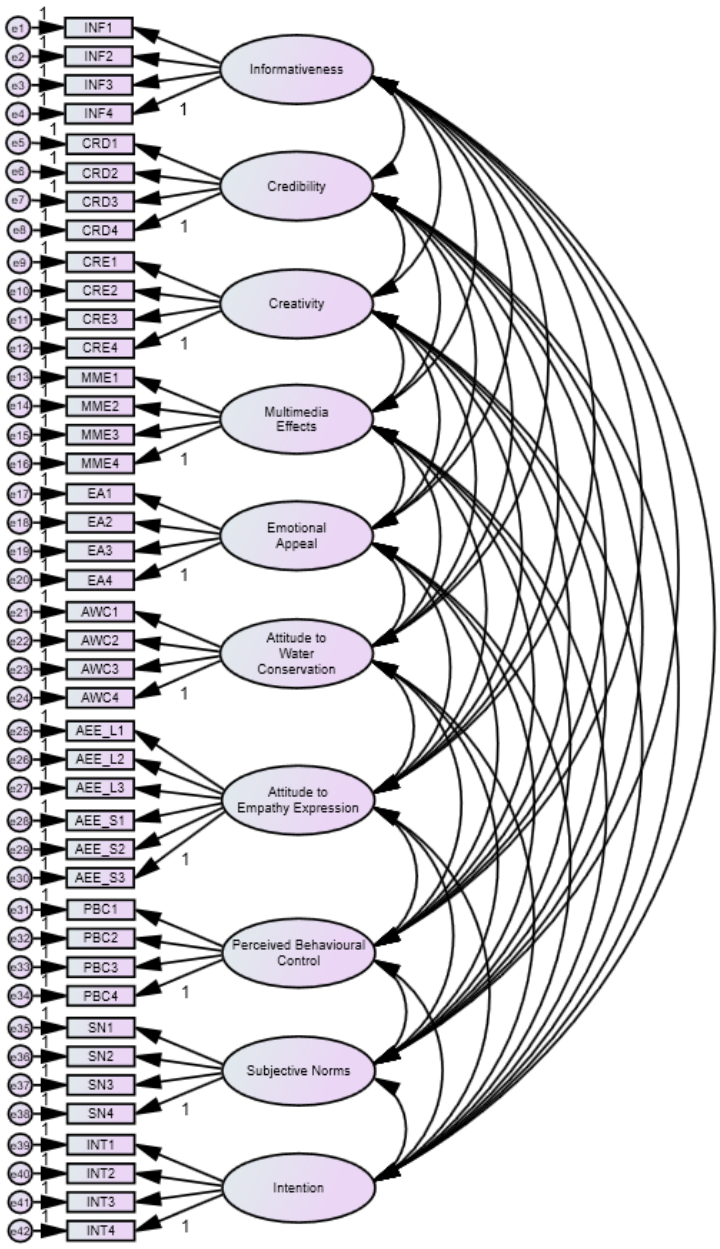

Figure 6.1. CFA model version 1. Mapping Observed Variables to Latent Variables - INF: Informativeness (INF1-4), CRD: Credibility (CRD1-4), EA: Emotional Appeal (EA1-4), CRE: Creativity (CRE1-4), MME: Multimedia Effects (MME1-4), AWC: Attitudes towards Water Conservation (AWC1-4), AEE: Attitudes towards Empathy Expressions (AEE_L1-3 and AEE_S1-3), PBC: Perceived Behavioural Control (PBC1-4), SN: Subjective Norms (SN1-4), INT: Intention (INT1-4). Note:. CRD4 is kept initially despite failing to load in the EFA.

The researcher then proceeded with model estimation and found negative standardised factor loadings. At this stage, the researcher observed the consistency between negative factor loadings and the existence of negative coded questions in the group shown in Table 6.2 below. Negative questions can cause problems with factor loadings in SEM, even after reversing and recoding the scores (Asnawi et al., 2012). This is because negative questions may tap into different aspects of the construct being measured than positive questions. Since negative questions are included in between positive questions, it is possible that respondents only read some part of the questions (Brosnan et al., 2019). If a negatively worded question measures a different aspect of the construct than the positively worded questions, it may load on a different factor or have a weaker relationship with the latent construct. This can result in strange or unexpected factor loadings, which can reduce the validity of the model.

Table 6.2. Standardised Regression Weights for CFA model version 1. Negative factor loadings on credibility, intention and attitude to empathy expression (shares). Note: INF: Informativeness (INF1-4), CRD: Credibility (CRD1-4), EA: Emotional Appeal (EA1-4), CRE: Creativity (CRE1-4), MME: Multimedia Effects (MME1-4), AWC: Attitudes towards Water Conservation (AWC1-4), AEE: Attitudes towards Empathy Expressions (AEE_L1-3 and AEE_S1-3), PBC: Perceived Behavioural Control (PBC1-4), SN: Subjective Norms (SN1-4), INT: Intention (INT1-4).

			Estimate
INF4	<---	INF	.882
INF3	<---	INF	.834
INF2	<---	INF	.863
INF1	<---	INF	.801
CRD4	<---	CRD	.195
CRD3	<---	CRD	-.897
CRD2	<---	CRD	-.911
CRD1	<---	CRD	-.751
CRE4	<---	CRE	.825
CRE3	<---	CRE	.738
CRE2	<---	CRE	.623
CRE1	<---	CRE	.650
MME4	<---	MME	.814
MME3	<---	MME	.790
MME2	<---	MME	.806
MME1	<---	MME	.691
EA4	<---	EA	.822
EA3	<---	EA	.894
EA2	<---	EA	.906
EA1	<---	EA	.840

Credibility
The factor loadings for CRD1, CRD2, CRD3 are negative

			Estimate
AWC4	<---	AWC	.834
AWC3	<---	AWC	.770
AWC2	<---	AWC	.769
AWC1	<---	AWC	.702
AEE_L3	<---	AEE	-.957
AEE_L2	<---	AEE	-.980
AEE_L1	<---	AEE	-.977
PBC4	<---	PBC	.895
PBC3	<---	PBC	.655
PBC2	<---	PBC	.734
PBC1	<---	PBC	.821
SN4	<---	SN	.942
SN3	<---	SN	.961
SN2	<---	SN	.634
SN1	<---	SN	.491
INT4	<---	INT	.518
INT3	<---	INT	-.973
INT2	<---	INT	-.962
INT1	<---	INT	-.919
AEE_S1	<---	AEE	-.589
AEE_S2	<---	AEE	-.682
AEE_S3	<---	AEE	.420

Intention
The factor loadings for INT1, INT2, INT3 are negative

Attitude to Empathy Expression
The factor loadings for S1 and S2 are negative

After careful consideration, the researcher decided to remove CRD4, AEE_S3 and INT4 (negative coded questions in the survey). The researcher then estimated the CFA model and assessed the factor loadings (Figure 6.2).

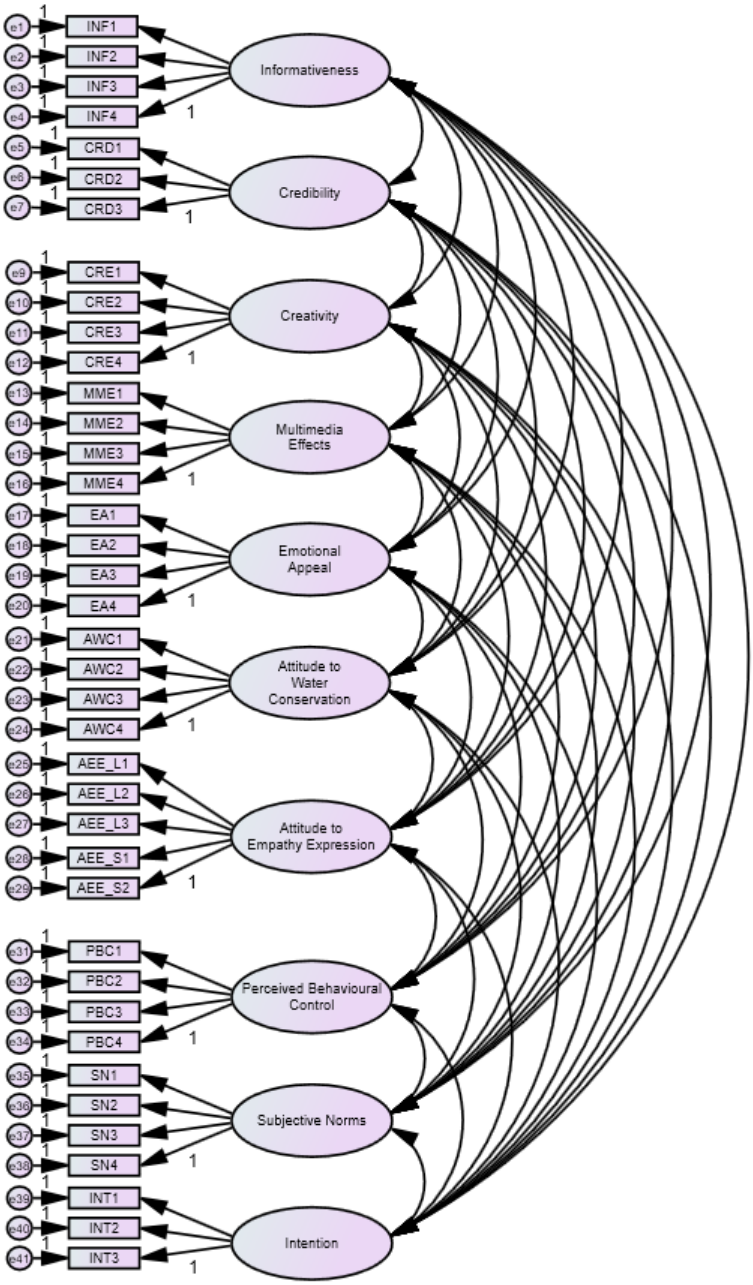

Figure 6.2. CFA model version 2. Mapping Observed Variables to Latent Variables - INF: Informativeness (INF1-4), CRD: Credibility (CRD1-3), EA: Emotional Appeal (EA1-4), CRE: Creativity (CRE1-4), MME: Multimedia Effects (MME1-4), AWC: Attitudes towards Water Conservation (AWC1-4), AEE: Attitudes towards Empathy Expressions (AEE_L1-3 and AEE_S1-2), PBC: Perceived Behavioural Control (PBC1-4), SN: Subjective Norms (SN1-4), INT: Intention (INT1-3). Note: Without the inclusion of CRD4, AEE_S3 and INT4.

The researcher further removed one observed variable of subjective norms – SN1 - *I feel like there is a social pressure to save water around the house and in my home landscape,* as the factor loading was below .50. The factor loadings for CFA model version 2 are shown in Table 6.3 below.

Table 6.3. Standardised Regression Weights for CFA model version 2. Note: INF: Informativeness (INF1-4), CRD: Credibility (CRD1-3), EA: Emotional Appeal (EA1-4), CRE: Creativity (CRE1-4), MME: Multimedia Effects (MME1-4), AWC: Attitudes towards Water Conservation (AWC1-4), AEE: Attitudes towards Empathy Expressions (AEE_L1-3 and AEE_S1-2), PBC: Perceived Behavioural Control (PBC1-4), SN: Subjective Norms (SN1-4), INT: Intention (INT1-3). SN1 has a factor loading below .5.

			Estimate
INF4	<---	INF	.882
INF3	<---	INF	.833
INF2	<---	INF	.863
INF1	<---	INF	.801
CRD3	<---	CRD	.897
CRD2	<---	CRD	.911
CRD1	<---	CRD	.750
CRE4	<---	CRE	.825
CRE3	<---	CRE	.738
CRE2	<---	CRE	.622
CRE1	<---	CRE	.650
MME4	<---	MME	.814
MME3	<---	MME	.790
MME2	<---	MME	.806
MME1	<---	MME	.691
EA4	<---	EA	.822
EA3	<---	EA	.894
EA2	<---	EA	.906
EA1	<---	EA	.840

			Estimate	
AWC4	<---	AWC	.834	
AWC3	<---	AWC	.770	
AWC2	<---	AWC	.769	
AWC1	<---	AWC	.702	
AEE_L3	<---	AEE	.957	
AEE_L2	<---	AEE	.980	
AEE_L1	<---	AEE	.977	
PBC4	<---	PBC	.895	
PBC3	<---	PBC	.655	
PBC2	<---	PBC	.734	
PBC1	<---	PBC	.821	
SN4	<---	SN	.942	
SN3	<---	SN	.961	
SN2	<---	SN	.634	
SN1	<---	SN	.491	→ Factor loading below 0.5
INT3	<---	INT	.974	
INT2	<---	INT	.962	
INT1	<---	INT	.919	
AEE_S1	<---	AEE	.587	
AEE_S2	<---	AEE	.680	

Figure 6.3 below shows the pooled CFA model after SN1 has been removed and Table 6.4 shows its standardised regression weight.

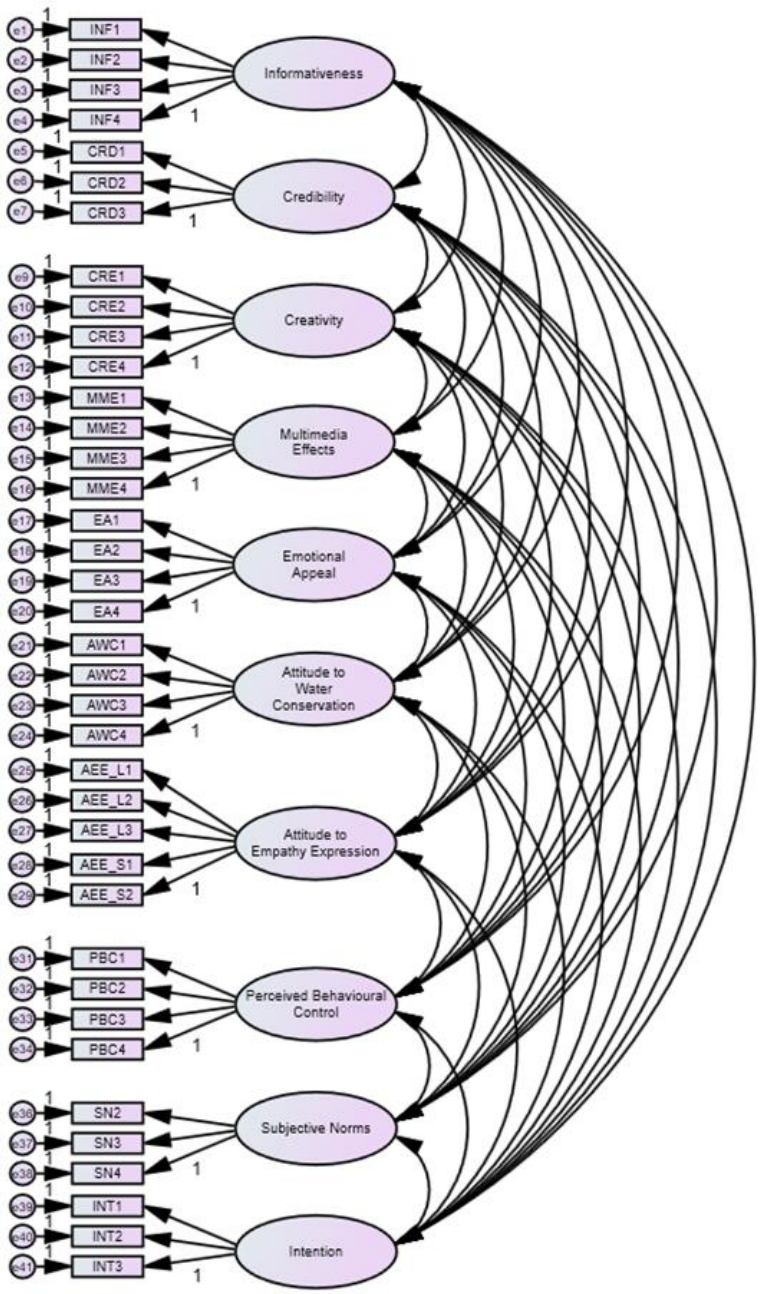

Figure 6.3. CFA model version 3. Mapping Observed Variables to Latent Variables - INF: Informativeness (INF1-4), CRD: Credibility (CRD1-3), EA: Emotional Appeal (EA1-4), CRE: Creativity (CRE1-4), MME: Multimedia Effects (MME1-4), AWC: Attitudes towards Water Conservation (AWC1-4), AEE: Attitudes towards Empathy Expressions (AEE_L1-3 and AEE_S1-2), PBC: Perceived Behavioural Control (PBC1-4), SN: Subjective Norms (SN2-4), INT: Intention (INT1-3). Note: Without the inclusion of CRD4, AEE_S3, INT4 and SN1.

Table 6.4. Standardised Regression Weights for CFA model version 3. INF: Informativeness (INF1-4), CRD: Credibility (CRD1-3), EA: Emotional Appeal (EA1-4), CRE: Creativity (CRE1-4), MME: Multimedia Effects (MME1-4), AWC: Attitudes towards Water Conservation (AWC1-4), AEE: Attitudes towards Empathy Expressions (AEE_L1-3 and AEE_S1-2), PBC: Perceived Behavioural Control (PBC1-4), SN: Subjective Norms (SN2-4), INT: Intention (INT1-3). Note: At this stage, all factor loadings achieved the required level.

			Estimate
INF4	<---	INF	.882
INF3	<---	INF	.833
INF2	<---	INF	.863
INF1	<---	INF	.801
CRD3	<---	CRD	.897
CRD2	<---	CRD	.911
CRD1	<---	CRD	.750
CRE4	<---	CRE	.825
CRE3	<---	CRE	.738
CRE2	<---	CRE	.623
CRE1	<---	CRE	.651
MME4	<---	MME	.814
MME3	<---	MME	.790
MME2	<---	MME	.806
MME1	<---	MME	.691
EA4	<---	EA	.822
EA3	<---	EA	.894
EA2	<---	EA	.906
EA1	<---	EA	.840

			Estimate
AWC4	<---	AWC	.834
AWC3	<---	AWC	.770
AWC2	<---	AWC	.769
AWC1	<---	AWC	.702
AEE_L3	<---	AEE	.957
AEE_L2	<---	AEE	.980
AEE_L1	<---	AEE	.977
PBC4	<---	PBC	.895
PBC3	<---	PBC	.655
PBC2	<---	PBC	.734
PBC1	<---	PBC	.821
SN4	<---	SN	.941
SN3	<---	SN	.965
SN2	<---	SN	.625
INT3	<---	INT	.974
INT2	<---	INT	.962
INT1	<---	INT	.919
AEE_S1	<---	AEE	.587
AEE_S2	<---	AEE	.680

6.5.2 Preliminary Model Fit Assessment

All the indices indicated a good fit between the hypothesised model and the observed data ($\chi 2/df$ = 3.009, RMSEA = .067; IFI = .915; CFI = .914; TLI = .903; SRMR = .0578). The overall initial fit for the measurement model was acceptable according to conventional cutoff criteria (Bentler, 1990; Hair et al., 2019; Hooper et al., 2008; Kline, 2005; Meyers et al., 2005; Tucker & Lewis, 1973).

6.5.3 Re-Specify the Model to Improve Model Fit

The researcher then re-specify the model to improve the model fit. This involves examining the factor covariances, and error variances estimated by the model, and making inferences about the underlying latent factors and their relationship to the observed variables. The researcher improved the model fitness as suggested by AMOS 24.0 (Table 6.5). Here, the researcher checked for modification indices. However, the researcher needs to be cautious as not every suggested covariance shall be followed (Latif, 2021).

Table 6.5. Modification indices suggested by AMOS 24.0. Showing Modification Indices (MI) and Parameter Change (Par Change). Error terms (denoted as e) represent the discrepancy between observed and predicted values of a variable in the model. They capture all factors that influence the observed variable but are not explicitly included in the model.

			M.I.	Par Change
e33	<-->	e32	75.664	.287
e29	<-->	AEE	32.949	-.178
e29	<-->	e28	180.093	.791
e20	<-->	e17	41.563	.230
e10	<-->	e9	63.145	.395

All the indices indicated an even better fit between the hypothesised model and the observed data (χ^2/df = 2.329, RMSEA = .055; IFI = .944; CFI = .944; TLI = .936; SRMR = .0555). The overall initial fit for the measurement model was acceptable according to conventional cutoff criteria (Bentler, 1990; Hair et al., 2019; Hooper et al., 2008; Kline, 2005; Meyers et al., 2005; Tucker & Lewis, 1973). Figure 6.4 below shows the error covariances between e32 and e33, e28 and e29, e17 and e20, and e9 and e10.

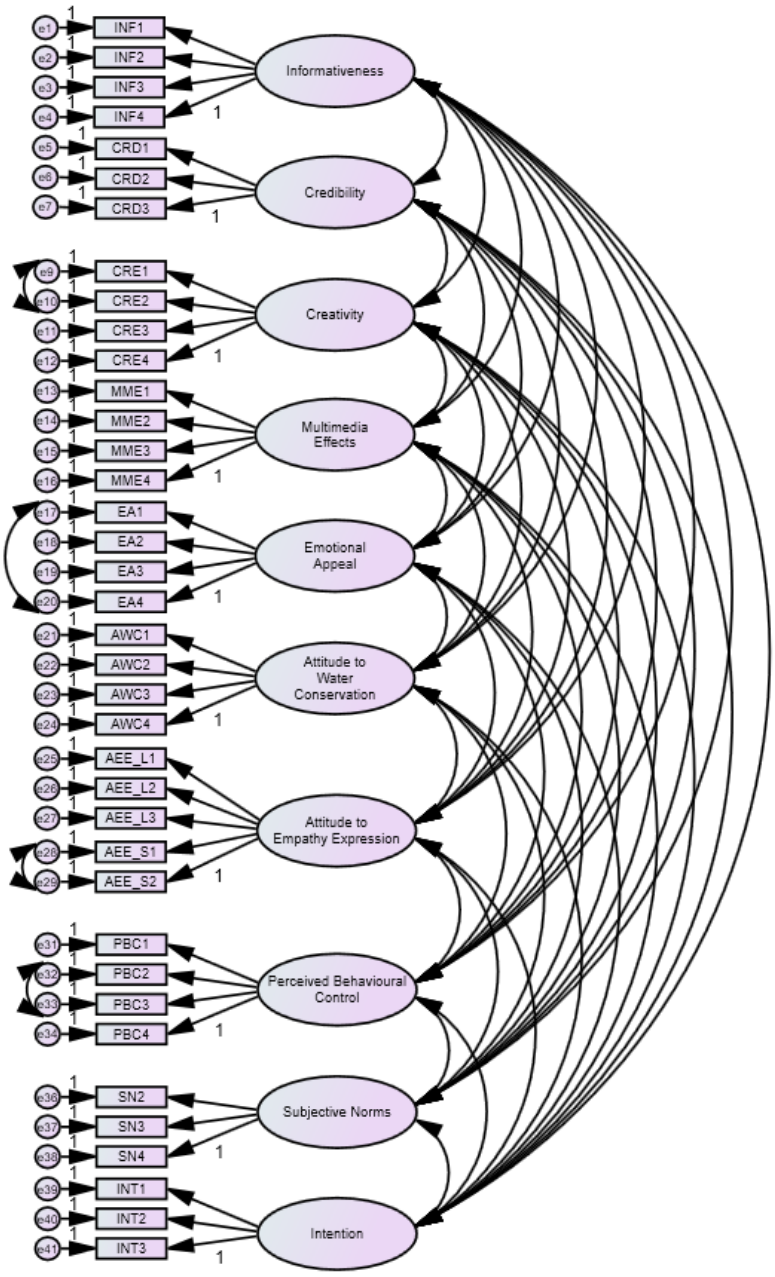

Figure 6.4. CFA model version 4. Mapping Observed Variables to Latent Variables - INF: Informativeness (INF1-4), CRD: Credibility (CRD1-3), EA: Emotional Appeal (EA1-4), CRE: Creativity (CRE1-4), MME: Multimedia Effects (MME1-4), AWC: Attitudes towards Water Conservation (AWC1-4), AEE: Attitudes towards Empathy Expressions (AEE_L1-3 and AEE_S1-2), PBC: Perceived Behavioural Control (PBC1-4), SN: Subjective Norms (SN2-4), INT: Intention (INT1-3). Note: Covariances of error terms (denoted as e): Credibility e9 and e10; emotional appeal e17 and e20; attitude to empathy expression e28 and 29; perceived behavioural control e32 and e33.

6.5.4 Reliability and Validity Assessment

Finally, in the CFA phase, the researcher performed a construct reliability and validity assessment for the measurement model. The reliability of the constructs was assessed using the AMOS 24.0 extension. Initially, there was a validity concern as the Average Variances Extracted (AVE) was less than .50. CRE2 was further removed as suggested by AMOS to enhance AVE. The final CFA model is depicted in Figure 6.5.

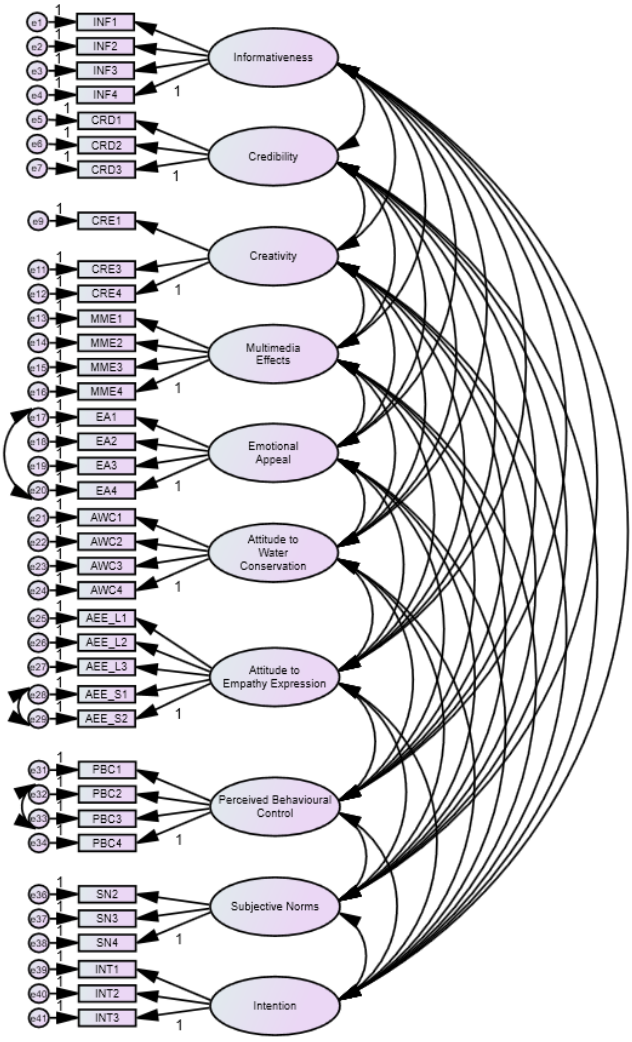

Figure 6.5. Finalised CFA model. Mapping Observed Variables to Latent Variables - INF: Informativeness (INF1-4), CRD: Credibility (CRD1-3), EA: Emotional Appeal (EA1-4), CRE: Creativity (CRE1,3-4), MME: Multimedia Effects (MME1-4), AWC: Attitudes towards Water Conservation (AWC1-4), AEE: Attitudes towards Empathy Expressions (AEE_L1-3 and AEE_S1-2), PBC: Perceived Behavioural Control (PBC1-4), SN: Subjective Norms (SN2-4), INT: Intention (INT1-3). Note: CRE2 was removed in order to improve AVE.

All the indices indicated an even better fit between the hypothesised model and the observed data (χ^2/df = 2.300, RMSEA = .054; IFI = .947; CFI = .947; TLI = .939; SRMR = .0543). The researcher then re-assessed the reliability and validity of the measures. Composite Reliability (CR) values are between .778 and .967, all exceeding the .70 threshold (Fornell & Larcker, 1981). Therefore, the constructs used in this study represented acceptable reliability. Next, convergent validity and discriminant validity were tested. Convergent validity was assessed by examining the factor loadings of each observed variable. All factor loadings are significant and exceed the recommended .50 threshold (Hair et al., 2019). Convergent validity was further assessed by examining CR and AVE values. CR values were above .70 and AVE values were above .50, indicating that both CR and AVE values exceeded the corresponding cutoff criteria (Hair et al., 2019). CR values of the constructs and AVE values (ranging from .544 to .906) demonstrated fair convergent validity (Table 6.6). Furthermore, the square root of AVE obtained for each construct was larger than the correlation of the construct with each of the remaining constructs, confirming discriminant validity (Fornell & Larcker, 1981). Therefore, convergent and discriminant validity as well as reliability proved to be adequate for the measurement model.

Table 6.6. Model reliability and validity measures. Abbreviations Explanation - INF: Informativeness, CRD: Credibility, CRE: Creativity, MME: Multimedia Effects, EA: Emotional Appeal, AWC: Attitudes towards Water Conservation, AEE: Attitudes towards Empathy Expressions, PBC: Perceived Behavioural Control, SN: Subjective Norms, INT: Intention. CR: Composite Reliability, AVE: Average Variance Extracted, MSV: Maximum Shared Variance, MaxR(H): Maximum Redundancy. Note: Showing no reliability and validity concerns.

	CR	AVE	MSV	MaxR(H)	INF	CRD	CRE	MME	EA	AWC	AEE	PBC	SN	INT
INF	0.909	0.715	0.449	0.913	**0.845**									
CRD	0.891	0.733	0.380	0.912	0.580***	**0.856**								
CRE	0.778	0.544	0.464	0.818	0.557***	0.616***	**0.737**							
MME	0.858	0.603	0.351	0.865	0.467***	0.502***	0.592***	**0.777**						
EA	0.917	0.735	0.464	0.931	0.670***	0.608***	0.681***	0.405***	**0.857**					
AWC	0.853	0.593	0.460	0.860	0.453***	0.292***	0.423***	0.411***	0.462***	**0.770**				
AEE	0.926	0.724	0.443	0.983	0.586***	0.504***	0.612***	0.390***	0.666***	0.531***	**0.851**			
PBC	0.849	0.590	0.338	0.893	0.384***	0.280***	0.255***	0.310***	0.338***	0.581***	0.362***	**0.768**		
SN	0.890	0.736	0.320	0.956	0.313***	0.183***	0.195***	0.118*	0.385***	0.563***	0.419***	0.467***	**0.858**	
INT	0.967	0.906	0.460	0.973	0.386***	0.321***	0.427***	0.281***	0.556***	0.678***	0.569***	0.503***	0.566***	**0.952**

6.6 Comparative Analysis of Measures: Social Media vs. SurveyCircle Responses

Given the requirement of a large sample size for Structural Equation Modeling (SEM), it is common practice to gather data from multiple sources. In this study, data was collected from two distinct sources: social media platforms and SurveyCircle. Measurement model invariance testing is crucial to ascertain whether the factor loadings of indicators in the CFA phase remain consistent across different groups (i.e., participants from social media platforms versus those from SurveyCircle). This is imperative because these differences may unintentionally affect how individuals interpret and react to the indicators being measured in the study.

To address this concern and ensure the validity of the measurements, it is essential to conduct measurement invariance testing. This test evaluates whether the indicators effectively measure the same underlying construct across all groups (Horn & McArdle, 1992). A lack of measurement invariance suggests that the interpretation of the latent construct varies across groups, potentially undermining the comparability of results. In this study, two critical tests were performed to assess measurement invariance. Firstly, the Configural Invariance test examines whether the overall structure of the measurement model remains consistent across groups. Essentially, it evaluates whether the same number of factors adequately represents the data for both groups. Achieving a strong model fit across both groups indicates that the data is invariant from a structural standpoint, allowing for meaningful comparisons.

Additionally, the Metric Invariance test aims to establish the equivalence of the basic meaning of the construct by assessing the factor loadings across groups. By constraining the factor loadings to be equal for each group, the researcher assesses whether the indicators measure the same underlying construct across all groups. The comparison of the change in chi-square between the unconstrained and constrained models helps determine if there are significant differences in the interpretation of the latent construct between groups. Ultimately, a non-significant difference indicates that the latent construct remains consistent across groups, strengthening the validity and reliability of the measurement instruments.

6.6.1 Configural Invariance Test

The measurement model was tested for Configural Invariance across respondents gathered from social media platforms and SurveyCircle platforms. The results indicated a good fit for the Configural Invariance model, supporting the idea that the same latent constructs are being measured across the two groups. The fit indices for the Configural Invariance model were $\chi 2/df = 1.910$, RMSEA = .045; IFI = .929; CFI = .928; TLI = .917; SRMR = .0606, suggesting that the basic structure of the measurement model is consistent between respondents from social media platforms and SurveyCircle platforms.

6.6.2 Metric Invariance Test

Following the confirmation of Configural Invariance, Metric Invariance was assessed to examine whether the factor loadings were equivalent across respondents from social media platforms and SurveyCircle platforms. However, significant differences in factor loadings across the two groups were observed ($p < .05$), indicating potential differences in the characteristics of the user bases or in the recruitment strategies employed. The significant differences in Metric Invariance may indicate potential variations in the meaning of items or differences in how the latent construct is perceived by respondents from social media platforms compared to SurveyCircle platforms.

6.7 COMMON METHOD BIAS (CMB)

Results from the CMB test showed that the most covariance explained by one factor was 34.054 % which was below the 50% threshold, meaning that common method biases are not a severe concern for this study (Podsakoff & Organ, 1986).

6.8 STRUCTURAL MODEL ASSESSMENT (SMA)

The structural model is shown in Figure 6.6

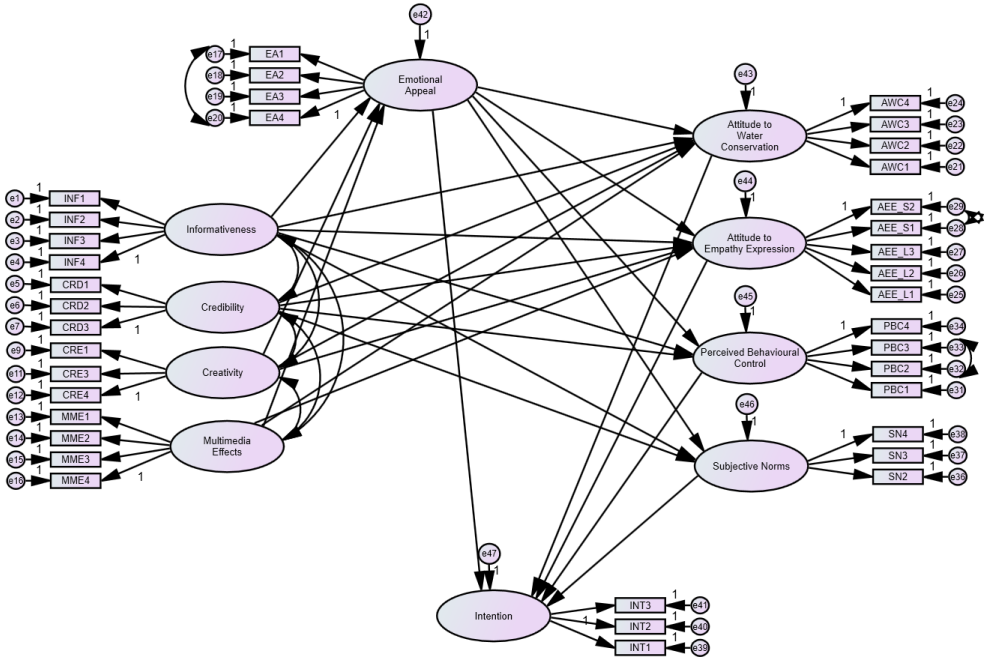

Figure 6.6. Structural Equation Modelling. Path Diagram - Mapping Observed Variables to Latent Variables - INF: Informativeness (INF1-4), CRD: Credibility (CRD1-3), EA: Emotional Appeal (EA1-4), CRE: Creativity (CRE1,3-4), MME: Multimedia Effects (MME1-4), AWC: Attitudes towards Water Conservation (AWC1-4), AEE: Attitudes towards Empathy Expressions (AEE_L1-3 and AEE_S1-2), PBC: Perceived Behavioural Control (PBC1-4), SN: Subjective Norms (SN2-4), INT: Intention (INT1-3). Note: Based on the hypothesised model.

6.8.1 Model Fit Assessment

The resulting indices indicated acceptable model fit (χ^2/df = 2.644, RMSEA = .061; IFI = .931; CFI = .930; TLI = .922; SRMR = .0662) according to conventional cutoff criteria (Bentler, 1990; Kline, 2005; Meyers et al., 2005). Appendix I shows the model fit summary.

6.8.2 Estimating Path Coefficient

Appendix J summarises the results.

Informativeness. The results of the structural model illustrated the vital role of informativeness in determining water consumers' attitudes to water conservation, attitudes toward empathy expression, perceived behavioural control and subjective norms (Figure 6.7). Informativeness (β= .231, p= .002) is found to have a significant positive effect on attitude toward water conservation (H1). Informativeness (β= .221, p<.001) is also found to have a significant positive effect on attitude to empathy expression (H2), perceived behavioural control (β= .295, p<.001) (H3) and subjective norms (β= .172, p=.018) (H4).

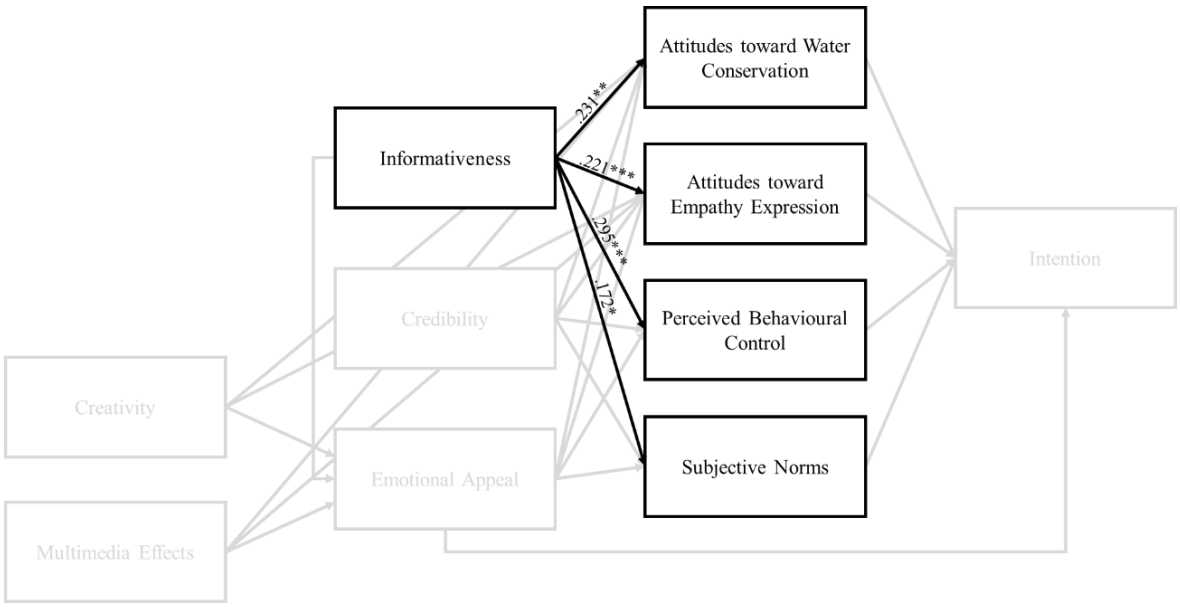

Figure 6.7. Informativeness in the framework. Showing beta values and significance; *p < 0.05; **p < 0.01; ***p < 0.001; ns = non-significant.

Credibility. However for credibility, despite its popularity in the ELM literature, the results of the analysis suggest that there is a statistically significant negative relationship between credibility and attitude to water conservation(β= -.207, p=.004) (H5) and credibility and subjective norms (β= -.158, p=.014) (H8). Contrary to hypotheses H5 and H8, these findings suggest that as credibility increases, attitude to water conservation and subjective norms decrease. Additionally, the hypothesised positive effects of credibility on attitude to empathy expression (β= -.008, p=.879) (H6), as well as perceived behavioural control (β= -.002, p= .974) (H7), were not supported by the data. The results are summarised in Figure 6.8 below.

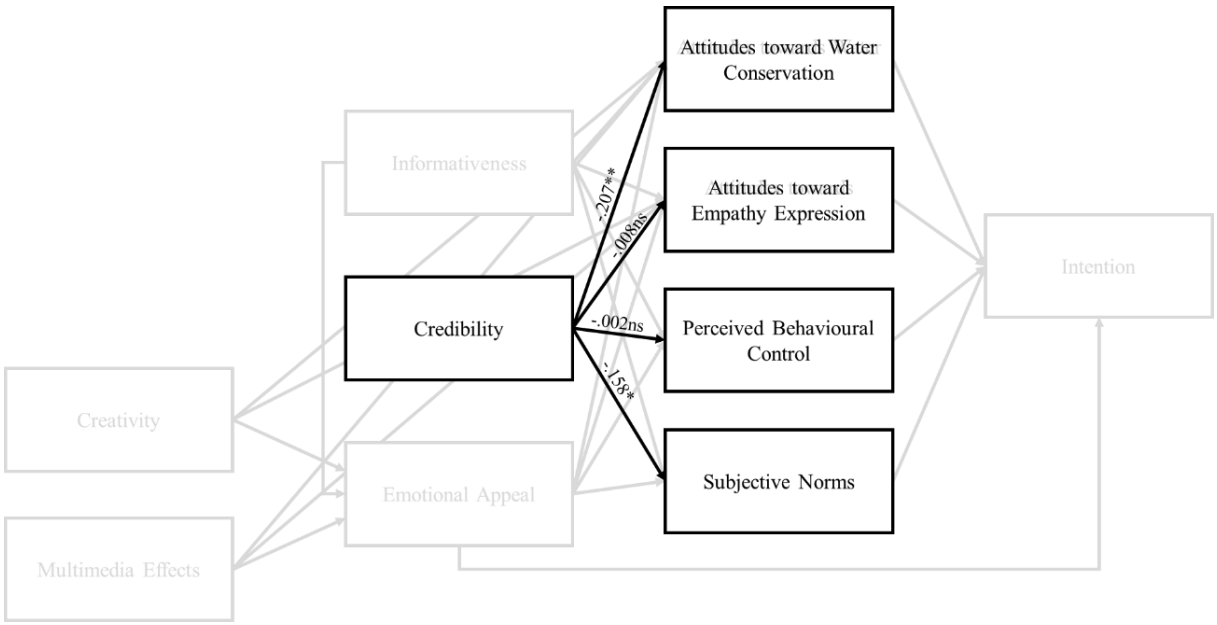

Figure 6.8. Credibility in the framework. Showing beta values and significance; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$; ns = non-significant.

Emotional Appeal. As H9 suggests, emotional appeal (β= .284, p<.001) is found to have a significant positive effect on attitude toward water conservation. Emotional appeal (β= .352, p<.001) is also found to have a significant positive effect on attitude to empathy expression (H10), perceived behavioural control (β= .160, p=.033) (H11) and subjective norms (β= .380, p<.001) (H12). The results are summarised in Figure 6.9 below.

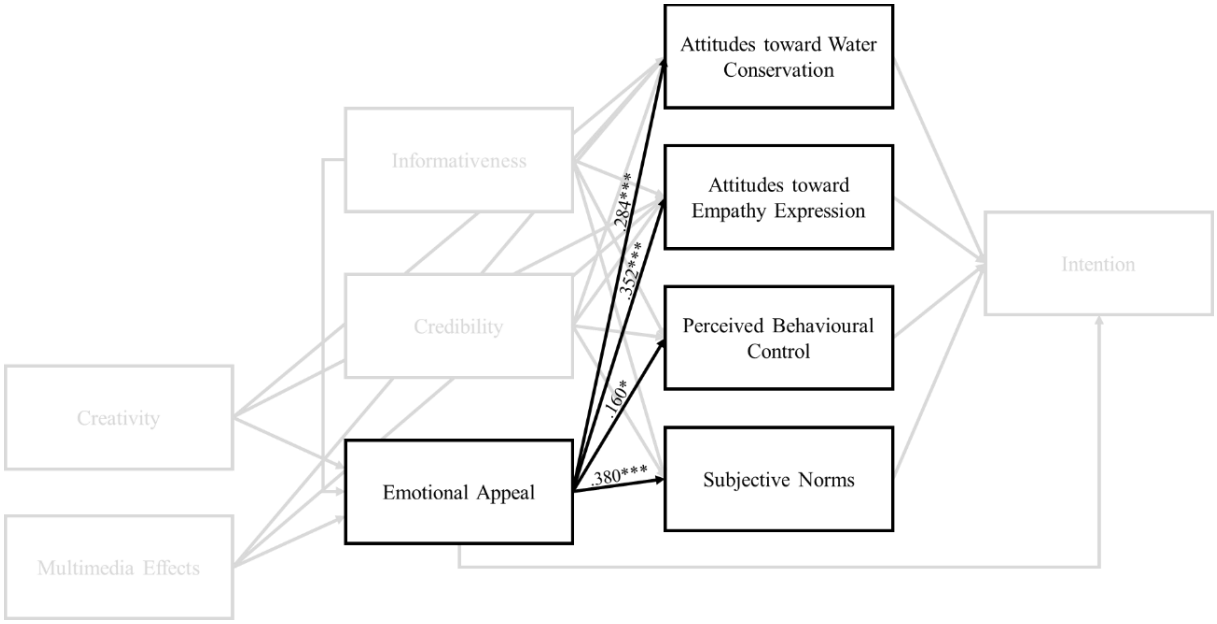

Figure 6.9. Emotional appeal in the framework. Showing beta values and significance; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$; ns = non-significant.

Evoking Emotional Appeal. In predicting emotional appeal, the researcher further analysed the result to see the effects of informativeness, creativity and multimedia effects on emotional appeal (Figure 6.10). Informativeness has a statistically significant positive effect on emotional appeal(β= .434, p< .001), supporting H13. Moreover, H14 is supported as creativity has a statistically significant positive effect on emotional appeal(β=.515, p= .001). However, the regression analysis showed a negative relationship between multimedia effect and emotional appeal (β= -.104, p= .055), suggesting that multimedia may not have a significant positive effect on emotional appeal, thus H15 was not supported. It is important to note that a p-value of .055 is only marginally above the conventional threshold for statistical significance (p< .05).

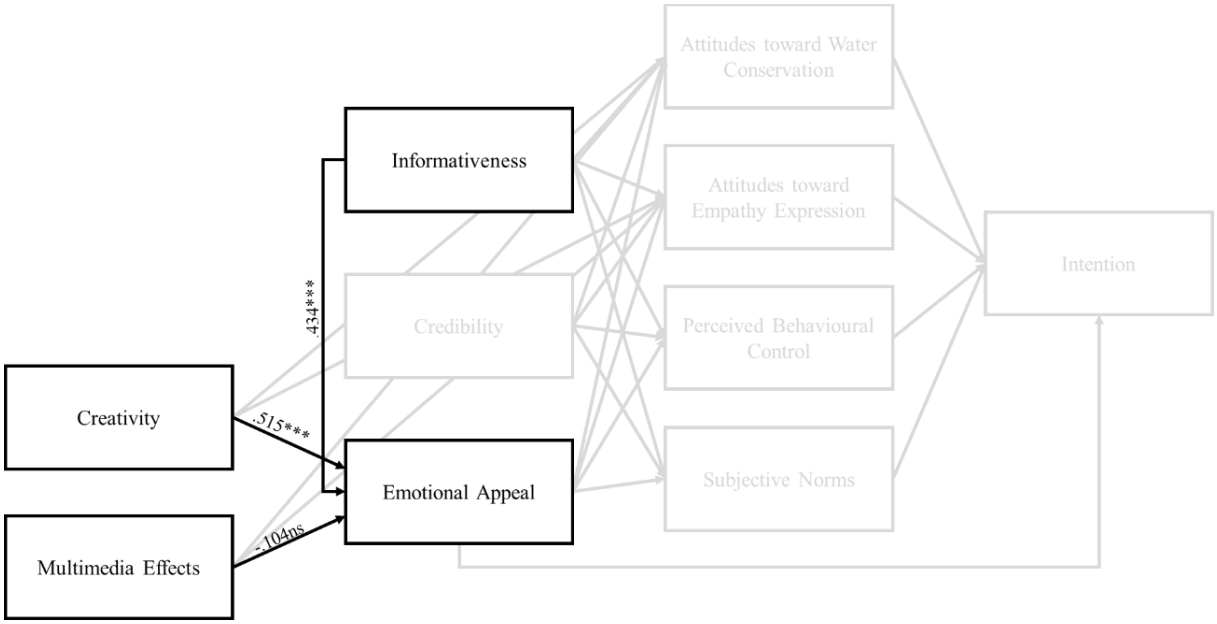

Figure 6.10. Evoking emotional appeal in the framework. Showing beta values and significance; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$; ns = non-significant.

Creativity. In terms of creativity, the analysis revealed the relationship between creativity and attitude to water conservation (H16) was not statistically significant (β= .121, p=.215). The results of the analysis further indicate a significant positive relationship between creativity and attitude to empathy expression (β= .263, p< .001) (H17), suggesting that individuals who score higher on measures of creativity are likely to also exhibit a more positive attitude towards expressing likes and intending to shares. The results are summarised in Figure 6.11 below.

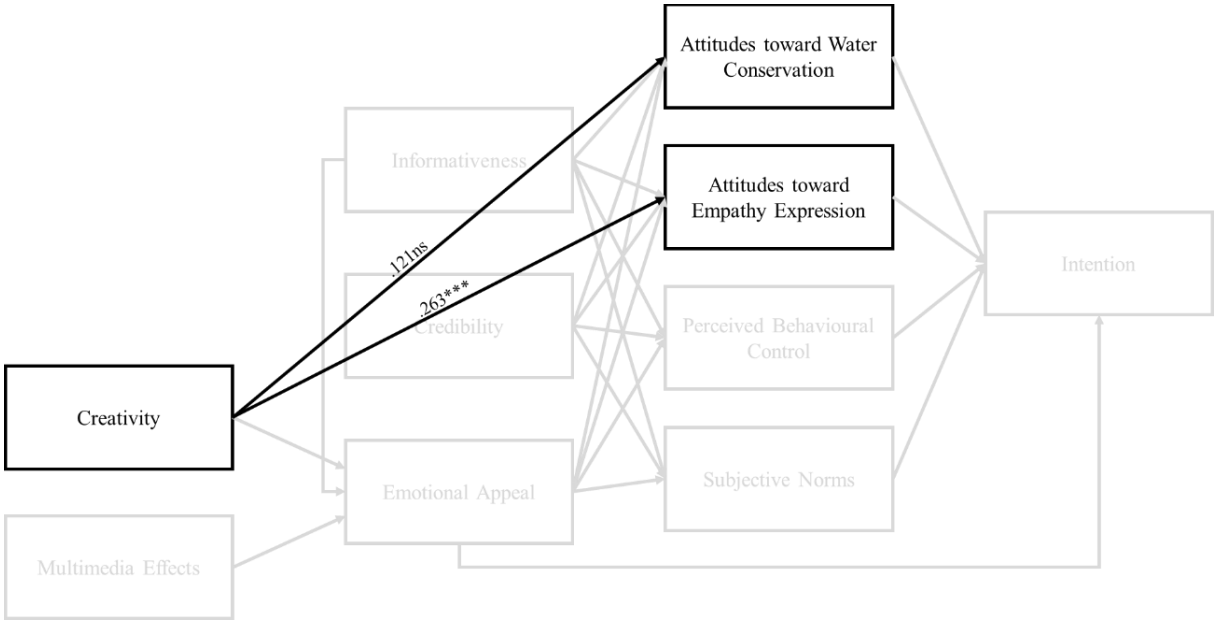

Figure 6.11. Creativity in the framework. Showing beta values and significance; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$; ns = non-significant.

Multimedia Effects. As for the multimedia effects, the regression analysis showed a significant positive relationship between creativity and attitude to water conservation(β= .214, p= .002). This suggests that there is evidence to support H18. The results also indicated that there is no significant effect of multimedia effects on attitude to empathy expression (β= -.003, p= .957). The finding suggests that multimedia effects do not have a meaningful impact on individuals' attitudes towards expressing empathy, hence H19 is not supported. The results are summarised in Figure 6.12 below.

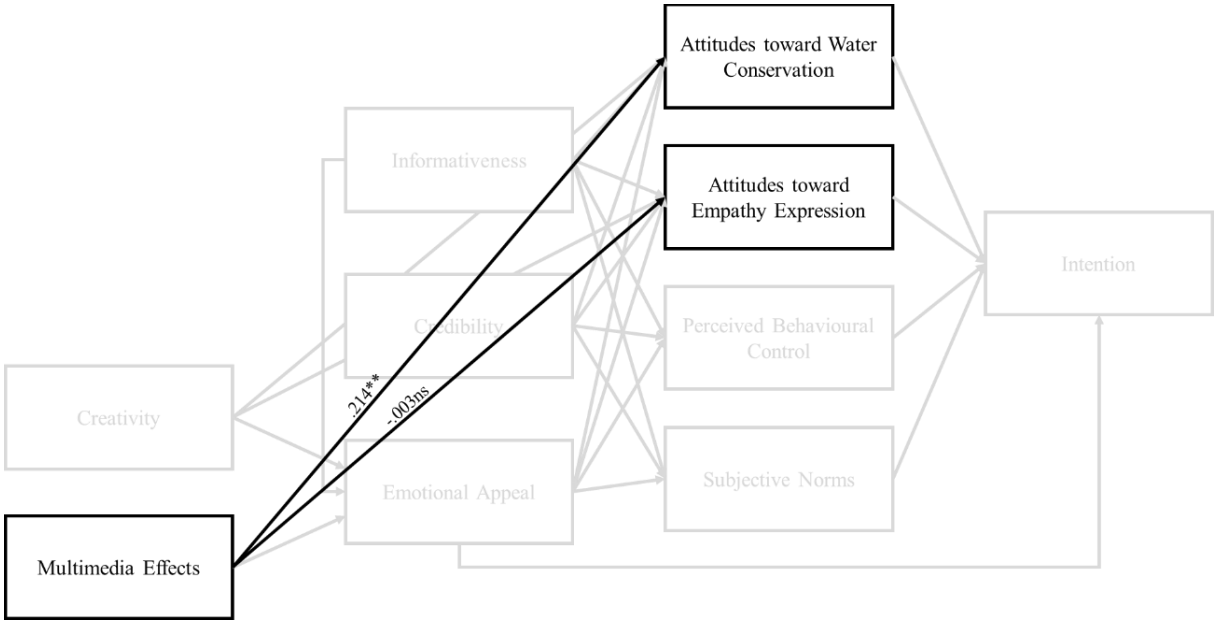

Figure 6.12. Multimedia effects in the framework. Showing beta values and significance - $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$

Intention. In terms of directly predicting the intention to conserve water, attitudes toward water conservation (β= .341, p< .001), attitudes to empathy expression (β= .165, p= .001), perceived behavioural control(β= .117, p= .009) and subjective norms(β= .231, p< .001)are all have a significant positive effect on the intention. Most importantly, emotional appeal has a significant positive effect on intention (β= .182, p< .001). Hence, all H20, H21, H22, H23 and H24 are supported (Figure 6.13).

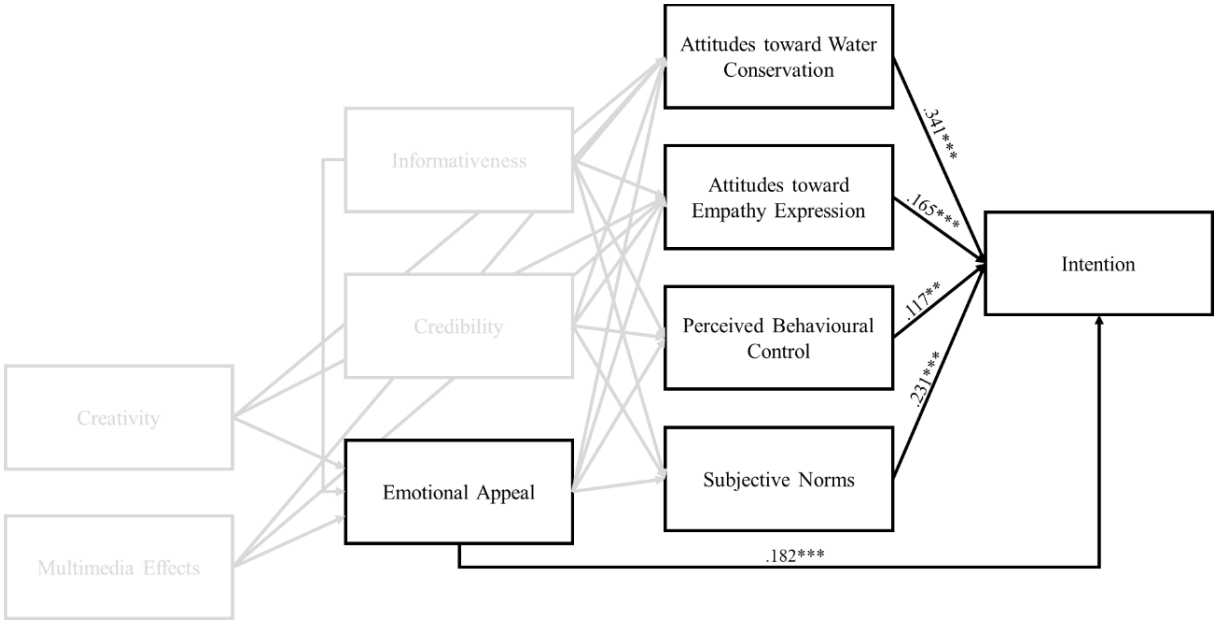

Figure 6.13. Predicting intention in the framework. Showing beta values and significance - $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$

6.8.3 Estimating Squared Multiple Correlations (R^2)

Table 6.7 summarises the coefficients of determination (R^2).

Table 6.7. Coefficients of determination (R^2). Showing all endogenous variables only.

Constructs	Estimate
Attitude to Water Conservation	.335
Attitude to Empathy Expressions	.529
Perceived behavioural control	.175
Subjective Norms	.191
Emotional Appeal	.606
Intention	.535

6.9 MEDIATION ANALYSIS

Appendix K shows the standardised total effects, indirect effects and direct effects. Table 6.8 below summarises the result of the mediation analysis. The results demonstrate that emotional appeal acts as a full mediator in the relationship between informativeness and attitude toward water conservation, as well as between creativity and attitude toward water conservation. Furthermore, emotional appeal is found to serve as a partial mediator in the relationship between informativeness and attitude toward water conservation and the relationship between creativity and attitude toward empathy expression. Additionally, the analysis reveals that emotional appeal establishes a direct relationship between multimedia effects and attitude toward water conservation. However, no significant effect of emotional appeal is observed in the relationship between multimedia effects and attitude toward empathy expression.

Table 6.8. Mediation analysis summary. Summary of mediation analysis with two-tailed significance. Significance is indicated by green, and non-significance by yellow.

Hypothesis/Relationship		Total effect	Indirect Effect	Direct Effect	Conclusion
H26a. Informativeness → Attitude to water conservation	**Estimate**	.354	.123	.231	***Full mediation***
	Lower Bound	.156	.018	-.019	
	Upper Bound	.548	.265	.477	
	P-value	.001	.019	.069	
H26b. Creativity→ Attitude to water conservation	**Estimate**	.267	.146	.121	***Full mediation***
	Lower Bound	.044	.022	-.116	
	Upper Bound	.469	.303	.362	
	P-value	.027	.021	.355	
H26c Multimedia effects → Attitude to water conservation	**Estimate**	.184	-.030	.214	***Direct relationship***
	Lower Bound	.029	-.100	.054	
	Upper Bound	.360	.002	.390	
	P-value	.018	.063	.009	
H26d. Informativeness → Attitude to empathy expression	**Estimate**	.373	.153	.221	***Partial mediation***
	Lower Bound	.221	.058	.049	
	Upper Bound	.510	.266	.371	
	P-value	.001	.007	.014	
H26e. Creativity→ Attitude to empathy expression	**Estimate**	.444	.181	.263	***Partial mediation***
	Lower Bound	.263	.087	.040	
	Upper Bound	.675	.310	.543	
	P-value	.001	.006	.010	
H26f. Multimedia effects → Attitude to empathy expression	**Estimate**	-.039	.-037	-.003	***No relationship***
	Lower Bound	-.183	-.108	-.140	
	Upper Bound	.095	.002	.135	
	P-value	.590	.063	.971	

6.10 MULTIGROUP ANALYSIS

In conducting Multigroup Analysis (MGA), the researcher first categorises respondents into distinct groups to facilitate a comprehensive examination of various factors. Gender focuses exclusively on responses identified as either "men" or "women" while excluding other responses. Age further delineates the groups, dividing respondents into those aged 24 and below and those aged 25 and above, forming categorical distinctions between "younger" and "older" individuals. Water consumption habits and awareness levels are clustered using K-means cluster analysis, a statistical technique that partitions respondents into clusters based on similarities in their water-related behaviours and levels of awareness. This method aids in identifying distinct subgroups within the sample population based on these variables. Moreover, billpayer status serves as another grouping parameter, with responses categorised solely as either "yes" or "no". By systematically organising respondents into these groups, the researcher can conduct the MGA properly, discerning potential differences and patterns across various demographic and behavioural segments. Table 6.9 below summarises the number of samples for each group.

Table 6.9. Number of samples in each group. Note that the total sample for each group may not be 443 as some are excluded to fit the criteria of interest. K-means cluster analysis was used to categorise water usage habits and awareness levels.

Categorical Groups	Sample Size
Gender:	Male: 186 Female: 242
Age:	Younger (18 to 24): 248 Older (25 and above): 195
Water consumption habit:	Water conserver: 241 Non-water conserver: 202
Awareness level:	Aware: 304 Lack of awareness: 139
Billpayer status:	Billpayer: 184 Non-billpayer: 236

6.10.1 Gender

Invariance. Configural Invariance was assessed by specifying the measurement model separately for each group and comparing the models. The factor structure was found to be consistent across

the groups, indicating that the same latent construct was being measured in each group. The fit indices for the Configural Invariance models were acceptable: $\chi^2/df = 1.814$, CFI = .931, TLI = .921, RMSEA = .044. These results suggest that the Configural Invariance model provided an acceptable fit to the data for all groups, indicating that the factor structure was consistent across the groups.

Metric Invariance was assessed by comparing the unconstrained model, where all factor loadings were freely estimated, to the constrained model, where all factor loadings were constrained to be equal across the groups. The fit indices for the unconstrained and constrained models were compared, and the results indicated that the chi-square difference test between the unconstrained and constrained models was significant, $\Delta\chi^2(27) = 50.770$, $p = .004$, indicating that the factor loadings were not invariant across the groups. Therefore, Metric Invariance was not established, suggesting that the construct was measured inconsistently across the groups.

MGA. To test for statistical significance, the researcher compared the fit of the unconstrained model (where the path coefficients and intercepts are free to vary across groups) to the constrained model (where the path coefficients and intercepts are fixed to be equal across groups) using a chi-square difference test. The results have been tabulated in Table 6.10.

Table 6.10. Nested model comparisons for gender (male versus female). The output shows the difference between the constrained and unconstrained models.

DF	CMIN	P	NFI	IFI	RFI	TLI
51	87.956	.001	.006	.006	-.001	-.001

The researcher proceeded to conduct a more in-depth analysis to determine potential variations in the relationships of interest between males and females. The outcomes of this analysis are succinctly summarised in Table 6.11.

Table 6.11. Summary of the difference in the relationship between gender (male versus female). AMOS assumes the model unconstrained to be correct. H26b and H26c are supported.

Relationship between the variables of interest	Results	Moderator	Estimate	P-value	Criteria checked
H26a. Informativeness → emotional appeal	Non-significant	Male Female	.263 .448	.004 <.001	-
H26b. Creativity → emotional appeal	Significant	Male Female	.782 .418	<.001 <.001	Not moderated
H26c. Multimedia effects → emotional appeal	Significant	Male Female	-.249 -0.12	.009 .867	Moderated
H26d. Emotional appeal → intention.	Non-significant	Male Female	.195 .143	.030 .092	-

6.10.2 Age

Invariance. The fit indices for the Configural Invariance models were acceptable: $\chi^2/df = 1.852$, CFI = .932, TLI = .923, RMSEA = .044. These results suggest that the Configural Invariance model provided an acceptable fit to the data for all groups.

For Metric Invariance, the results indicate that the chi-square difference test between the unconstrained and constrained models was non-significant, $\Delta\chi^2(27) = 50.770$, p = .747. Therefore, Metric Invariance was established, suggesting that the construct was measured consistently across the groups.

MGA. The results indicate that there is no significant effect of age on the model (H32) (Table 6.12). Therefore, the researcher decided not to proceed to test H32a, H32b, H32c and H32d.

Table 6.12. Nested model comparisons for age (younger versus older). The output shows the difference between the constrained and unconstrained models.

DF	CMIN	P	NFI	IFI	RFI	TLI
51	54.923	.328	.003	.004	-.003	-.004

6.10.3 Habit

Invariance. The fit indices for the Configural Invariance models were acceptable: $\chi^2/df = 1.871$, CFI = .930, TLI = .919, RMSEA = .044. These results suggest that the Configural Invariance model provided an acceptable fit to the data for both groups, indicating that the factor structure was consistent across the habit groups (good water conservation habit and poor water conservation habit).

The results for Metric Invariance indicate that the chi-square difference test between the unconstrained and constrained models was significant, $\Delta\chi^2(27) = 52.279$, p = .002, indicating that the factor loadings were not invariant across the groups.

MGA. The analysis suggests that there is a significant difference between the two models (water saver versus non-water saver) as summarised in Table 6.13. Nested model comparisons for water usage habit (water conserver and non-water conserver).

Table 6.13. Nested model comparisons for water usage habit (water conserver and non-water conserver). The output shows the difference between the constrained and unconstrained models.

DF	CMIN	P	NFI	IFI	RFI	TLI
51	84.132	.002	.005	.006	-.001	-.002

The researcher conducted a more detailed analysis to determine differences in the relationships of interest between the two groups. The summarised results can be found in Table 6.14 below.

Table 6.14. Summary of the difference in the relationship between good water conservation habits and poor water conservation habits. H28b, H28c, and H28d are supported. 'Good' indicates individuals with pre-existing positive water consumption habits, while 'poor' represents individuals with less favourable water usage habits.

Relationship between the variables of interest	Results	Moderator	Estimate	P-value	Criteria checked
H28a. Informativeness → emotional appeal	Non-significant	Good Poor	.383 .556	<.001 <.001	-
H28b. Creativity → emotional appeal	Significant	Good Poor	.646 .361	<.001 <.001	Not moderated
H28c. Multimedia effects → emotional appeal	Significant	Good Poor	-.218 .018	.010 .795	Moderated
H28d. Emotional appeal → intention.	Significant	Good Poor	.264 .028	<.001 <.001	Not moderated

6.10.4 Level of Awareness

Invariance. The fit indices for the Configural Invariance models were acceptable: $\chi^2/df = 1.912$, CFI = .927, TLI = .917, RMSEA = .045, indicating that the factor structure was consistent across the groups (high awareness level and low awareness level).

The results of Metric Invariance indicate that the chi-square difference test between the unconstrained and constrained models was significant, $\Delta\chi^2(27) = 44.172$, $p = .020$, indicating that the factor loadings were not invariant across the groups. Therefore, Metric Invariance was not established.

MGA. The multi-group analysis suggests that there is a significant difference between the two models (sufficient awareness versus lack of awareness) (H34 was supported) as summarised in Table 6.15.

Table 6.15. Nested model comparisons for water issues awareness (sufficient awareness versus lack of awareness). The output shows the difference between the constrained and unconstrained models.

DF	CMIN	P	NFI	IFI	RFI	TLI
51	132.573	.000	.008	.009	.002	.002

Further analysis of the differences in the relationships is summarised in Table 6.16 below.

Table 6.16. Summary of the difference in the relationship between high awareness level and low awareness level. H29a and H29d are supported. LA stands for low awareness and HA represents high awareness.

Relationship between the variables of interest	Results	Moderator	Estimate	P-value	Criteria checked
H29a. Informativeness → emotional appeal	Significance	LA HA	.354 .641	<.001 <.001	Not moderated
H29b. Creativity → emotional appeal	Non-significance	LA HA	. 544 .452	<.001 <.001	-
H29c. Multimedia effects → emotional appeal	Non-significance	LA HA	-.094 -.154	.148 .078	-
H29d. Emotional appeal → intention.	Significance	LA HA	.110 .423	.081 <.001	Moderated

6.10.5 Billpayer Status

Invariance. The fit indices for the Configural Invariance models were acceptable: $\chi^2/df = 1.876$, CFI = .927, TLI = .916, RMSEA = .046. These indicate that the factor structure was consistent across the groups.

The fit indices for the unconstrained and constrained models were compared to evaluate Metric Invariance, and the results indicate that the chi-square difference test between the unconstrained and constrained models was significant, $\Delta\chi^2(27) = 46.616$, $p = .011$. This suggests that the construct was measured inconsistently across the groups.

MGA. There is a significant difference between the two models (bill payer versus non-bill payer)-summarised in Table 6.17.

Table 6.17. Nested model comparisons for bill payer status (bill payer versus non-bill payer). The output shows the difference between the constrained and unconstrained models.

DF	CMIN	P	NFI	IFI	RFI	TLI
51	100.033	.000	.007	.007	.000	.000

To observe if the emotional appeal is likely to be a strong motivator for both groups, the results of further analysis are summarised in Table 6.18 below.

Table 6.18. Summary of the difference in the relationship between billpayer and non-billpayer. H30b and H30c are supported. 'BP' stands for bill payer and 'NBP' represents non-bill payer.

Relationship between the variables of interest	Results	Moderator	Estimate	P-value	Criteria checked
H30a. Informativeness → emotional appeal	Non-significance	BP NBP	.339 .484	<.001 <.001	-
H30b. Creativity → emotional appeal	Significance	BP NBP	.734 .381	<.001 <.001	Not moderated
H30c. Multimedia effects → emotional appeal	Significance	BP NBP	-.273 .044	.005 .527	Moderated
H30d. Emotional appeal → intention.	Non-significance	BP NBP	.139 .232	.074 .001	-

6.11 CHAPTER SUMMARY

This analysis and result chapter offers a comprehensive overview of the SEM process and its application in the study. The measurement model assesses relationships between indicators and latent variables, using both EFA and CFA, ensuring the reliability and validity of measures. Model fit indicators are favourable. Structural model tests examine relationships among latent variables, assessing statistical significance and model-data fit. Among the initial 24 hypotheses, H1-H4, H9-H14, H17-H18, H20-H24 are supported, H6 and H7 show significant but negative relationships, while H5, H8, H15, H16, and H19 lack support (Table 6.19).

Table 6.19. Summary of the structural model assessment. Examining the relationship between constructs in the model.

	Hypothesis	Outcomes
H1	The informativeness of a water conservation campaign video will be significant and positively associated with attitude toward water conservation.	β= .231, p = .002 Supported (p<.05)
H2	The informativeness of a water conservation campaign video will be significant and positively associated with the attitude toward empathy expression.	β= .221, p <.001 Supported (p<.05)
H3	The informativeness of a water conservation campaign video will be significant and positively associated with perceived behavioural control.	β= .295, p <.001 Supported (p<.05)
H4	The informativeness of a water conservation campaign video will be significant and positively associated with subjective norms.	β= .172, p =.018 Supported (p<.05)
H5	The credibility of a water conservation campaign video will be significant and positively associated with attitude toward water conservation.	β= -.207, p =.004 Not supported (negative β value)
H6	The credibility of a water conservation campaign video will be significant and positively associated with the attitude toward empathy expression.	β= -.008, p =.879 Not supported (p>.05 and negative β value)
H7	The credibility of a water conservation campaign video will be significant and positively associated with perceived behavioural control.	β= -.002, p = .974 Not supported (p>.05)
H8	The credibility of a water conservation campaign video will be significant and positively associated with subjective norms.	β= -.158, p =.014 Not supported (negative β value)
H9	The emotional appeal of a water conservation campaign video will be significant and positively associated with attitude toward water conservation.	β= .284, p = .001 Supported (p<.05)
H10	The emotional appeal of a water conservation campaign video will be significant and positively associated with the attitude toward empathy expression.	β= .352, p <.001 Supported (p<.05)
H11	The emotional appeal of a water conservation campaign video will be significant and positively associated with perceived behavioural control.	β= .160, p =.033 Supported (p<.05)
H12	The emotional appeal of a water conservation campaign video will be significant and positively associated with subjective norms.	β= .380, p <.001 Supported (p<.05)
H13	The informativeness will be significant and positively associated with the emotional appeal.	β = .434, p < .001 Supported (p<.05)
H14	The creativity will be significant and positively associated with the emotional appeal.	β =.515, p = .001 Supported (p<.05)
H15	The multimedia effects will be significant and positively associated with the emotional appeal.	β = -.104, p = .055 Not supported (p>.05 and negative β value)
H16	The creativity of a water conservation campaign video will be significant and positively associated with attitude toward water conservation.	β = .121, p = .215 Not supported (p>.05)
H17	The creativity of a water conservation campaign video will be significant and positively associated with the attitude toward empathy expression.	β = .263, p < .001 Supported (p<.05)
H18	The multimedia effects of a water conservation campaign video will be significant and positively associated with attitude toward water conservation.	β = .214, p = .002 Supported (p<.05)
H19	The multimedia effects of a water conservation campaign video will be significant and positively associated with the attitude toward empathy expression.	β = -.003, p = .957 Not supported (p>.05)
H20	Consumers' intention to conserve water will be significant and positively predicted by their attitude toward water conservation behaviour.	β = .341, p < .001 Supported (p<.05)
H21	Consumers' intention to conserve water will be significant and positively predicted by the attitude toward empathy expression.	β = .165, p = .001 Supported (p<.05)
H22	Consumers' intention to conserve water will be significant and positively predicted by subjective norms.	β = .231, p < .001 Supported (p<.05)

H23	Consumers' intention to conserve water will be significant and positively predicted by their perceived behaviour control.	β = .117, p = .009 Supported (p<.05)
H24	Consumers' intention to conserve water will be significant and positively predicted by the emotional appeal.	β = .182, p < .001 Supported (p<.05)

The study employs bootstrapping for mediation analysis. H25a and H25b indicate emotional appeal as a full mediator, while H25e and H25f suggest partial mediation. However, H25c and H25d lack support. Mediation analysis outcomes are summarised in Table 6.20.

Table 6.20. Summary of the mediation analysis results. FM refers to full mediation and PM refers to partial mediation.

	Hypothesis	Outcomes
H25a	Emotional Appeal mediates the relationship between informativeness and attitude to water conservation.	FM
H25b	Emotional Appeal mediates the relationship between creativity and attitude to water conservation.	FM
H25c	Emotional Appeal mediates the relationship between multimedia effects and attitude to water conservation.	Direct relationship
H25d	Emotional Appeal mediates the relationship between informativeness and attitude to empathy expression.	PM
H25e	Emotional Appeal mediates the relationship between creativity and attitude to empathy expression.	PM
H25f	Emotional Appeal mediates the relationship between multimedia effects and attitude to empathy expression.	No relationship

Despite not establishing Metric Invariance, a multigroup analysis examines framework differences among UK water consumer groups. In the multigroup analysis, gender (H26), level of awareness (H28), water usage habits (H29), and bill-payer status (H30) impact the model, while age. The results are summarised in Table 6.21 below.

Table 6.21. Summary of the results. Hypothesis test; mediation and moderation analysis.

Hypothesis		P-value	Outcomes
H26	The proposed model differs across different genders (male and female).	Significant	Gender moderates the relationship between multimedia effects and emotional appeal.
H27	The proposed model differs across different ages (younger and older)	Non-significant	-
H28	The proposed model differs across different habits (good water conservation habits and poor water conservation habits).	Significant	Existing habit moderates the relationship between multimedia effects and emotional appeal
H29	The proposed model differs across different levels of awareness (high-level awareness and low-level awareness of water issues).	Significant	Awareness level moderates the relationship between emotional appeal and intention.
H30	The proposed model differs across bill payer status (billpayer and non-billpayer)	Significant	Bill paying moderates the relationship between multimedia effects and emotional appeal.

In conclusion, this analysis chapter has provided a comprehensive exploration of the SEM process, complexly applied within the context of this study. Through an adeptly conducted measurement model, the elaborate relationships between indicators and underlying latent variables were meticulously examined via both EFA and CFA. The imperative goal of establishing the reliability and validity of measurement constructs was well met, as evidenced by the favourable model fit indicators. Furthermore, the inquiry extended to the structural model, where relationships among latent variables were rigorously assessed for statistical significance and model-data congruence. Notably, a majority of the initial hypotheses received support, corroborating the framework's underlying assumptions. The mediation analysis, facilitated by bootstrapping, revealed the role of emotional appeal as both a full and partial mediator. The multigroup analysis, despite the absence of Metric Invariance, unveiled the differential impact of factors such as gender, level of awareness, water usage habits, and bill-payer status on the proposed model. While the current chapter succinctly presents these significant findings, the ensuing chapter (Chapter 7) will delve into a comprehensive discussion of their implications, contextualising them within the broader scope of the research, and elucidating avenues for future inquiry.

7 DISCUSSION

7.1 CHAPTER INTRODUCTION

The preceding chapter has delved into the analysis, results and findings of the current research study, which aims to propose a new, socio-psychological water conservation conceptual framework that integrates elements of effective communication through the integration of emotional appeal. This chapter serves as the platform for a comprehensive discussion of the research's outcomes.

In Section 7.2, the focus will be on answering RQ 1: *How can a persuasive message be communicated effectively to enhance positive viewer responses and promote resilience?*. Building upon the findings presented in Chapter 6, the researcher examines the core components of effective communication - their individual and collective influence on intention, and their potential to evoke meaningful shifts in water consumption behaviour. By dissecting the elements of effective communication, this research explains their interplay and their distinct impacts on viewers' attitudes and intentions toward water conservation.

Section 7.3 focuses on answering RQ 2: *How can emotions be effectively evoked within the context of the WCC video?*. By contextualising the findings, the researcher interprets the mechanisms through which various emotional triggers (informativeness, creativity and multimedia effects) embedded in communication strategies can elicit profound emotional responses.

Section 7.4 directs the focus towards RQ 3: *What role does emotional appeal play as a mediator in the relationships between informativeness, creativity, multimedia effects, and attitudes?*. In dissecting the complex interplay between these factors, the researcher unravels the multifaceted role of emotional appeal

as a bridge between different elements of effective communication. By analysing the underlying mechanisms, the researcher draws connections between the factors that may evoke emotions (informativeness, creativity, and multimedia effects) and attitudes (attitude to water conservation and attitude to empathy expressions), thus further clarifying the answer to the previous RQ 2.

As the readers step into Section 7.5, the overall effectiveness of the proposed framework broadens to encompass diverse demographic and contextual factors. Addressing RQ 4, the researcher explores whether the effectiveness of the proposed model differs across groups based on gender, age, habits, awareness levels, and billpayer status. Through a thorough examination of these variables, the researcher observes how each group engages with the communication strategies, and how their responses contribute to the overall success of the framework.

Lastly, Section 7.6 concludes with a synthesis of the results. By aligning the research outcomes with existing literature, the researcher not only illuminates the significance of the study within the broader field but also lays the bridge of relevant knowledge gaps.

7.2 How Can a Persuasive Message be Communicated Effectively to Enhance Positive Viewer Responses and Promote Resilience? (RQ 1)

The primary focus of the first research question (RQ 1) was to explore the effectiveness of the proposed framework that not only elicits positive viewer responses but also cultivates resilience. This investigation involved an in-depth analysis of a model framework that incorporates key elements of effective communication such as informativeness, credibility, creativity, multimedia effects, and emotional appeal. Each of these elements was examined to understand their impact on attitudes, perceived behavioural control, and subjective norms. Consequently, their collective influence on intention was also examined.

7.2.1 Informativeness

Informativeness, within the scope of this study, refers to the extent to which the WCC video provides complete, relevant and up-to-date information. This concept finds its roots predominantly in the realms of social media and marketing (Cahyani & Artanti, 2020; Ducoffe, 1996; Hamouda, 2018; Logan et al., 2012; Mir, 2012; Murillo, 2017; Saadeghvaziri & Hosseini, 2011; Shareef et al., 2019; Saadeghvaziri & Hosseini, 2011). Moreover, when applied to the specific context of WCC, previous research underscores the pivotal role of informativeness in educating the public about water-related concerns and sustainable behavioural shifts (Lewis & Hendrix, 2012; Pérez-Urdiales & García-Valiñas, 2016; Renwick & Green, 2000; Syme et al., 2000). Howarth and Butler (2004) assert that informativeness aids in raising awareness among water consumers, subsequently prompting actions to mitigate water consumption.

Significantly, a noteworthy proportion of individuals in the UK remain largely uninformed about their daily water usage habits (e.g., Kelly & Fong, 2015; Mace, 2020). A pronounced lack of awareness regarding crucial water-related issues further complicates this challenge (CCW, 2021; Jones et al., 2021; Weitkamp et al., 2020). Hence, in this study, the dynamics of informativeness as a central cue in effective communication strategies aimed at enhancing awareness, thereby contributing to sustainable water consumption and resilient communities.

Commencing with authoritative sources such as DEFRA (2018) and Water UK (2020a), the video presentation begins with a staggering statistic: the average UK individual consumes over 142 litres of water daily. This statistic serves as a concrete foundation for the ensuing discourse. Echoing Nisbet and Gick (2008) and Gilbertson et al. (2011), the communication must adeptly illustrate the environmental consequences of ignorance and visualise a life devoid of accessible water, invoking urgency and illuminating the far-reaching consequences of disregarding conservation efforts. Additionally, culminating with the societal benefits of water preservation, supported by Rumble et al. (2017), the video concludes by highlighting the interdependence between personal choices and communal well-being. Therefore, the WCC video joins together a multifaceted array of information to encourage conscientious water stewardship.

The results demonstrate a statistically significant, moderate, and positive relationship between informativeness and attitudes towards water conservation, aligning with Maduku (2021). This

suggests that increased informativeness corresponds to more positive attitudes toward water conservation. When individuals encounter well-structured and informative water conservation communication, they tend to develop a clearer grasp of the importance of preserving water resources (Lewis & Hendrix, 2012; Pérez-Urdiales & García-Valiñas, 2016; Renwick & Green, 2000; Syme et al., 2000). As awareness deepens, individuals perceive water conservation as an immediate and crucial concern (Gilbertson et al., 2011; Kaplan, 2000; Nisbet & Gick, 2008; Rodriguez-Sanchez & Sarabia-Sanchez, 2020; Saurí, 2013). The element of informativeness, therefore, transforms water conservation communication from an abstract concept into a tangible responsibility, amplifying "personal relevance" (Liberman & Chaiken, 1996; Noe & Hammitt, 1992; Spence & Pidgeon, 2010) and emotional engagement triggered by informative content. A more detailed exploration of the latter idea will follow in Section 7.3.

In the new media era, social media platforms serve as dynamic arenas where individuals not only consume information but also actively express their alignment with causes (Chugh et al., 2019; Döbrössy et al., 2020; Schulz et al., 2022; Thomson & Greenwood, 2017). The findings underscore a robust and statistically significant connection between informativeness and attitudes toward empathy expressions, in alignment with Lee and Hong (2016). This correlation indicates that as informativeness levels rise, so do positive attitudes toward individuals' empathetic actions particularly through "likes" and "shares". These empathetic actions set forth a ripple effect, intensifying awareness and engagement (Mavrodieva et al., 2019; Scholtz et al., 2016). These expressions extend beyond mere acknowledgement, embodying active endorsement and message propagation. When individuals "like" or "share" a video, they actually signal their commitment to the cause and a desire to disseminate awareness within their social networks.

Perceived behavioural control refers to an individual's perception of their ability to successfully engage in a specific behaviour (Ajzen, 1985; Ajzen, 1991) - in this case, water conservation behaviour. The results of the analysis provide evidence of a significant and positive connection between informativeness and individuals' perceived behavioural control. This indicates that as the information content of the videos increases, individuals tend to feel more in control of their ability to engage in water conservation behaviours. This positive correlation suggests that well-informed individuals are not only more knowledgeable about water conservation but also believe in their capacity to actively contribute to conservation efforts. These findings also echo the findings of previous studies in related domains. For instance, this finding aligns with the concept of the

"knowledge-action gap" that previous studies in environmental psychology have explored (Finn, 2023; Flagg & Kirchhoff, 2018), in which action can be hindered by perceived barriers or a lack of confidence to effect change (Frick et al., 2021). In addition, this phenomenon could be explained by the role of information in fostering a "sense of empowerment" (Belanche et al., 2020; Park & Goering, 2016; Sharma & Khadka, 2019), as contingent upon resilience (Nga et al., 2022). As viewers gain insights into water conservation's importance, they become attuned to actionable steps they can take. This heightened awareness, coupled with the motivational aspect of social media engagement, nurtures a belief in their potential to enact impactful change.

Subjective norms capture the influence of perceived social pressures, including family, friends, colleagues, and societal expectations, on individual behaviour (Ajzen, 1985; Ajzen, 1991). In the context of water conservation, subjective norms encompass the perceived social consensus about the importance of conserving water resources (Maduku, 2021). The findings reveal a significant positive association between the level of informativeness and the strength of subjective norms. This implies that individuals who possess a deeper understanding of water conservation and water-related issues are more likely to align their actions with the perceived norms of their social environment. Unfortunately, the examination of the relationship between informativeness and subjective norms remains a subject of ongoing investigation. As such, direct comparisons of these findings with prior studies may pose challenges. The intricacies of this dynamic underscore the need for a whole comprehension of these variables within the study's unique framework.

7.2.2 Credibility

The integration of short videos into environmental initiatives has surged in popularity (Adams & Gynnild, 2013; Scholtz et al., 2016), attributed to their ability to elucidate complex information in an engaging and easily digestible manner. However, the ubiquity of videos in social media campaigns necessitates a consideration of their credibility (Hsieh et al., 2012; McCorkindale & Distaso, 2013), given mounting concerns about the accuracy of the information within these platforms (Suciu, 2021). As a result, it is crucial to make sure the videos being used are trustworthy and dependable sources of information.

According to previous research, the perceived credibility of a message has a considerable influence on the intention (Petty & Cacioppo, 1986) and social judgment (Birnbaum & Stegner, 1979). From

the standpoint of a water conservation campaign, credibility has been considered a crucial element in conservation initiatives. Environmental campaigns must be credible in order to motivate people to engage in sustainable activities (Dziegielewski, 1991; Hawkins & Berthold, 2016; Rodriguez-Sanchez & Sarabia-Sanchez, 2020). Specific to WCC communication, Maduku (2021) emphasised that communication efforts that come from highly credible sources tend to receive more social approbation. This highlights the importance of credibility in promoting WCC efforts.

The results of the SEM revealed that credibility, which is commonly utilised in the ELM literature (Jayawardena et al., 2023; Ragab, 2022; Wilson, 2014), had varying impacts on different constructs related to water conservation. Specifically, the study found that as credibility increases, the attitude and subjective norms toward water conservation decrease. This finding supports Maduku (2020). Moreover, credibility was found to have no significant relationship with empathy expression and perceived behavioural control, supporting Jones et al. (2004). These results indicate that credibility may not be an effective factor in influencing empathy expression and perceived behavioural control related to water conservation.

Rodriguez-Sanchez and Sarabia-Sanchez (2020) illuminate the potential for drought-induced amplification of WCC credibility. Greater familiarity with water scarcity tends to correlate with heightened concern, favourable credibility assessment of water conservation messages, and a higher likelihood of future water conservation efforts (Holland et al., 2019). The anticipation was that the heightened awareness stemming from recent droughts in the UK (British Red Cross, 2023; Hess & Holman, 2022; Jackson, 2022) might lead to an exaggerated emphasis on WCC efficacy. However, even amidst the backdrop of a recent UK drought, this heightened awareness did not necessarily translate to a significant audience impact. UK water consumers might have grown desensitised to the issue or may already be taking conservation actions due to the obvious drought effects (Rodriguez-Sanchez & Sarabia-Sanchez, 2020).

Indeed, the stimulus employed in this study was designed to be credible, featuring content from the Environment Agency and real recent drought imagery. Yet, the effectiveness of the WCC video in conveying environmental messages might be compromised by factors like perceived storyteller authenticity, overly artistic design, and amateur content creator involvement (Cohen et al., 2023; Niu et al., 2023; Song et al., 2021). When creative components overshadow the message, viewers could question the information's accuracy and validity. Moreover, amateur content creators might

lack the expertise necessary to effectively convey environmental concerns, potentially rendering messages unconvincing (Baier et al., 2022; Pant et al., 2012).

7.2.3 Creativity

The importance of advertising creativity is associated with the fundamental human need to consume something new, original, out of the ordinary, and imaginative (Bruner, 1962; Das et al., 2023; Haberland & Dacin, 1992; Lee & Hong, 2016). In this research, creativity is regarded as the extent to which the WCC communication is original, unexpected, extraordinary, artistic and intriguing. From the standpoint of advertising, creativity influences customer attitudes, associations, information gathering and amusement (Ameen et al., 2022; Darley & Lim, 2023; Hashem, 2020; Jin et al., 2019; Lee & Hong, 2016; Lies, 2021; Reinartz & Saffert, 2013; Shen et al., 2020; Smith et al., 2007). Artistic messaging captures more attention and affects opinions about the featured products as well as attitudes towards the advertisement (e.g., Feng & Xie, 2019; Koslow et al., 2006; Reinartz & Saffert, 2013).

Contrary to the previous findings outside the realm of water conservation communication (e.g., Southgate et al., 2010), this study did not find sufficient evidence to conclude that there is a meaningful and reliable connection between creativity and attitudes toward water conservation. In other words, the level of creativity in water conservation efforts does not seem to have a significant impact on how individuals view or respond to water conservation. The results however revealed a noteworthy relationship between creativity and attitudes toward empathy expressions, indicating that the impact of creativity on empathy expressions, is statistically significant. This supports Lee and Hong (2016). Visual designs in advertisements play a major role in influencing and swaying their perceptions (Negm & Tantawi, 2015). This implies that viewers who engage with the creative elements that effectively convey the message of the WCC video are more likely to express empathy through actions such as liking and sharing the video on social media platforms. Users are likely to develop a positive attitude to the expression of a favourable affective evaluation of the stimulus when the stimulus is creative enough to provide hedonic value (Cheung et al., 2022).

7.2.4 Multimedia Effects

Videos, with their multifarious media components, have emerged as a potent strategy for evoking emotional responses (Gross & Levenson, 1995; Rottenberg et al., 2007). Compared to static images, videos offer a more immersive and lifelike experience, thus elevating their efficacy (Sung & Cho, 2012). The role of multimedia effects in communication is closely tied to the intrinsic human desire for entertainment and enrichment (Hsieh et al., 2012; Karat et al., 2002; Lim et al., 2009; Yang & Coffey, 2014). From the advertising perspective, the synergy of video, text, and sound yields significant impacts on motivation, behavioural intentions (Ibrahim et al., 2015), sales, and popularity (Aduloju et al., 2009; Potter, 2012; Zhao et al., 2013). Thus, a combination of multimedia should capture consumers' attention, driving them to express their positive attitude to the advertised product, in this case, promoting water conservation.

However, this study observed that heightened perceptions of multimedia effects led to more positive attitudes toward water conservation, rather than empathy expression. When stimuli possess robust multimedia elements, water consumers are more likely to foster positive attitudes toward water conservation. The analysis revealed a noteworthy, positive effect of multimedia effects on attitudes toward water conservation, lending credence to the hypothesis that multimedia effects amplify individuals' attitudes in favour of water conservation. In contrast, no significant effect of multimedia effects on attitudes toward empathy expression emerged, suggesting that multimedia might not be an effective avenue for enhancing attitudes associated with empathy expression.

7.2.5 Emotional Appeal

Recognising the limitations of informational approaches in conservation efforts, researchers emphasise the need to combine rational and emotional elements (Cary, 2008; Ferraro & Price, 2013; Howarth & Butler, 2004; Jackson, 2005; Koop et al., 2019; McKenzie-Mohr, 2000). Thus, the integration of emotional appeal in the framework becomes pivotal in fostering targeted water conservation outcomes (Granina, 2022). Knowledge transfer alone often proves inadequate, necessitating the inclusion of emotional elements (Salmon et al., 2020; Kassirer, 2022) in efforts to raise awareness, shift attitudes, and modify behaviour. Hence, balancing information with

emotional engagement appears to be the key to meaningful and sustainable conservation outcomes (Smith et al., 2018). Addressing this, RQ 2 and RQ 3 further explore how the inclusion of emotional appeal with credibility and informativeness in water conservation communication campaigns shapes intention. Note that emotional appeal in this study refers to the extent to which emotional responses are triggered when exposed to the WCC video, a definition adapted from Lee and Hong (2016).

Extensive psychological and behavioural research underscores the profound impact of emotions on decision-making, attitudes, persuasion, and actionable behaviours (e.g., Bechara, et al., 2000; Gosling, et al., 2020; Mankad, 2012). This influence extends to attitudes toward advertisements and products (Burman et al., 2017; Fu & Chen, 2012; Mattila, 1999; Mattila, 2001; Nysveen & Breivik, 2005; Stafford & Day, 1995; Wang et al., 2017; Zhang et al., 2014a). In this study, emotional appeal echoes this profound effect on attitude. The result demonstrates a robust connection between emotional appeal and attitudes toward water conservation, signifying that emotionally appealing content positively shapes perceptions of water conservation. Such emotional appeals can provoke urgency, responsibility, and mindfulness, positioning water conservation as a vital cause, and driving attention and action (Pereira et al., 2022).

Furthermore, the study underscores emotional appeal's pivotal role in shaping attitudes toward empathy expression, particularly liking and sharing content on social media. This aligns with prior works on emotional engagement and online interactions (Lee & Hong, 2016; Hsieh et al., 2012). Emotional responses fostered by content lead to heightened empathy and resonance with creators' messages.

A significant impact of emotional appeal on perceived behavioural control emphasises emotions' role in influencing conservation behaviours. This aligns with research showcasing the role of emotions in interpretation, judgment, decision-making, and learning (e.g., Blanchette & Richards, 2010; Rick & Loewenstein, 2008; Petty & Briñol, 2015; Quadt et al., 2022; Wang et al., 2023). Emotional appeals trigger responsibility, urgency, or concern, potentially enhancing individuals' confidence in executing water-saving actions and fostering a sense of empowerment and competence (Bradford, 2017; Daluwatte et al., 2020).

The emotional appeal was also found to have a significant positive effect on subjective norms. This finding implies that when viewers are exposed to emotionally appealing content, they are

more likely to interpret societal norms and expectations in alignment with the WCC video. This suggests that emotional content has the potential to establish WCC as a shared value and a normative behaviour within social circles. As viewers feel emotionally connected to the video, they are more likely to adopt water-saving behaviours, feeling peer pressure and possibly encourage others to do the same, thus contributing to the normalisation of conservation practices within their communities.

7.2.6 Intention

The TPB plays a crucial role in understanding the intention behind engaging in specific behaviours – in this case, water conservation. Intentions serve as indicators of an individual's motivation, representing how much effort they are willing to invest to carry out a particular behaviour (Ajzen, 1991). TPB focuses primarily on cognitive factors, giving weight to attitudes, subjective norms, and perceived behavioural control (Ajzen, 1985). This study introduces a unique perspective by dividing attitudes into two components: attitudes toward water conservation and attitudes towards empathy expression.

To such an extent, the emotional aspect is largely overlooked within the TPB framework (Bettiga & Lamberti, 2020; Londono et al., 2017). This limitation points to a gap in fully capturing the psychological mechanisms that drive behaviour, particularly when emotions are integral to decision-making processes (e.g., Bechara, et al., 2000; Gosling, et al., 2020; Mankad, 2012). To bridge this gap, the study suggests the inclusion of emotional appeals as an additional predictor within the TPB framework. Given the potent influence of emotions on decision-making and motivation, integrating emotional appeal into the model would better predict behavioural intention, thus enhancing the model's accuracy and explanatory power.

However, including attitudes to empathy expressions and emotional appeals to predict intention in the TPB framework should be approached with caution (Ajzen, 2020). While acknowledging the importance of empathy expressions and emotional appeal in social media communication, it is essential to ensure that this addition aligns with the existing theoretical foundations and does not dilute the core constructs of TPB (Ajzen, 2020). Hence, introducing these two predictors underwent careful consideration of their relationship with the existing cognitive factors, in order to avoid overlapping or redundancy.

Attitudes to water conservation. Firstly, the results of the R^2 analysis showed that 33.5% of the variance in attitudes to water conservation was explained by a combination of informativeness, credibility, emotional appeal, creativity, and multimedia effects. Collectively, consumers' attitude toward water conservation behaviour is a significant predictor of their intention to conserve water and there is a moderate positive relationship between these two variables. This supports many previous studies in relation to WCC and TPB (Chaudhary et al., 2017; Clark & Finley, 2007; Gibson et al., 2021; Maduku, 2021). This means that consumers who have a more positive attitude toward water conservation behaviour are more likely to have the intention to conserve water.

Attitudes to empathy expressions. The results of the R^2 analysis showed informativeness, credibility, emotional appeal, creativity, and multimedia effects, jointly explaining 52.9% of the variance in attitudes to empathy expression. Consumers' attitude toward empathy expression is a significant predictor of their intention to conserve water. This alignment of attitudes towards empathy expression with intention resonates with Lee and Hong's (2016) findings and suggests that empathy plays a pivotal role in driving intentions toward water conservation. This means that consumers who have a more positive attitude toward empathy expression are more likely to have the intention to conserve water.

Perceived behavioural control. 17.5% of the variance in perceived behaviour control was explained by a combination of informativeness, credibility and emotional appeal. Consumers' perceived behaviour control is a significant predictor of their intention to conserve water. These findings echo prior research (Chaudhary et al., 2017; Clark & Finley, 2007; Gibson et al., 2021; Maduku, 2021). This means that consumers who feel that they have control over their ability to conserve water are more likely to have the intention to conserve water.

Subjective norms. 19.1% of the variance in subjective norms was explained by a combination of informativeness, credibility and emotional appeal. Subjective norms are also a significant predictor of consumers' intention to conserve water with a moderate positive relationship between these two variables. This supports many previous studies in relation to WCC and TPB (Chaudhary et al., 2017; Clark & Finley, 2007; Gibson et al., 2021; Maduku, 2021). This means that consumers who perceive that their peers or significant others value water conservation behaviour are more likely to have the intention to conserve water. The interconnectedness of this construct and its

influence on intention underscores the intricate interplay of cognitive factors and societal influences in shaping decisions related to water conservation.

Emotional appeal. The novel introduction of emotional appeal as a predictor of behavioural intention acknowledges a previously underrepresented facet in TPB. The observed significance of emotional appeal in predicting intention amplifies its role in driving behaviour (Dülek, 2022). This finding echoes the works of Bettiga and Lamberti (2020) and Londono et al. (2017), affirming that emotions are pivotal in influencing decisions. The study found that 53.5% of the variance in intention was explained by a combination of attitudes to water conservation, attitudes to empathy expression, subjective norms, perceived behaviour control, and emotional appeal. By highlighting emotional appeal's substantial predictive power, this research underscores the need to integrate emotions into theoretical frameworks to better capture the complexity of human decision-making processes. Moreover, the combination of targeted emotions (sadness, guilt and calm) appears to be effective, giving rise to attitudes, empathy, perceived behavioural control and subjective norms in average water consumers.

7.2.7 Relevances

These findings collectively emphasise the multifaceted nature of effective WCC communication. By strategically integrating informativeness, creativity, multimedia effects, credibility, and emotional appeal, communication designers can construct compelling messages, foster positive attitudes, encourage empathy expressions, boost perceived behavioural control, and align with societal norms. This comprehensive approach offers a promising avenue to drive sustainable behaviour change and promote resilience within communities. It was found that, while all constructs have a direct impact on the intention this finding implies that water consumers who form a positive attitude to water conservation will be likely to develop the intention.

Informativeness. The study underlines the significance of informativeness in water conservation communication, echoing previous research's emphasis on complete and relevant information (Lee & Hong, 2016; Maduku, 2021). The portrayal of compelling statistics, environmental consequences, and societal benefits in the WCC video effectively captures attention and elevates awareness. This heightened awareness correlates with more positive attitudes, emphasising that

well-informed individuals perceive water conservation as a tangible responsibility rather than an abstract concept.

Credibility. While credibility is often deemed pivotal in communication (Hsieh et al., 2012; McCorkindale & Distaso, 2013), the study reveals complex dynamics. The anticipated strong influence of credibility on attitudes did not appear as expected, suggesting that audiences might assess credibility differently within the context of environmental social media campaigns. However, the interplay of factors particularly storyteller authenticity, visual design and design quality could affect credibility perception and its impact on attitudes (Baier, et al., 2022; Cohen, et al., 2023; Niu, et al., 2023; Pant, et al., 2012; Song, et al., 2021).

Creativity. Contrary to external studies, creativity's influence on attitudes toward water conservation was not significant. However, the study identified a noteworthy relationship between creativity and attitudes toward empathy expressions. Creative elements seem to enhance empathy expression attitudes, possibly due to their novelty, out-of-the-ordinary, and imaginative characteristics and these invoke a positive affective response (Lee and Hong, 2016).

Multimedia effects. The study affirms the significant influence that multimodal effects have in influencing attitudes towards water conservation. The immersive experience provided by multimedia components effectively enhances positive attitudes toward water conservation. However, the study observed no substantial influence on attitudes toward empathy expression, suggesting that multimedia might not be a driving factor in that context.

Emotional appeal. While the rational aspects of the communication aim to provide useful and complete information that enhances awareness, the emotional aspects aim to evoke emotions (in this case - sadness, guilt and calm) in individuals, particularly, those that motivate sustainable behaviour (Lee and Hong, 2016). Emotional appeal emerges as a crucial element, contributing to positive attitudes, empathy expressions, perceived behavioural control, subjective norms, and ultimately, intentions for water conservation. Emotional responses triggered by the video drive empathy, urgency, and a sense of responsibility, fostering a deeper connection to the cause.

Intentions. The integration of emotional appeal within the TPB framework enriches its predictive capacity. The study dissects attitudes into attitudes toward water conservation and empathy expressions, illuminating their respective roles as motivators for behavioural intention. Perceived

behavioural control and subjective norms continue to play crucial roles, indicating the intricate interplay of cognitive factors and societal influences in shaping conservation intentions.

7.3 How Can Emotions Be Effectively Evoked Within the Context of the WCC Video? (RQ 2)

Addressing the inquiry of effectively evoking emotions within the WCC video context (RQ 2), the researcher hypothesises a connection between emotional appeal and informativeness, creativity, and multimedia effects. In this section, each of these relationships will be explored based on SEM results.

7.3.1 The Role of Informativeness in Evoking Emotions

Informativeness demonstrated a strong positive relationship with emotional appeal, with a substantial beta value of .434 ($p < .001$). This suggests that when viewers perceive the video as informative and educational regarding water conservation, they are more likely to emotionally connect with the content. Particularly, the "facts and figures" strategy elicits an emotional response by highlighting daily water consumption, potential scarcity issues, and their environmental impact, fostering a sense of responsibility through guilt (Koop et al., 2019; Mankad, 2012; Middlestadt et al., 2001; Nelson et al., 2011). It may also develop a sense of mindfulness of water (Pereira et al., 2022). Moreover, the "imagining life without water" strategy taps into emotions by creating a sense of urgency by visualising the consequences of water scarcity, thus evoking sadness (Caputo et al., 2022; Diaz et al., 2020; Gilbertson et al., 2011; Liang et al., 2017; Rumble et al., 2017). By making the issue relatable and personal, it motivates individuals to take action and contribute positively to the community's well-being, fostering a sense of competence and purpose (Anspach & Draguljić, 2019; Corner et al., 2018a; Parry et al., 2022). These "prevention-focused" approaches appear to be more effective in triggering sadness, as described by Wang et al. (2021).

7.3.2 The Role of Creativity in Evoking Emotions

Creativity displayed an even stronger positive correlation with emotional appeal, showing a high beta value of .515 ($p < .001$). This supports previous studies (e.g., Bing & Ruiqiu, 2018; Yang & Smith, 2009). This indicates that original, unexpected, extraordinary, artistic and intriguing WCC content tends to have a significant impact on eliciting emotional appeal from viewers. The "original and unexpected" strategy engages emotions by introducing elements unique out of ordinary WCC video and intrigue the audience. This element of novelty can trigger curiosity and excitement, leading to a stronger emotional connection (Rosengren et al., 2020; Vekovtseva & Plotnikova, 2019). When viewers encounter unexpected content, they are more likely to feel engaged and curious, which can elicit positive emotions and encourage them to pay closer attention (Bing & Ruiqiu, 2018; Yang & Smith, 2009). In addition, the "artistic visualisation" strategy taps into emotions by presenting information in creative and unconventional ways (Glowka, 2021). Unusual storytelling techniques or visuals can stimulate the audience's imagination, triggering a sense of wonder and fascination. By embracing artistic visualisation techniques, the content becomes visually appealing and captivating, invoking stronger targeted emotions. This might elucidate the higher "interest" scores, as discussed in the video validation chapter (Chapter 5).

7.3.3 The Role of Multimedia in Evoking Emotions

The use of background music in the WCC video is believed to add emotional depth to the message (Arafat et al., 2021; Krishna et al., 2016; Guido et al., 2016; Maroely & Munichor, 2023; Park et al., 2014; Raja et al., 2019). The mood and tempo of the music enhance the audience's emotional connection, invoking contemplation, empathy, or urgency (Alpert & Alpert, 1990; Hecker, 1984; Murrock, 2005; Whan & Young, 1977; Tesoriero & Rickard, 2012), depending on how it's synchronised with the visuals (e.g., Herget, 2021; Krishna et al., 2016). Furthermore, the visuals also play a crucial role in evoking emotional appeal. Particularly, showing images of recent droughts helps the audience empathise with the potential consequences of water scarcity by making the issue more relatable and immediate (Metag, 2020; Merkel et al., 2020; Nerlich & Jaspal, 2014). This strategy prompts feelings of concern, compassion, and a sense of responsibility. Similarly, showcasing picturesque water scenery triggers emotional responses by highlighting the beauty and value of water resources (Chen et al., 2023; Hartmann & Apaolaza-Ibáñez, 2010; Peng & Han,

2018). Therefore, these visuals may evoke feelings of appreciation, connection to nature, and a desire to preserve such natural wonders for current and future generations.

Conversely, the relationship between "multimedia effects" and "emotional appeal" exhibited a different pattern. The beta value of -.104 was not statistically significant ($p > .05$). This implies that there is no substantive impact of multimedia effects on emotional engagement in this context. This contrasts prior research on multimedia and emotion (e.g., Chen & Wang, 2011; Kuo et al., 2022; Leutner, 2014; Mittal et al., 2021; Park & Lim, 2007; Li et al., 2020). This contradiction might stem from specific stimulus characteristics, assessed aspects, viewing environment, audio hardware, volume, and screen size. Thus, these insights, while valuable, are confined to the WCC video under study, as diverse multimedia content or contexts could yield disparate results.

7.3.4 Relevances

The second research question (RQ 2) focused on the effective evocation of emotions within the WCC video context. The investigation aimed to uncover the role of emotional appeal and its interplay with informativeness, creativity, and multimedia effects in enhancing emotional engagement. By exploring the relationships between these factors, RQ 2 delves into the significance of evoking emotions within WCC campaigns and its implications for behaviour change.

Informativeness. The findings highlight the pivotal role of informativeness in stimulating emotional appeal within the WCC video. As viewers perceive the video as informative and educational, they are more likely to form emotional connections with the content. The strategies employed, such as presenting factual information and envisioning life without water, trigger emotions such as guilt, sadness, responsibility, and urgency (Anspach & Draguljić, 2019; Caputo, et al., 2022; Diaz, et al., 2020; Gilbertson, et al., 2011; Liang, et al., 2017; Rumble, et al., 2017). This approach harnesses the power of emotional triggers to enhance viewers' connection to the cause, fostering a sense of mindfulness and urgency around water conservation (Pereira, et al., 2022).

Creativity. The study reveals that creativity plays a crucial role in evoking emotions within the WCC video. The incorporation of original, unexpected, artistic, and intriguing content leads to a substantial impact on emotional appeal. The strategies of introducing novelty and employing

artistic visualizations stimulate curiosity, excitement, and wonder, thus deepening the emotional connection of viewers (Rosengren et al., 2020; Vekovtseva & Plotnikova, 2019). By leveraging creativity, water conservation campaigns can tap into viewers' emotions, making the message more captivating and encouraging stronger engagement.

Multimedia effects. While multimedia elements such as background music and visuals are believed to enhance emotional depth (Arafat et al., 2021; Krishna et al., 2016; Guido et al., 2016; Maroely & Munichor, 2023; Park et al., 2014; Raja et al., 2019), the study's results suggest the opposite. It is however important to include multimedia effects such as the use of background music and synchronise it with visuals that can evoke contemplation, empathy, or urgency, depending on the mood and tempo. In this study, visuals depicting recent droughts and picturesque water scenery are expected to foster concern (in relation to guilt), compassion (in relation to sadness), and appreciation (in relation to calm). However, the relationship between multimedia effects and emotional appeal is not statistically significant, indicating that its impact might vary based on specific stimulus characteristics and viewing contexts.

In summary, the R^2 value (60.6%) shows that the combination of informativeness, creativity and multimedia effects is likely to play a substantial role. Effectively evoking emotions within the context of the WCC video holds considerable implications for driving behaviour change. This will motivate viewers to take meaningful actions towards water conservation. By strategically integrating informativeness and creativity, WCC campaigns can trigger emotional responses that resonate with viewers on a personal level. For deeper insights into these relationships, comprehending emotional appeal's role as a mediator variable is vital (RQ 3) and, hence, to be discussed in the forthcoming section (Section 7.4). Furthermore, the lack of significance between multimedia effects and emotional appeal suggests that other factors, beyond the scope of this study, might contribute more significantly to the emotional resonance. The understanding of multimedia's impact on emotional engagement highlights the need for careful selection and synchronisation of audio and visual elements to maximise emotional appeal.

7.4 What Role Does Emotional Appeal Play as a Mediator in the Relationships between Informativeness, Creativity, Multimedia Effects, and Attitudes? (RQ 3)

The primary focus of RQ 3 is to explore the mediating function of emotional appeal in the connections between informativeness, creativity, multimedia effects, and attitudes. Previous discussions underscore emotional appeal as a critical factor in determining attitudes toward water conservation and expressions of empathy. The mediation analysis seeks to enhance the comprehension of how emotional appeal operates within the pertinent relationships. This research is interested in seeing the possibility that emotional appeal intervenes on the influence between two constructs: informativeness and attitude to water conservation; creativity and attitude to water conservation; multimedia effects and attitude to water conservation; informativeness and attitude to empathy expression; creativity and attitude to empathy expression; and multimedia effects and attitude to empathy expression. Note that this is a novel approach to understanding the dynamic components of WCC video, hence, comparing the results with previous studies is limited.

7.4.1 Informativeness and Attitude to Water Conservation

Based on the result of the mediation analysis, emotional appeal serves as a full mediator between informativeness and attitude to water conservation. Full mediation occurs when the relationship between two variables (informativeness and attitudes to water conservation) is completely explained by the mediator (emotional appeal). The indirect effect (.019) signifies that the influence of informativeness on attitudes is channelled entirely through the emotional response triggered by the message. The direct effect (.069) becomes non-significant because once the mediator (emotional appeal) is considered, the original relationship between informativeness and attitudes no longer holds. In this case, when an individual receives an informative WCC video, the emotional appeal entirely accounts for the effect on the attitudes to water conservation.

7.4.2 Creativity and Attitude To Water Conservation

Emotional appeal also serves as a full mediator between creativity and attitude to water conservation. Similar to the previous case, emotional appeal fully mediates the relationship between creativity and attitudes to water conservation. The indirect effect (.021) indicates that the impact of creativity on attitudes is entirely conveyed through emotional appeal. The direct effect (.356) becomes non-significant because emotional appeal fully captures the influence of creativity on attitudes to water conservation. Hence, when creative messages are presented, the emotional response evoked plays a crucial role in shaping individuals' attitudes towards water conservation behaviour.

7.4.3 Multimedia Effects and Attitude To Water Conservation

In this study, there is a direct relationship between multimedia effects and attitudes to water conservation. The total effect (.018) represents the overall influence of multimedia on attitudes. The indirect effect (.063) is not significant, suggesting that emotional appeal does not play a role in transmitting the effect of multimedia effects on attitudes. The direct effect (.009) represents the direct impact of multimedia effects on attitudes without any mediation by emotional appeal.

7.4.4 Informativeness and Attitude To Empathy Expressions

In terms of the relationship between informativeness and attitude to empathy expressions, emotional appeal serves as a partial mediator in this case. Partial mediation occurs when the mediator (emotional appeal) explains part of the relationship between the predictor (informativeness) and the outcome (attitudes to empathy expressions). In this case, while the indirect effect (.007) shows that emotional appeal conveys some of the effects of informativeness on attitudes, the direct effect (.014) remains significant. The direct effect proves that even if emotional appeal is considered, the role of informativeness still plays a role in determining attitudes toward empathy expression.

7.4.5 Creativity and Attitude To Empathy Expression

The emotional appeal also serves as a partial mediator between creativity and attitude toward empathy expression. The indirect effect (.006) indicates that emotional appeal conveys part of the effect of creativity on attitudes. The direct effect (.010) remains notable, indicating that both creativity and emotional appeal independently contribute to shaping attitudes toward empathy expression.

7.4.6 Multimedia Effects and Attitude to Empathy Expressions

In this case, there is no relationship between multimedia effects and attitudes toward empathy expression. The total effect (.590) demonstrates the absence of influence of multimedia effects on attitudes. Emotional appeal does not mediate this relationship, as the indirect effect (.063) is not significant. Thus, it seems that multimedia effects do not play a role in shaping attitudes toward empathy expression, and emotional appeal does not mediate this relationship.

7.4.7 Relevances

The mediation analysis carried out in response to RQ 3 offers valuable insights into the interplay between emotional appeal, informativeness, creativity, multimedia effects, and attitudes within the context of WCC videos. By delving into the mediating role of emotional appeal, a deeper understanding of the dynamics between different elements of WCC videos is attained.

The confirmed full mediation of emotional appeal between informativeness and attitudes toward water conservation underscores the pivotal role of emotional resonance in translating informative content into positive attitudes. This suggests that conveying information alone is insufficient to evoke desired attitudes; emotional engagement is essential for fostering favourable responses to water conservation messages, as highlighted previously (Cary, 2008; Ferraro & Price, 2013; Granina, 2022; Howarth & Butler, 2004; Jackson, 2005; Koop, et al., 2019; McKenzie-Mohr, 2000).

Similarly, the full mediation effect of emotional appeal between creativity and attitudes towards water conservation emphasises that creativity alone is not solely responsible for influencing attitudes. Instead, the emotional response elicited by creative content drives attitudes, reinforcing the importance of crafting emotionally compelling narratives to enhance conservation-related attitudes.

While multimedia effects exhibited a direct relationship with attitudes toward water conservation, a more complex dynamic may be implied by the absence of emotional appeal as a mediating factor. This underscores that multimedia effects may influence attitudes through distinct channels other than emotional appeal, perhaps warranting further investigation into these alternative pathways.

The partial mediation of emotional appeal between informativeness and attitudes toward empathy expressions highlights the complex nature of influencing attitudes related to empathy. Although emotional appeal contributes to shaping attitudes, other unmeasured factors also play a role in this relationship, indicating the multifaceted nature of empathy expression.

Likewise, the partial mediation observed between creativity and attitudes towards empathy expressions reinforces the notion that both creativity and emotional appeal are instrumental in influencing attitudes related to empathy expression. This dual contribution emphasises the need for a comprehensive approach when aiming to elicit empathetic responses.

It is interesting to note that there is no correlation between multimedia impacts and attitudes toward expressing empathy, which highlights how differently multimedia affects attitudes in different ways. This suggests that multimedia effects may not consistently shape empathy-related attitudes, encouraging further exploration into the underlying mechanisms.

This is a novel approach to understanding the dynamic components of WCC video, hence, comparing the results with previous studies is limited. The findings of this mediation analysis emphasise the critical part that emotional appeal plays in influencing attitudes toward sustainability (Janmaimool, 2017). It is also assumed that these emotional appeals mediate the effects of the components of attitudes by arousing "protection motivation" (Rogers, 1975). Protection motivation is an intervening variable that has the typical characteristics of a motive: it arouses, sustains, and directs activity (Rogers, 1975). People's perceived scarcity and droughts could significantly explain their attitudes, which are influenced by protection motivation (Skurka et al.,

2018). This protection motivation may provide a more inclusive set of predictors for the TPB (Shafiei & Maleksaeidi, 2020).

In conclusion, the findings from the mediation analysis illuminate the intricate pathways through which emotional appeal interacts with other factors to influence attitudes within the context of WCC videos. These insights have practical implications for designing effective communication strategies that leverage emotional appeal in conjunction with informativeness, creativity, and multimedia effects to foster positive attitudes toward water conservation and empathy expressions.

7.5 Does the Effectiveness of the Proposed Model Differ Across Gender, Age, Habit, Level of Awareness, and Billpayer Status? (RQ 4)

In the context of escalating water scarcity concerns, effective communication has emerged as a pivotal tool in addressing the challenges associated with water resilience. While various strategies contribute to achieving water resilience, communication models that foster community engagement and participation have become indispensable. A central question, however, pertains to whether the proposed communication model's effectiveness varies across diverse demographic factors, such as gender, age, existing water usage habits, level of awareness, and billpayer status. This query forms the basis of RQ 4 and underscores the significance of investigating the interplay between these factors and the model's efficacy.

To delve into this inquiry, the researcher conducted an in-depth assessment, considering each demographic factor's impact on the model's effectiveness. Gender, age, household income, and level of education were incorporated as control variables for water conservation behaviour. Drawing from prior research studies (Abu-Bakar, et al., 2023; Addo, et al., 2018a, 2018b; Akram, et al., 2023; Dietz, et al., 1998; Fielding, et al., 2012; Gardner, et al., 2020; Grilli & Curtis, 2021; Maduku, 2021; Reddy, et al., 2023; Russell & Knoeri, 2020; Saurí, 2013; Sedegah, et al., 2023; Singha, et al., 2022; Thakur, et al., 2022a; Verma, et al., 2023; Zietlow, et al., 2016), the study established a robust foundation for its exploration.

7.5.1 Gender

The investigation into whether gender influences individuals' intention to conserve water within the context of an emotionally appealing social media WCC video is of paramount importance. Previous studies highlighted that gender indeed exerts a significant effect on intention (Palamuleni et al., 2022; Tong et al., 2017). Interestingly, the absence of a gender-related impact would have suggested that the emotionally appealing campaign equally resonates with both genders, fostering comparable levels of intention to conserve water. The research findings indicate that the model's effectiveness is indeed influenced by gender differences, aligning with previous studies by Palamuleni et al. (2022) and Tong et al. (2017). Specifically, the analysis has revealed that the relationship between multimedia effects and emotional appeal is moderated by gender, with a significant and negative beta value for males. The findings from the MGA are significant and point to an interesting relationship between multimedia effects, emotional appeal, and gender. This result suggests that the impact of multimedia effects on emotional appeal varies between males and females. The negative beta value for males indicates that, in this context, multimedia effects might have a diminishing effect on emotional appeal among male viewers.

7.5.2 Age

After conducting an MGA, it was found that the proposed model for predicting consumers' intention to conserve water does not differ significantly by age. This means that the relationship between the variables in the model remains consistent across different age groups (younger versus older). This contradicts many previous studies (e.g., Corral-Verdugo et al., 2003; Kantola et al., 1982; Lam, 2006). This specific finding indicates that the model's impact is not age-dependent, which can be seen as a positive aspect. It may also be worth highlighting the decision of regrouping the responses below and above 24 years old Although the decision would allow a clearer comparison between younger and older, the regrouping perhaps led to a loss of granularity in the analysis. The researcher may not be able to capture subtle differences within age categories or identify specific age-related trends.

7.5.3 Habit

The question of whether antecedent water conservation habits influence intention to conserve water when exposed to a social media water conservation campaign with emotional appeal is similarly important. The inquiry into the influence of prior water conservation habits on individuals' intention to conserve water within the emotionally resonant social media campaign revealed noteworthy insights. Notably, the study identified that the model's effectiveness is indeed moderated by existing water usage habits. This aligns with previous research (Gregory & Di Leo, 2003; Ibáñez-Rueda et al., 2023; Maduku, 2021). The distinctions emerged in the relationship between multimedia effects and emotional appeal. The negative beta value for good water conservation habits suggests an intriguing relationship. In this context, it implies that when individuals already have good water usage habits, an increase in multimedia effects might not significantly enhance their emotional appeal. This could be because individuals with established good habits are already motivated or engaged in water conservation efforts, and additional multimedia content has a diminishing effect on their emotions.

7.5.4 Level of Awareness

The level of awareness concerning water issues also emerges as a critical factor influencing individuals' intentions to conserve water (Kagoya et al., 2018; Li et al., 2022; Shahangian et al., 2021). Individuals who are not aware of the water issues (knowledge-action gap) may have a higher intention to conserve water as they gain an understanding of the importance of water conservation through "personal relevance", and "protection motivation" mentioned earlier. Therefore, when they are exposed to an emotionally appealing WCC video, they may be more motivated to take action and conserve water. However, the findings found a non-significant relationship between emotional appeal and intention in the low awareness group suggesting that individuals who have a limited understanding of water-related issues may not be strongly influenced by emotional factors when it comes to their intention to engage in water conservation. This could imply that for this group, other elements, such as information or factual content, might be more effective in motivating them to take action. On the other hand, the significant and strong relationship between emotional appeal and intention in the high-awareness group suggests that emotionally charged messages are effective in motivating individuals who are well-informed about water-related issues.

7.5.5 Billpayer Status

An underexplored variable, billpayer status, emerged as another significant factor in the effectiveness of the proposed model. Although highlighted in the context of energy-saving behaviour (Langevin et al., 2013), its relevance in water conservation has been mentioned by Kelly and Fong (2015). The results of the MGA demonstrate that billpayers indeed moderate the model's effectiveness, particularly the significant but negative correlation between multimedia effects and emotional appeal for billpayers. This suggests that, in this context, higher levels of multimedia effects might be associated with lower emotional appeal among individuals who are responsible for paying water bills. There could be several plausible explanations for this result. It might be the case that multimedia elements intended to enhance emotional appeal in water conservation messages are perceived differently by billpayers. For instance, certain types of multimedia effects might come across as less authentic or may not align with the billpayers' expectations and experiences. Further investigation is needed to pinpoint the specific reasons behind this negative correlation.

7.5.6 Relevances

RQ 4 analysed the impact of gender, age, existing water usage habits, level of awareness, and billpayer status on the effectiveness of a water-resilient community communication model. While gender, water usage habits, awareness level, and billpayer status emerged as notable moderators, age yielded less pronounced effects. These findings collectively highlight the intricate dynamics between demographic factors and the effectiveness of the proposed model, offering insights for the refinement of water conservation campaigns. For example, one-sided messages that target high-consuming and relatively uninformed households may be effective (Cary, 2008; Koop et al., 2019). Moving beyond uniform approaches, acknowledging dynamic responses across gender, water usage habits, awareness levels, and billpayer status is vital. Integrating these insights into communication strategies has the potential to drive engagement, boost intentions, and elevate the success of community-level water conservation initiatives

Gender. These findings could have several implications. First, it underscores the importance of considering gender as a moderating factor when assessing the effectiveness of multimedia content

in water conservation communication. It suggests that the same multimedia elements may not elicit the same emotional responses across different genders. Second, it opens up opportunities for further research to delve deeper into the specific reasons behind this gender-based difference. Are there particular aspects of multimedia content that resonate differently with males compared to females? Understanding these factors can inform the development of more tailored and effective communication strategies. Additionally, it highlights the need for a gender-sensitive approach to crafting water conservation messages on social media. The findings indicate that a one-size-fits-all approach might not be as effective as tailoring content to the preferences and responses of different gender groups.

Habits. Given the findings, it may be worth considering a more targeted approach to individuals with different water usage habits. For those with good habits, the focus could shift toward sustaining their positive behaviours rather than trying to enhance emotional appeal. On the other hand, for individuals with poor water usage habits, enhancing multimedia effects could be an effective strategy to boost the emotional appeal and potentially motivate behaviour change. The results thus highlight the importance of considering individuals' existing habits when designing WCC communication. Understanding that the impact of multimedia content can vary based on habit levels is crucial for tailoring effective messaging. These findings may open avenues for further research into the dynamics of multimedia content's impact on individuals with different water usage habits. Qualitative research or surveys could help explore the underlying reasons for the negative beta value and significance in those with good habits.

Level of awareness. The findings underscore the importance of segmenting the target audience based on their level of awareness. Tailoring messages to the cognitive and emotional needs of each group can enhance the effectiveness of water conservation communication. For individuals with low awareness, focusing on informative and factual content may be more effective. Addressing low awareness individuals may require educational initiatives to increase their understanding of water-related issues (Howarth & Butler, 2004). Once they have a better grasp of the problems, they may become more receptive to emotional appeals. For those with high awareness, emphasising emotional appeals in messaging can be a valuable strategy.

Billpayer status. The negative correlation highlights the need for a proper approach to crafting multimedia content in water conservation communication for billpayers. It suggests that certain

multimedia effects, while well-intentioned, might not resonate effectively with this audience. Practical implications may include reevaluating the choice of multimedia elements or the way they are incorporated into messages for billpayers. Exploring the characteristics of multimedia effects that elicit positive emotional responses among this group can lead to more tailored and effective communication strategies.

7.6 CHAPTER SUMMARY

In this chapter, the study delves into the intricate relationships between emotional appeal, informativeness, creativity, multimedia effects, attitudes, and empathy expressions within the context of social media WCC videos. Information campaigns alone seem insufficient to achieve long-term water conservation. Beyond the obtained results, the work's novelty lies in advocating emotional messaging's efficacy over fact-based approaches. Emotional messages, as opposed to facts, prove superior in influencing water scarcity risk perceptions and driving water-saving behaviour (Sarabia-Sanchez et al., 2021).

RQ 1. In the quest to effectively communicate persuasive messages that enhance positive viewer responses and promote resilience, the analysis has underscored the pivotal role of informativeness as the central cue. Informativeness serves as the linchpin, enhancing awareness and the provision of valuable content. This facet empowers individuals with knowledge, strengthening their ability to make informed decisions when confronted with adversity. Complementing informativeness, albeit as a peripheral cue, is emotional appeal. Emotional appeal enriches the message by evoking viewer emotions, a recognised influencer of attitudes and behaviours. Now, concerning credibility, while direct correlation eluded the researcher, it remains an indispensable element. Credibility cultivates trust and believability. Trust and believability are vital when individuals seek reliable information amidst challenges, indirectly impacting viewer responses and resilience. Together, these facets craft persuasive messages that shape sustainable intention and support resilience.

RQ 2. In the context of the WCC video, the effective evocation of emotions hinges on a delicate balance of several factors. Significantly, selecting a suitable stimulus to evoke target emotions is crucial for disseminating water-saving information (Sarabia-Sanchez et al., 2021). The study found that informativeness and creativity emerge as significant factors. The findings suggest that while

informativeness lays the groundwork for complete, relevant and up-to-date information, it indirectly facilitates emotional resonance. In particular, the "facts and figures" and "imagining life without water" strategies foster emotional connections by triggering feelings of responsibility, urgency, and personal connection (Anspach & Draguljić, 2019; Caputo, et al., 2022; Diaz, et al., 2020; Gilbertson, et al., 2011; Koop, et al., 2019; Liang, et al., 2017; Mankad, 2012; Middlestadt, et al., 2001; Nelson, et al., 2011; Parry, et al., 2022; Pereira, et al., 2022; Rumble, et al., 2017). Additionally, creativity emerges as a catalyst for emotional engagement. Creative elements infuse originality, uniqueness, out-of-the-ordinary, artistic and intriguing vibrancy into the video, capturing the viewer's attention and imagination (Bing & Ruiqiu, 2018; Yang & Smith, 2009). Furthermore, background music, visuals of droughts, and picturesque water scenery may heighten emotional engagement, although multimedia effects as a whole do not seem to have a connection with emotional appeal. Multimedia elements may not consistently evoke emotions, but they excel in enhancing creativity. While their direct correlation with emotions may be inconsistent, their ability to diversify the sensory experience cannot be underestimated because multimedia elements indeed provide a sensory-rich environment that, when creatively employed, can stimulate a range of emotions.

RQ 3. In the context of this study, emotional appeal takes on a multifaceted role as a mediator in the relationships between various factors. Firstly, emotional appeal acts as a full mediator between informativeness and attitude toward water conservation. This means that emotional appeal fully explains how informative content influences individuals' attitudes toward water conservation, highlighting the mechanism through which knowledge can be effectively conveyed and embraced. Secondly, emotional appeal also serves as a full mediator between creativity and the attitude toward water conservation. In this case, it elucidates how creative elements in the message lead to emotional responses, ultimately shaping attitudes. This insight offers a more comprehensive understanding of the focal role creativity plays in communication strategies. Thirdly, emotional appeal functions as a partial mediator between informativeness and attitude to empathy expressions. Furthermore, emotional appeal also acts as a partial mediator between creativity and attitude to empathy expressions. The third and fourth points indicate that emotional appeal explains part of how informative and creative content impacts attitudes related to empathy expressions. This emphasises the interplay of emotional appeal alongside informativeness and creativity in shaping attitudes in this specific domain. In contrast, the relationship between multimedia effects and attitudes is direct, with emotional appeal playing no mediating role.

RQ 4. The analysis of the proposed model reveals that it indeed differs in its effectiveness across different demographic and behavioural dimensions. Gender, habit, level of awareness, and billpayer status have been identified as significant factors influencing the model's effectiveness. Firstly, gender plays a notable role in determining the effectiveness of the model. It suggests that there are gender-specific distinctions in how individuals respond to the persuasive messaging employed in water conservation campaigns. Understanding these differences can lead to more tailored and effective communication strategies that resonate better with both genders. Secondly, individuals' habits have a discernible impact on the model's effectiveness. This implies that habitual behaviours (in this case water-conserving habits) can either enhance or hinder the effectiveness of persuasive messaging. Insights into habit-related variations can guide the development of interventions to promote positive behavioural change. Thirdly, the level of awareness is also a significant factor affecting the model. This suggests that individuals with different levels of awareness about water conservation respond differently to the persuasive message. Hence, tailoring messages to the awareness level of the target audience can maximise the impact of communication campaigns. Lastly, billpayer status, which indicates who is responsible for paying the water bill, also influences the model's effectiveness. This finding has implications for targeting specific segments of the population based on their billpayer status, ensuring that communication efforts are aligned with their specific needs and motivations.

8 FUTURE PROSPECTS AND CONCLUDING INSIGHTS

8.1 CHAPTER INTRODUCTION

The previous chapter (Chapter 7) focused on discussions of the research questions. This chapter serves to identify potential limitations, suggest avenues for future research and recapitulate the main findings of this research. Hence, in this culminating chapter, the researcher acknowledges and critically examines potential limitations, recognising the boundaries of the current research (Section 8.2.). This introspective exploration lays the foundation for relevant future studies. Therefore Section 8.3 presents future research directions building upon the groundwork laid in this thesis. Finally, this chapter concludes the thesis journey by revisiting the research problems, and key findings, emphasising their significance, and highlighting practical implications (Section 8.4).

8.2 IDENTIFYING POTENTIAL LIMITATIONS

While this study has provided valuable insights and contributions, it is important to acknowledge and address certain limitations that may have implications for the interpretation of the findings.

Limited constructs. The practical application of the presented conceptual framework may be limited as the elements of effective communication may not be exhaustive. Moreover, although the TPB and ELM models provide valuable insights, they inherently simplify the complexity of human behaviour and cognitive processing (Ajzen, 2020; El Hedhli & Zourrig, 2023). The

complexity of real-world decision-making might not be fully captured by these models, as individuals often consider multifaceted factors beyond the scope of these frameworks.

Self-reported data and social desirability bias. The online questionnaire employed in this study is expected to access large and widely spread populations, allowing for quick responses, and enabling participants to answer questions at their convenience (Ha, 2022; Lefever et al., 2007). It relies heavily on self-reported data, which can be subject to social desirability bias. This means that participants might present responses that align with perceived societal norms rather than their genuine attitudes or behaviours (Bernardi & Nash, 2023). This could impact the accuracy of the findings related to water conservation actions.

Sampling limitation. Due to resource constraints and recruitment challenges, a non-probability sampling approach was chosen, through convenience sampling. This approach targeted active social media users, aligning with the study's focus on social media-based water conservation campaigns. The use of this sampling method may limit the generalisability of the findings to a broader population (Schreuder et al., 2001; Coughlan et al., 2009; Penn et al., 2003).

Behaviour change assessment. The concept of strong intentions may be a robust predictor of behaviour (Conner & Norman, 2022), yet it is essential to recognise that having strong intentions might not always lead to actual behavioural change (Fishman et al., 2020). Furthermore, behavioural changes in the ELM peripheral route (in this case, emotional appeal) tend to be temporary (Petty & Cacioppo, 1981). While the research may demonstrate the short-term impacts of persuasive messages, assessing the long-term behaviour changes resulting from these messages could prove challenging.

Single stimulus. While using a single stimulus can help make the findings more reliable and applicable (Mora et al., 2023), it does have its limitations. By focusing on only one stimulus, the chances of directly applying the results to diverse industries and geographical regions become limited.

Stimulus viewing environment. The incongruity observed in this study regarding multimedia effects could potentially related to the specific stimulus attributes such as assessment criteria,

viewing conditions, audio equipment, volume levels, and screen dimensions. The absence of standardised procedures for stimulus absorption might restrict the generalisability of these findings. Consequently, the insights garnered from this study are pertinent primarily to the specific WCC video under examination, emphasising the potential for inconsistent outcomes when considering a diverse range of multimedia content or contextual variations.

Emotion targeting and effects limitation. While this study successfully validated the dynamic nature of target emotions - comprising a blend of sadness, guilt, and calm, it however remains limited in its exploration of the differential effects of each emotion. The research does not delve deeper into which emotions elicit specific responses or dominate the behavioural impact.

Significant differences in Metric Invariance across respondents from social media and SurveyCircle platforms. Firstly, these discrepancies may indicate underlying variations in respondent characteristics or survey administration methods between the platforms, potentially influencing the reliability and validity of the collected data. Secondly, the identified metric non-invariance challenges the assumption of equivalence in measurement across groups, which could impact the comparability of findings and limit the generalisability of results.

8.3 FUTURE RESEARCH DIRECTIONS

In addition to the identified limitations, this research also opens the door to promising opportunities within the realm of water conservation communication and related studies. These areas, which have received relatively limited attention, present good opportunities for further investigation.

Extend the model. Further research is needed to explore additional elements of effective communication that can direct cues from the ELM and other cognitive factors to predict intention within the TPB. This might involve looking at "personal relevance" and "protection motivation",

Further investigation on the intended emotions. This study mainly focuses on the extent to which emotional responses are triggered when exposed to the WCC video. The targetted emotions

are sadness, guilt and calm. There are other potential discrete emotions that can be used such as humour and anger. Additionally, the cognitive consequences of the targetted emotions remain underexplored, presenting a potential avenue for further studies.

The interplay of algorithmic social media influence. Future research should explore the algorithmic mechanisms that govern the visibility and dissemination of content on social media platforms (Duffy & Meisner, 2023). Moreover, the combination of the proposed framework with artificial intelligence and machine learning may be able to better design personalised communication strategies that match individual inclinations and preferences. This presents an opportunity to enhance the efficacy of persuasive messages by offering tailored, data-driven recommendations for sustainability.

Go beyond the household level. The agricultural sector is the most dominant global freshwater user (European Environment Agency, 2022; Tiseo, 2023). This research, however, focuses on individuals as members of water-resilient communities. Future water conservation communication research may focus on communicating with agricultural and even industrial water consumers.

Longitudinal studies and behavioural change. Exploring the interconnectivity between intention and individual behaviour change presents an intriguing path. Future research should conduct longitudinal studies to assess the long-term impact of persuasive messages on water conservation behaviour. In addition, future studies may examine the temporal aspects of persuasive communication on social media platforms. Investigate how the timing of messages, such as before, during, or after water scarcity events or environmental awareness campaigns, affects engagement levels and behaviour change.

Generalisability to other important issues. The proposed framework for effective communication may extend to other critical communication domains. Issues such as flood management, pandemic response, vaccination programs, and climate change communication share similarities with water conservation in terms of the need for engaging and persuasive messaging. The principles and insights derived from the study can potentially be applied to these areas to enhance their communication effectiveness.

Adaptation to various communication modes. Beyond social media, the framework might also be adaptable to different communication modes. For example, it may be worth considering whether the same principles apply to traditional media like television, outdoor billboards, or print materials such as posters. Testing the model in these alternative communication channels can help validate its robustness and practicality in diverse contexts.

Extend MGA to understand multimedia effects. In order to lead more tailored and effective communication strategies, future studies should delve deeper into the specific reasons behind particular aspects of multimedia content that resonate differently among gender, habit and billpayer status. For example, qualitative research may help explore the underlying reasons for the dynamics of multimedia content's impact on individuals with different water usage habits. It may also be interesting to explore the characteristics of multimedia effects that elicit positive emotional responses among groups.

8.4 THESIS CONCLUSIONS

In conclusion, this thesis delved into the realm of water conservation campaigns on social media, dissecting the intricate balance between persuasive communication, viewer responses, and the promotion of resilience. It began by recognising the vital importance of effective communication, identifying informativeness as a central cue and credibility and emotional appeal as a peripheral cue in shaping positive attitudes, enhancing perceived behavioural control, and moulding subjective norms.

The study identifies the significance of incorporating elements of informativeness as the central cue and emotional appeal as the peripheral cue in persuasive messaging. This approach fosters positive attitudes, enhances perceived behavioural control, and influences subjective norms, ultimately predicting greater intention as the foundation of resilience. While credibility was not found to be effective in this context, the role of creativity and informativeness in evoking emotions is underscored. Overall, this research has successfully proposed a comprehensive socio-psychological water conservation framework that integrates effective communication through video and social media technologies to evoke a change in household water consumption behaviour.

The integration of emotional appeal demonstrates a paradigm shift in fostering water conservation behaviours. The findings reveal the significance of emotions as vital variables within the framework, rendering emotional appeal a catalyst for attitudes, empathy expressions, and, ultimately, behavioural intentions.

Furthermore, this study provided valuable insights into the art of evoking emotions within the context of WCCs. The study emphasises that emotions can be effectively evoked within the context of the WCC video through the skilful integration of informativeness and creativity. These findings underscore the role of emotional appeal in enhancing the emotional impact of persuasive messages, facilitating positive responses from viewers, and promoting resilience. Furthermore, the mediation analysis has explained the central role of emotional appeal in translating informative content and creative narratives into favourable attitudes toward water conservation. It showcased the central role of emotional appeal as a mediator, elucidating the multifaceted nature of this emotional conduit. This highlights the need for emotional engagement to complement the conveyance of information and creativity to drive sustainable behaviour change. This has practical implications in terms of the intricate mechanisms through which emotional appeal operates in persuasive messaging, providing practical insights for designing more effective communication campaigns.

Additionally, this research has illuminated the impact of demographic factors, such as gender, water usage habits, awareness levels, and billpayer status, on the effectiveness of the proposed communication model. The tailored approach to gender-based messaging, addressing diverse water usage habits, amplifying awareness, and leveraging billpayer dynamics emphasises the need for effective communication strategies that cater to distinct audience segments. By acknowledging and addressing these factors, water conservation campaigns can achieve greater engagement, stronger intentions for conservation, and higher success rates in fostering behaviour change.

As the researcher now stands on the precipice of the future, it is evident that this thesis offers more than a mere exploration of WCCs; it offers a compass for future research in the ever-evolving landscape of persuasive communication and resilience promotion. It highlights the enduring relevance of effective messaging, the artistry of evoking emotions, and the importance of considering diverse audience attributes. Overall, this thesis is more than a culmination; it is a

catalyst, propelling researchers into the uncharted waters of communication and resilience, where the confluence of science and art continues to shape our new media world.

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APPENDICES

Appendix A. VIDEO PRODUCTION PROPOSAL

FACULTY OF COMPUTING, ENGINEERING AND THE BUILT ENVIRONMENT (CEBE)

WATER CONSERVATION VIDEO
PROPOSAL

Student Name:	**MOHAMMAD FAHMI ABU BAKAR**
Student ID:	20111669
Director of Studies:	Prof. Wenyan Wu
Supervisors:	Prof. David Proverbs
	Prof. Eirini Mavritsaki

Table of Contents

1. INTRODUCTION

1.1.Purpose of this document

This document provides specifications for developing a water conservation campaign video content. The content should be properly designed and developed based on the conceptual framework developed by the researcher.

1.2.Purpose of the video

The content should focus on delivering water quantity-related issue awareness. This type of environmental awareness campaign should provide people with the information, and attitudes needed to lessen their influence on water consumption. The final content will then be used as a stimulus for research to test the efficacy of the elements of effective communication embedded in the content. The elements of effective communication include informativeness, credibility, creativity, multimedia effect and emotional appeal.

1.3.PhD Research in Brief

This research is being undertaken by Mohammad Fahmi Abu Bakar as part of a PhD research project on the Effective Communications for Water Resilient Communities in the Faculty of Computing, Engineering and Built Environment at Birmingham City University. The project is being supervised by Prof. Wenyan Wu (email: wenyan.wu@bcu.ac.uk); Prof. David Proverbs (email: david.proverbs@wlv.ac.uk) and Prof. Eirini Mavritsaki (email: eirini.mavritsaki@bcu.ac.uk). This research aims to propose a new, socio-psychological water conservation conceptual framework that integrates elements of effective communication using video and social media technologies to motivate a change in water consumption behaviour through the integration of emotional appeal.

In the marketing sector, the role of emotion plays an essential part. Considerable literature in the field of psychology and behavioural science shows that emotions affect decision-making, critical thinking, attitudes, persuasion and action. The term “emotional marketing” emerged as a way to ensure an effective communication campaign by evoking emotion. Therefore, this

study focuses on the role of emotion in influencing water consumers' attitudes and behaviour toward water conservation campaign communications on social media platforms.

1.4.Proposed Conceptual Framework

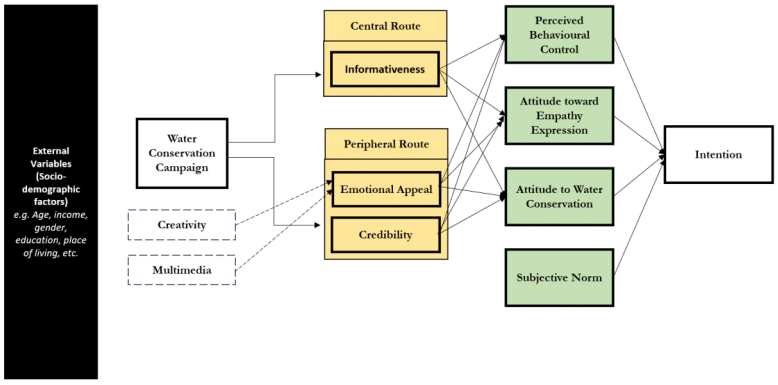


Figure 1: A socio-psychological water conservation conceptual framework for use on social media platforms.

The success of the message can be viewed when the targeted audience starts to conserve water. Therefore, marketing campaigns aimed at bringing about water conservation behaviour need to allow users to respond to the advertisement. This may extend the advertisement to a wider audience, contribute to more awareness, induce positive perceptions, create the word-of-mouth effect and finally lead to the efficient consumption of water.

Building on the evidence drawn from the existing literature, this research presented a social media water conservation framework that is capable of developing an emotional connection with the target audience to spark new behaviours and actions, capture the viewer's attention and reach wider audiences.

Although previous literature has provided various important clues on achieving effective water conservation campaigns, this research suggests that the conjunctive use of informativeness, credibility factors and emotional appeal offers more effective communication. A particularly promising application of such an integrative approach is the use of the element of emotional appeal. While all three elements (informativeness, credibility and emotional appeal) may

persuade viewers, the element of emotional appeal pushes the target audiences to the ELM's lower end of the continuum to engage with the advertisement and affect their decision-making.

1.5.Proposed Stages of Production

The video-making methodology is summarised in Table 1.

Table 1: Stages of Production

START	DEFINE	DEVELOP	DESIGN	DELIVER
	Pre-production • Objective, focus, concept • Discover and discuss ideas • Content, script, storyboard • Production schedule and coordination	**Production** • Shot list and shooting schedule • Crew and equipment • Shooting • Client feedback	**Post-production** • Editing, revisions, formatting • Overlays, sound/visual effects • Quality testing • Client review	

2. PRE-PRODUCTION STAGE

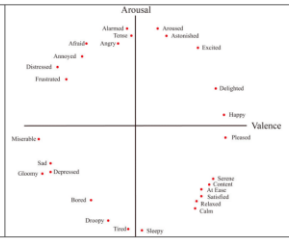
2.1. Objective, Focus and Concept

- Communication goals:
  1. Positive advertisement responses (retain viewers and promote likes and shares);
  2. Enhance resilience (increasing awareness and persuading viewers to change behaviour).
- The proposed conceptual and theoretical framework will be used to guide the creation of the story and contents to make it more relevant and relatable to the viewers.
- The elements of effective communication:
  1. Informativeness
  2. Credibility
  3. Emotional Appeal
- Target audience:
  1. Water consumers in the UK AND Social media users: followers on water companies and water utilities' social media pages (Instagram, youtube, Facebook and Twitter).
  2. Especially those vulnerable to water shortage and scarcity.

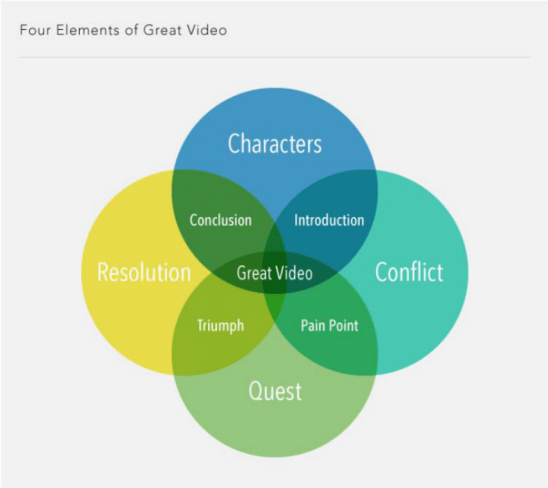
Elements	Definition	Strategy/ How to evoke?
Informativeness	Consumers' overall perception of whether the online advertisement provides complete, relevant and up-to-date information (Ducoffe, 1996).	*Messaging strategy* • The ability to convey how behavioural change can make positive differences. • Motivate the public to be competent by informing the importance of their contributions in making better conditions (Kaplan, 2000); • Convey how behavioural change can make a difference to the whole community (Gilbertson, et al., 2011); • Promote social benefits to promote increased change (Rumble, et al., 2017). • The ability to portray environmental values. Relationship with nature (Schultz, 2000; Nisbet, et al., 2010); the sense of connectedness to the environment (Nisbet & Gick, 2008); • The ability to portray environmental impacts of ignorance. help the public to make an informed decision and recognise any potential compromises (Nisbet & Gick, 2008). • The ability to put the audience in the position of imagining life without water. The message should be able to put the audience in the position of imagining what it would mean to have no water (Gilbertson, et al., 2011). • Displays facts about the importance of conserving water. • Provides tips for reducing water usage at home including how to avoid overwatering the lawn, shower instead of bath, • Include facts about things most people don't realize require enormous amounts of water to produce including food and goods.
		Narrative and story-telling: Text.
Credibility	Credibility can be viewed as source expertness (subject-matter experts), source trustworthiness and source experience (source familiarity) (Sugiantari, et al., 2018).	*Messaging strategy:* provide credible names.
		Narrative and story-telling: text.

Emotional Appeal	The extent to which emotional responses are triggered when exposed to a social media advertisement.	*Entertainment and creativity* • Entertainment: Motivations related to diverting personal issues, emotional relief, relaxation, enjoyment, passing time and arousal (Muntinga, et al., 2011). • Creativity: The extent to which an SNS ad is original and unexpected • The audience's interpretation of the information is based on their experiences and that they can fit into the narration. • This is related to the self-reference strategy. It has been suggested that something can be better remembered when it is familiar and relatable (Bower & Gilligan, 1979). • This represents a way to persuade customers by encouraging the audience to relate themselves or their own experiences to the marketing contents and thus help them to recall the presented information (Meyers-Levy & Peracchio, 1996; Rogers, et al., 1977). • Similarly, it has been suggested that the persuasion of viewers can be increased if the information is linked to personal experiences and memories (Meyers-Levy & Peracchio, 1996). • Connecting to the advertisement through memory and experience may lead to a positive relationship with brand attitudes and behavioural intentions (Escalas, 2004).
		Messaging strategy: One way to do this is by informing the public about the rewards of pro-environmental actions. This induces positive emotions and eventually leads to disincentives for unsustainable actions (Nisbet & Gick, 2008).
		Multimedia • *Narrative and story-telling:* text and audio. Social media allows content marketing in which storytelling becomes the key to attracting and retaining customers (Pulizzi, 2012). • Story-telling can be regarded as narratives (Padgett & Allen, 1997), and this will help the audience to process the content and thus enhance self-brand

		connections. Storytelling in advertising is one of the important factors for effective communication (Kang, et al., 2020). • Water utilities should consider becoming storytellers of the investment, engineering, and science behind sustainable water supplies (Dearing Smith, 2019). This kind of communication effectively pushes the audience to respond to the advertisement, and ultimately elicit an emotional response (Kang, et al., 2020), mainly as a result of either factual or emotive narratives (Wearn & Shepherd, 2020). Guilt and Sadness: First part of the video; music; images of wasting water; images of droughts Calm: Towards the end The drama is exhibited on a landscape with the level of water; the brooding clouds above.

2.2.Discover and Discuss Ideas



Source: https://www.lemonlight.com/video-marketing-strategy-the-ultimate-guide/ (C, 2020)

Protagonist with a goal *This person should align with your target demographic.*	Water consumers; unaware of issues; ignorant
Conflict *This is your customer's pain point.*	Water issues (drought and scarcity); future prediction
Quest *This will be how you introduce your product or service.*	Ways to reduce water consumption at home; awareness
Resolution *This is how your product or service solves the problem.*	Sustainable water supply; water resilient communities

2.3. Content, Script and Storyboarding

See Appendix A and B.

2.4. Colour Theme

The colour pallet will follow (Yang & Min, 2014):

2.5. Production Schedule and Coordination

The plan is to shoot the campaign video internally (bathroom and kitchen) and externally (lawn, water environment area), giving the idea of relatedness to water consumers.

Scene 1	Focus to eyes	**Props:** Toothbrush; toothpaste; Sink; tap **Talent:** 20-40 years old * 1 **Audio:** Water splashing **Text: -**
Scene 2	Toilet/bathroom (int)	**Props:** Toothbrush; toothpaste; Sink; tap **Talent:** 20-40 years old * 1 **Audio:** Water splashing **Text:** In the UK, each person uses, on average, more than 142 litres of water each day
Scene 3	Toilet/bathroom (int)	**Props:** Showerhead **Talent:** 20-40 years old * 1 **Audio:** Water splashing **Text: -**
Scene 4	Overflowing water (from jug/bowl/etc)	**Props:** Vegetables; sink; tap **Talent:** 20-40 years old * 1 **Audio:** Water splashing

		Text: While some view the UK as having abundant water resources, some areas of the country could run out of water in the future **Text:** The Jaws of Death
Scene 5	Kitchen/tap (int)	**Props:** Tap **Talent:** 20-40 years old * 1 **Audio:** Water splashing **Text: -**
Scene 6	Garden (ext)	**Props:** Sprinkler **Talent: -** **Audio:** Water splashing **Text: -**
Scene 7	Dry reservoir (ext)	Existing footage **Talent:** - **Audio:** sad/tense music **Text:** Credit to…
Scene 8	Back to scene 1	Motion (reverse/rewind) **Text:** We know what to do
Scene 9	Drinking (int)	**Props:** Cup **Talent:** 20-40 years old * 1 **Audio:** sad/tense/interest music **Text: -**
Scene 10	Back to scene 3	Reduce water consumption scenes
Scene 11	Back to scene 5	
Scene 12	Back to scene 2	
Scene 13	Back to scene 4	
Scene 14	Reservoir; river	Existing footage **Talent:** 5-10 years old * 3 **Audio:** happy music **Text:** credit to…
Scene 15	Black screen	**Text:** Act in Time. Be #resilient

Project timeline

Pre-production	2 weeks
Shooting	4 weeks
Post-production & Editing	2 weeks
Launch for Marketing	2 week

Budget/Scope

In the interests of the research project and giving back to the community, the researcher is looking for a charity, a voluntary or community organisation or other worthy cause to provide video production services pro bono.

3. PRODUCTION

- During the production phase, the researcher as the writer, the director, producer, and other creative minds will capture the shots to tell the whole story.
- Once agreed that all decent footage has been shot, the next stage is to move into post-production.
- This is where the footage is edited, the sound is mixed, visual effects are added and the title is created.
- Once the project is completed it will be reviewed internally before the final distribution.

3.1. Setting up the sound/lighting/video equipment

- Angle and setting convey play an important role when shooting the subjects.
- Capturing the right angles, at the right lighting and at the right time is what makes the video appealing, attractive, and fascinating.
- This relates to the element of "emotional appeal" and "creativity".

3.2. Recording voice-overs

- This is the narrator of the video. As an alternative or addition to the background sound or music, the voiceover makes the video more informative and interesting.
- This relates to the elements of "credibility" and "emotional appeal". It is important to consider the professional to a semi-professional microphone and studio.

3.3. Capturing b-roll

- This is to show the shots of what the narrator is talking about.
- Capturing a b-roll will ensure that the audience can understand the message and be captivated. Hence, this relates to the elements of "informativeness" and "creativity".
- B-roll also helps to keep a good pace, cover mistakes and help the audience to dive deeper into the story.

3.4. Costume and Makeup

To be discussed with the production team.

4. POST-PRODUCTION

- The bulk of post-production consists of reviewing the footage, assembling the movie and editing.
- This stage starts when principal photography and shooting end, but they may overlap.
- There will be contributions as required from visual effects, music and sound design.

4.1.Producing the final story

- A good video grabs viewers' attention and tells the viewers a compelling story and a new perspective of things.
- When having a clear direction, it is possible to capture with intent and focus on the creative efforts.
- The picture will now be locked and delivery elements will be created.

4.2.Music selection

- This is one of the most crucial steps in the editing process. Music selection can either make or break the video depending on the choice of the music.
- The idea is to avoid visuals and music from clashing.
- Choosing music for the video requires a sort of balance between the production's own tastes and what other people might like at the same time.
- In addition, it is also important to consider the tempo and structure of the song.
- The researcher is looking for big things that build-up, such that a nice build-up into a chorus.

4.3.Supporting graphics

- Supporting graphics can help provide a context for the video and help reinforce the concept or message.
- From simple titles, and backgrounds, to complex motion graphics, combining text, images, and creativity can raise the production value and video quality.
- It's equally important to limit the number of fonts you use in a project.

- Make the supporting text highlights the points that the researcher wants to get across, rather than being used more like subtitles.

4.4. Video –editing

- This stage commonly follows Logging, First Assembly, Rough Cut, Fine Cut, and Final Cut. Aspect ratio refers here: https://www.veed.io/blog/social-media-video-aspect-ratios/

4.5. Reviews/approval

- Once the final draft of the video is delivered, the next stage is to present it for the final comments. Any changes needed will be made at this point.

4.6. Final delivery/Marketing

- Various water companies/utilities' social media platforms.
  - Facebook
  - Youtube
  - Instagram
  - Twitter

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6. APPENDICES

6.1. Appendix A: Script

1. INT. DARK ROOM - DAY

MAN

(Close up to man's eye)

CUT TO:

2. INT. TOILET - DAY

MAN

Turns on the faucet. Water splashing down the sink.

(Close up to man *brushing teeth* while looking at the *mirror*.)
Text: In the UK, each person uses, on average, more than 142 litres of water each day

CUT TO:

3. INT. TOILET - DAY

MAN

Starts pouring shower water.

(Close up to *showerhead*.)

CUT TO:

4. INT. DARK ROOM – DAY

Turns on the faucet to fill in the jug.

(Close up to *water* splashing, pouring strong on *jug*.)

Text: While some view the UK as having abundant water resources, some areas of the country could run out of water in the future

Text: The Jaws of Death

CUT TO:

5. INT. KITCHEN - DAY

MAN

Turns on the faucet to clean vegetables while on the phone.

(Close up to *water* splashing, pouring strong on *vegetables* in the *sink*.)

CUT TO:

6. EXT. LAWN - DAY

(Shot of home garden *water sprinkler*)

CUT TO:

7. EXT. EMPTY WATER RESERVOIR - DAY

Video or images showing empty water reservoir.

DISSOLVE TO:

8. BACK TO SCENE 1

Text: We know what to do

9. INT. DARK ROOM - DAY

MAN

Drink water from a cup.

10. BACK TO SCENE 3

MAN

Turn off water.

11. BACK TO SCENE 5

MAN

Turn off water.

12. BACK TO SCENE 2

MAN

Turn off water.

13. BACK TO SCENE 4

MAN

Turn off water.

14. EXT. CALMING WATER ENVIRONMENT - DAY

Text: England is facing the "jaws of death" - Sir James Bevan

(Sound of water flowing)

SMASH TO:

15. BLACK BACKGROUND

NARRATOR

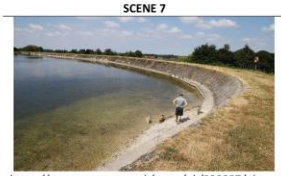
Act in Time. Be Resilient.

Text: Be #resilient.

FADE TO BLACK.

6.2.Appendix B: Storyboard

SCENE 1	SCENE 2	SCENE 3
 https://www.maxpixel.net/Crime-Scene-Carpet-Knife-Eyes-Knife-Crime-3243683	 https://www.storyblocks.com/video/stock/man-brushing-teeth-in-mirror-6wrfzjh	 https://www.victorianplumbing.co.uk/cruze-200mm-slim-rainfall-shower-head-with-1-25m-flexible-hose
SCENE 4	**SCENE 5**	**SCENE 6**
 https://www.istockphoto.com/photo/water-jug-gm185443306-27912556	 https://www.tapwarehouse.com/p/stainless-steel-kitchen-tap-44433	 https://www.aboveandbeyondcgm.com/importance-sprinkler-system/

SCENE 7	SCENE 8	SCENE 9
 https://www.express.co.uk/news/uk/990087/uk-hosepipe-ban-2018-drought-pictures-united-utilities-water-UK-reservoir	Back to scene 1	 https://focusedcollection.com/181893800/stock-photo-man-working-night-drinking-water.html
SCENE 10	**SCENE 11**	**SCENE 12**
Back to scene 3	Back to scene 5	Back to scene 2
SCENE 13	**SCENE 14**	**SCENE 15**
Back to scene 4	 https://blog.gooutdoors.co.uk/15-lakes-lochs-reservoirs-in-uk/	Act in Time. Be #resilient.

Appendix B. ETHICS APPROVAL

Faculty of Computing, Engineering & the Built Environment Research Office
Millennium Point, Curzon Street
Birmingham
B4 7XG

BCU_ethics@bcu.ac.uk

23/Nov/2021

Mr Mohammad Fahmi Abu Bakar

mohammad.abubakar@mail.bcu.ac.uk

Dear Mohammad Fahmi ,

Re: Abu Bakar /#9455 /sub2 /R(A) /2021 /Oct /CEBE FAEC - Effective Communications for Water Resilient Communities

Thank you for your application and documentation regarding the above activity. I am pleased to take Chair's Action and approve this activity.

Provided that you are granted Permission of Access by relevant parties (meeting requirements as laid out by them), you may begin your activity.

I can also confirm that any person participating in the project is covered under the University's insurance arrangements.

Please note that ethics approval only covers your activity as it has been detailed in your ethics application. If you wish to make any changes to the activity, then you must submit an Amendment application for approval of the proposed changes.

Examples of changes include (but are not limited to) adding a new study site, a new method of participant recruitment, adding a new method of data collection and/or change of Project Lead.

Please also note that the Computing, Engineering and the Built Environment Faculty Academic Ethics Committee should be notified of any serious adverse effects arising as a result of this activity.

If for any reason the Committee feels that the activity is no longer ethically sound, it reserves the right to withdraw its approval. In the unlikely event of issues arising which would lead to this, you will be consulted.

Keep a copy of this letter along with the corresponding application for your records as evidence of approval.

If you have any queries, please contact BCU_ethics@bcu.ac.uk

I wish you every success with your activity.

Yours Sincerely,

Professor Sharon Cox

On behalf of the Computing, Engineering and the Built Environment Faculty Academic Ethics Committee

Appendix C. THE SURVEY

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11% complete

Page 2: Consent Form

Please take your time to read this page

Please note that you are able to withdraw from this study at any time up to 14 days after your participation without giving any reason or explanation, however, the researcher will need your receipt number to identify your data. Therefore, please keep the receipt number upon completion of this survey.

All responses will be treated in confidence and will not be shared with any third party. Data be anonymised to protect your identity and all information collected will be securely destroyed upon successful completion of the study.

Before agreeing to participate, please make sure:

1. You have read and understood the information (provided here), inviting you to participate in this research.
2. You have been given the opportunity to ask any questions you have about the research.

   Email: mohammad.abubakar@mail.bcu.ac.uk
3. You have agreed to participate voluntarily in the research, as outlined in the information section.
4. You understand that you are free to withdraw from the study without giving reasons.
5. By participating in the study, you acknowledge that you are able to look at computer/gadget screens comfortably for at least an hour, and you are not visually impaired to the extent that it will affect your visual judgement.

6. You have been provided with the contact details of the researcher should you require further information or clarification regarding the study.

   Email: mohammad.abubakar@mail.bcu.ac.uk

7. You give permission for the researcher and his research supervisors to have access to the data provided by you.

8. You consent for your data to be shared (for research purposes only) with and funding/awarding bodies, academic institutions or academic publishers that support this research.

9. You consent for your personal data, including sex, age, primary language, place of birth, ethnic background, area of residence, educational background, water consumption information and household composition.

10. You understand that the data collected from you will be anonymised, securely stored during the research and securely destroyed at the end of the study.

By inserting the date below, you have agreed to participate in this study.

Today's date: ✱ *Required*

Dates need to be in the format 'DD/MM/YYYY', for example 27/03/1980.

01/12/2022

(dd/mm/yyyy)

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Next ›

Finish later

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22% complete

Page 3: Daily Water Consumption

This part of the survey uses a table of questions, view as separate questions instead?

Please choose one of the following: ***Never***; ***Rarely***; ***Sometimes***; ***Usually***; or, ***Always***, to reflect your own behaviour towards the following statements. ✱ *Required*

Please don't select more than 1 answer(s) per row.

Please select at least 7 answer(s).

	Never	Rarely	Sometimes	Usually	Always
a) Turn off the tap when soaping up	☐	☐	☐	☐	☐
b) Reduce the number of baths/showers	☐	☐	☐	☐	☐
c) Reduce toilet flushes	☐	☐	☐	☐	☐
d) Turn tap off when cleaning teeth	☐	☐	☐	☐	☐
e) Turn off the tap when washing dishes	☐	☐	☐	☐	☐
f) Use a shower rather than a bath	☐	☐	☐	☐	☐
g) Wait until there's a full load for washing	☐	☐	☐	☐	☐

This part of the survey uses a table of questions, view as separate questions instead?

Please choose one of the following: ***Strongly Agree***; ***Mildly Agree***; ***Mildly Disagree***; or, ***Strongly Disagree*** to reflect your own beliefs towards the following statements. ✱ *Required*

Please don't select more than 1 answer(s) per row.

Please select at least 6 answer(s).

	Strongly Agree	Mildly Agree	Mildly Disagree	Strongly Disagree
a) It rains so much in the UK that water shortages can't be possible	☐	☐	☐	☐
b) If water becomes scarce in the UK, technology will fix this.	☐	☐	☐	☐
c) Drinkable water is an unlimited resource in the UK.	☐	☐	☐	☐
d) Water scarcity in the UK is an excuse made by water companies for poor performance.	☐	☐	☐	☐
e) Drinkable water will be limited very soon if we do not save it.	☐	☐	☐	☐
f) A way of preventing water shortages in the UK is by using it only when necessary.	☐	☐	☐	☐

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Finish later

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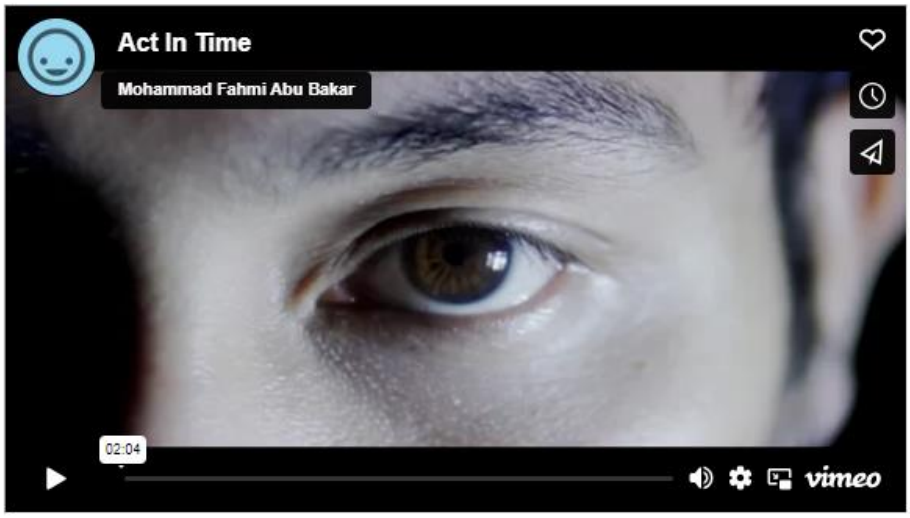
33% complete

Page 4: #ActInTime Video

Sit down, relax and watch the following video. Use headphones for better experience.



Have you watch the video until the end? * *Required*

- ○ Yes
- ○ No

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44% complete

Page 5: Response to #ActInTime Video

Which of the devices listed did you use to watch the video? * *Required*

- ○ Mobile Phone/Smartphone
- ○ Computer
- ○ Smart TV / Connected Device
- ○ Tablet
- ○ Other Device

What was the most important thing you just learned from the video? * *Required*

This part of the survey uses a table of questions, view as separate questions instead?

Please choose one of the following: ***Strongly Agree***; ***Agree***; ***Moderately Agree***; ***Moderately Disagree***; ***Disagree***; or, ***Strongly Disagree*** to respond to the statements below by keeping in mind the "informativeness" of the presented video. ✱ *Required*

Please don't select more than 1 answer(s) per row.

Please select at least 3 answer(s).

	Strongly Agree	Agree	Moderately Agree	Moderately Disagree	Disagree	Strongly Disagree
a) Information obtained from the water conservation video would be useful.	☐	☐	☐	☐	☐	☐
b) The video provides relevant information.	☐	☐	☐	☐	☐	☐
c) The video is a good source of updated information.	☐	☐	☐	☐	☐	☐
d) I think the information obtained from the video would be helpful.	☐	☐	☐	☐	☐	☐

This part of the survey uses a table of questions, view as separate questions instead?

Please choose one of the following: ***Strongly Agree***; ***Agree***; ***Moderately Agree***; ***Moderately Disagree***; ***Disagree***; or, ***Strongly Disagree*** to respond to the statements below by keeping in mind the "emotional appeal" of the presented video.

Please don't select more than 1 answer(s) per row.

Please select at least 4 answer(s).

	Strongly Agree	Agree	Moderately Agree	Moderately Disagree	Disagree	Strongly Disagree
a) After seeing this water conservation video, I had intense feelings.	☐	☐	☐	☐	☐	☐
b) I found the key message about water-saving emotionally engaging.	☐	☐	☐	☐	☐	☐
c) The emotional aspect of this ad leads me to appreciate the video.	☐	☐	☐	☐	☐	☐
d) There is strong emotional tie between me and the video.	☐	☐	☐	☐	☐	☐

This part of the survey uses a table of questions, view as separate questions instead?

Please choose one of the following: ***Strongly Agree***; ***Agree***; ***Moderately Agree***; ***Moderately Disagree***; ***Disagree***; or, ***Strongly Disagree*** to respond to the statements below by keeping in mind the "credibility" of the presented video.

Please don't select more than 1 answer(s) per row.

Please select at least 4 answer(s).

	Strongly Agree	Agree	Moderately Agree	Moderately Disagree	Disagree	Strongly Disagree
a) The person providing the video (content creator) was knowledgeable on the topic.	☐	☐	☐	☐	☐	☐
b) The overall video was trustworthy.	☐	☐	☐	☐	☐	☐
c) The person providing the video (content creator) was credible.	☐	☐	☐	☐	☐	☐
d) The person providing the video (content creator) is appeared to be a NON-expert on this topic.	☐	☐	☐	☐	☐	☐

This part of the survey uses a table of questions, view as separate questions instead?

Please choose one of the following: ***Strongly Agree***; ***Agree***; ***Moderately Agree***; ***Moderately Disagree***; ***Disagree***; or, ***Strongly Disagree*** to respond to the statements below by keeping in mind the "Multimedia Effect" of the presented video.

Please don't select more than 1 answer(s) per row.

Please select at least 4 answer(s).

	Strongly Agree	Agree	Moderately Agree	Moderately Disagree	Disagree	Strongly Disagree
a) The video is rich in sound effects (e.g., music, water sound).	☐	☐	☐	☐	☐	☐
b) The video is rich in visual effects.	☐	☐	☐	☐	☐	☐
c) The video is rich in multimedia effect (e.g., images, video footages, texts).	☐	☐	☐	☐	☐	☐
d) The overall media used in the video produced sufficient effects.	☐	☐	☐	☐	☐	☐

This part of the survey uses a table of questions, view as separate questions instead?

Please choose one of the following: ***Strongly Agree***; ***Agree***; ***Moderately Agree***; ***Moderately Disagree***; ***Disagree***; or, ***Strongly Disagree*** to respond to the statements below by keeping in mind the "Creativity" of the presented water conservation video.

Please don't select more than 1 answer(s) per row.

Please select at least 4 answer(s).

	Strongly Agree	Agree	Moderately Agree	Moderately Disagree	Disagree	Strongly Disagree
a) This video is original and unexpected.	☐	☐	☐	☐	☐	☐
b) The video is really out of ordinary.	☐	☐	☐	☐	☐	☐
c) This video is artistic.	☐	☐	☐	☐	☐	☐
d) The video is intriguing.	☐	☐	☐	☐	☐	☐

What do you like or dislike most about the video?

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Finish later

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55% complete

Page 6: Intention

This part of the survey uses a table of questions, view as separate questions instead?

Please choose one of the following: ***Strongly Agree***; ***Agree***; ***Moderately Agree***; ***Moderately Disagree***; ***Disagree***; or, ***Strongly Disagree*** to respond to the statements below: * *Required*

Please don't select more than 1 answer(s) per row.

Please select at least 14 answer(s).

	Strongly Agree	Agree	Moderately Agree	Moderately Disagree	Disagree	Strongly Disagree
a) I am confident that I could save water around the house and in my home landscape if I wanted to	☐	☐	☐	☐	☐	☐
b) The decision to save water around the house and in my home landscape is in my control	☐	☐	☐	☐	☐	☐
c) Whether or not I save water around the house and in my home landscape is entirely up to me	☐	☐	☐	☐	☐	☐
d) I am certain that I could save water around the house and in my home landscape if I wanted to	☐	☐	☐	☐	☐	☐
e) Please choose Moderately Disagree.	☐	☐	☐	☐	☐	☐

f) I believe it is important to conserve water; it is important to always conserve water to avert water shortages	☐	☐	☐	☐	☐	☐
g) If each household reduces the amount of water it uses by just a little, it will make a big difference for the community	☐	☐	☐	☐	☐	☐
h) People should use no more water in the home than is necessary	☐	☐	☐	☐	☐	☐
i) I feel a moral obligation to use water carefully	☐	☐	☐	☐	☐	☐
j) Rate the same here as your rating to the previous statement (i) I feel a moral obligation to use water carefully	☐	☐	☐	☐	☐	☐
k) I feel like there is a social pressure to save water around the house and in my home landscape	☐	☐	☐	☐	☐	☐
l) The people who are important to me want me to save water.	☐	☐	☐	☐	☐	☐
m) Most people in my life whose opinions I value would approve of me saving water.	☐	☐	☐	☐	☐	☐
n) The people that I am close to would approve if I explored ways to reduce my water use.	☐	☐	☐	☐	☐	☐

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66% complete

Page 7: #ActInTime on Social Media

This part of the survey uses a table of questions, view as separate questions instead?

Please respond to the following statements considering IF the video is posted on social media such as Facebook, Instagram, YouTube.

Please don't select more than 1 answer(s) per row.

Please select at least 3 answer(s).

	Strongly Agree	Agree	Moderately Agree	Moderately Disagree	Disagree	Strongly Disagree
a) I feel good about clicking “Like” for this water conservation video.	☐	☐	☐	☐	☐	☐
b) I feel positive about clicking “Like” for this water conservation video.	☐	☐	☐	☐	☐	☐
c) I feel favourable about clicking “Like” for this water conservation video.	☐	☐	☐	☐	☐	☐
d) I will recommend this video to others on social media.	☐	☐	☐	☐	☐	☐
e) I think this video is worth sharing with others on social media.	☐	☐	☐	☐	☐	☐
f) I will NOT share this video to my friends through social media.	☐	☐	☐	☐	☐	☐

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77% complete

Page 8: Intention to Save Water

This part of the survey uses a table of questions, view as separate questions instead?

Please indicate the extent to which you are willing to do the following after watching the video. If you have already committed with conserving water, the following statements refer to "more" or "further" in saving water. For example "a) I plan to save or conserve MORE water in the next six months".

Please don't select more than 1 answer(s) per row.

Please select at least 3 answer(s).

	Strongly Agree	Agree	Moderately Agree	Moderately Disagree	Disagree	Strongly Disagree
a) I plan to save or conserve water in the next six months.	☐	☐	☐	☐	☐	☐
b) I expect I will engage in everyday actions to save water in the next six months.	☐	☐	☐	☐	☐	☐
c) I intend to engage in everyday actions to save water in the next six months.	☐	☐	☐	☐	☐	☐
d) I DO NOT want to engage in everyday actions to save water in the next six months.	☐	☐	☐	☐	☐	☐

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88% complete

Page 9: Respondents' Demographics

How old are you? ✱ *Required*

- ○ 18-24
- ○ 25-34
- ○ 35-44
- ○ 45-54
- ○ 55-64
- ○ 65 and over

How do you describe your gender? ✱ *Required*

- ○ Male
- ○ Female
- ○ Trans Male
- ○ Trans Female
- ○ Gender variant/non-conforming
- ○ Prefer not to say
- ○ Other

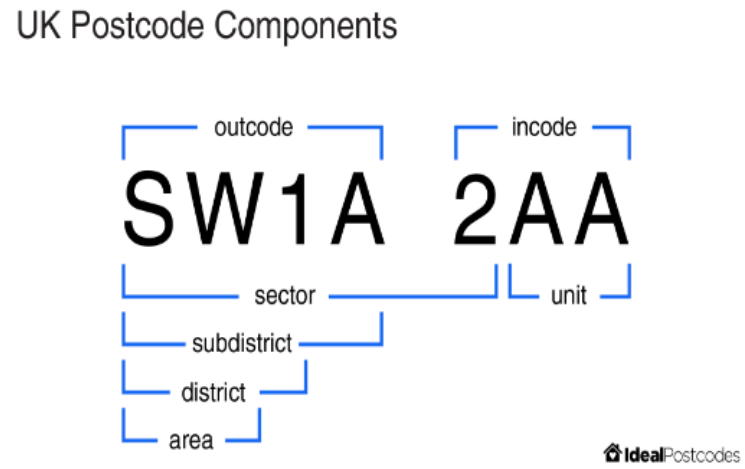
What is the language you use the most every day? * *Required*

- ○ English
- ○ Spanish
- ○ Chinese
- ○ Arabic
- ○ Other

How would you describe your ethnic background? * *Required*

- ○ White: British
- ○ White: Irish
- ○ White: Any other White background
- ○ Mixed: White and Black Caribbean
- ○ Mixed: White and Black African
- ○ Mixed: White and Asian
- ○ Mixed: Any other Mixed background
- ○ Asian or Asian British: Indian
- ○ Asian or Asian British: Pakistani
- ○ Asian or Asian British: Bangladeshi
- ○ Asian or Asian British: Chinese
- ○ Asian or Asian British: Any other Asian background
- ○ Black or Black British: Caribbean
- ○ Black or Black British: African
- ○ Black or Black British: Any other Black background
- ○ Other

Please state the full **outcode** of your postcode.



*Required

What type of accommodation do you live in? *Required

- ○ A whole house or bungalow that is Detached or Semi-detached or Terraced (including end-terrace)
- ○ A flat, maisonette or apartment that is In purpose-built of flats or tenement, or Part of a converted or shared house including bed-sits, or In a commercial building (office building, hotel or over a shop)
- ○ A mobile or temporary structure including A caravan or any other mobile or temporary structure
- ○ Other

What type of accommodation do you live in? * *Required*

- ○ A whole house or bungalow that is Detached or Semi-detached or Terraced (including end-terrace)
- ○ A flat, maisonette or apartment that is In purpose-built of flats or tenement, or Part of a converted or shared house including bed-sits, or In a commercial building (office building, hotel or over a shop)
- ○ A mobile or temporary structure including A caravan or any other mobile or temporary structure
- ○ Other

What is your highest qualification? * *Required*

- ○ Completed Year 9-11
- ○ Completed high school (year 12)
- ○ Certificate
- ○ Diploma
- ○ Undergraduate
- ○ Masters
- ○ PhD
- ○ Other

Are you the water bill payer in your household? * *Required*

- ○ Yes
- ○ No
- ○ Don't know

Who is your water company? Click here to find your local water supplier: https://www.water.org.uk/advice-for-customers/find-your-supplier/ * *Required*

- ○ ANH Anglian Water
- ○ WSH Dŵr Cymru
- ○ HDD Hafren Dyfrdwy
- ○ NES Northumbrian Water
- ○ SVE Severn Trent Water
- ○ SWB South West Water
- ○ SRN Southern Water
- ○ TMS Thames Water
- ○ UUW United Utilities Water
- ○ WSX Wessex Water
- ○ YKY Yorkshire Water
- ○ AFY Affinity Water
- ○ BRL Bristol Water
- ○ PRT Portsmouth Water
- ○ SEW South East Water
- ○ SSC South Staffs Water
- ○ SES SES Water
- ○ Don't know
- ○ Other

< Previous

Finish ✔

Finish later

WaterConservationCampaign

100% complete

Final page

Your responses to this survey have been submitted.

If you need a formal record of your submission, please use the following details:

Completion receipt

Receipt number: 1-1-1
Submission time: 2023-07-30 01:16:38 BST

Print Download PDF Email

Download my responses

You have 15 minutes to view this data

My responses

This research is being undertaken by Mohammad Fahmi Abu Bakar as part of a PhD research project on the Effective Communications for Water Resilient Communities in the Faculty of Computing, Engineering and Built Environment at Birmingham City University. The project is being supervised by Prof. Wenyan Wu (email: wenyan.wu@bcu.ac.uk); Prof. David Proverbs (email: david.proverbs@wlv.ac.uk) and Prof. Eirini Mavritsaki (email: eirini.mavritsaki@bcu.ac.uk) from October 2020 to October 2023. This research aims to propose an effective social media communication framework using an emotional connection that serves as a guide for water utilities to develop communication strategies. The research will be written up and submitted as a PhD thesis in September 2023 year and may be used for external publication for a further 24 months.

As part of this study, you were asked a series of questions about the water conservation campaign video that is intended to acts as a stimulus to conserve water. The questions consider the emotional connection with the video, attitudes and behaviours towards water consumption and conservation as well as some information about your own socio-demographic profiles. This survey is intended to

Appendix D. POST-FILM QUESTIONNAIRE

The following questions refer to how you *felt while watching the film.*

0	1	2	3	4	5	6	7	8
not at all/ none				somewhat/ some				extremely/ a great deal

Using the scale above, please indicate the greatest amount of EACH emotion you experienced while watching the film.

_____ amusement	_____ embarrassment	_____ love
_____ anger	_____ fear	_____ pride
_____ anxiety	_____ guilt	_____ sadness
_____ confusion	_____ happiness	_____ shame
_____ contempt	_____ interest	_____ surprise
_____ disgust	_____ joy	_____ unhappiness

Did you feel any other emotion during the film? O No O Yes

If so, what was the emotion? _____

How much of this emotion did you feel? _____

Please use the following pleasantness scale to rate the feelings you had during the film. Circle your answer:

0	1	2	3	4	5	6	7	8
unpleasant								pleasant

Had you seen this film before? O No O Yes

Did you close your eyes or look away during any scenes? O No O Yes

Appendix E. KMO AND BARTLETT'S TEST

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.886
Bartlett's Test of Sphericity	Approx. Chi-Square	11840.843
	df	820
	Sig.	.000

Appendix F. TOTAL VARIANCE EXPLAINED

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.838	26.435	26.435	10.838	26.435	26.435	3.608	8.799	8.799
2	3.789	9.240	35.675	3.789	9.240	35.675	2.933	7.154	15.954
3	2.532	6.176	41.851	2.532	6.176	41.851	2.901	7.075	23.028
4	2.060	5.025	46.876	2.060	5.025	46.876	2.899	7.071	30.100
5	1.672	4.077	50.953	1.672	4.077	50.953	2.844	6.936	37.035
6	1.510	3.683	54.636	1.510	3.683	54.636	2.781	6.783	43.819
7	1.494	3.644	58.279	1.494	3.644	58.279	2.567	6.261	50.080
8	1.365	3.329	61.608	1.365	3.329	61.608	2.555	6.231	56.311
9	1.278	3.118	64.726	1.278	3.118	64.726	2.537	6.189	62.500
10	1.251	3.052	67.778	1.251	3.052	67.778	2.164	5.278	67.778
11	1.110	2.706	70.484						
12	.893	2.178	72.662						
13	.798	1.946	74.608						
14	.722	1.761	76.369						
15	.692	1.687	78.056						
16	.651	1.589	79.644						
17	.601	1.466	81.110						
18	.575	1.403	82.514						
19	.540	1.317	83.831						
20	.515	1.256	85.087						
21	.506	1.234	86.321						
22	.451	1.100	87.421						
23	.442	1.077	88.498						
24	.420	1.024	89.523						
25	.391	.954	90.477						
26	.375	.914	91.391						
27	.358	.872	92.263						
28	.348	.850	93.113						
29	.326	.796	93.909						
30	.310	.755	94.665						
31	.288	.702	95.366						
32	.283	.689	96.056						
33	.251	.613	96.668						
34	.237	.577	97.245						
35	.212	.516	97.761						
36	.201	.489	98.251						
37	.180	.440	98.691						
38	.168	.409	99.100						
39	.146	.355	99.455						
40	.124	.302	99.757						
41	.100	.243	100.000						

Extraction Method: Principal Component Analysis.

Appendix G. COMMUNALITIES

	Initial	Extraction
a) Information obtained from the water conservation video would be useful.	1.000	.579
b) The video provides relevant information.	1.000	.693
c) The video is a good source of updated information.	1.000	.670
d) I think the information obtained from the video would be helpful.	1.000	.711
a) After seeing this water conservation video, I had intense feelings.	1.000	.712
b) I found the key message about water-saving emotionally engaging.	1.000	.731
c) The emotional aspect of this ad leads me to appreciate the video.	1.000	.639
d) There is strong emotional tie between me and the video.	1.000	.697
a) The person providing the video (content creator) was knowledgeable on the topic.	1.000	.611
b) The overall video was trustworthy.	1.000	.727
c) The person providing the video (content creator) was credible.	1.000	.725
d) The person providing the video (content creator) is appeared to be a NON-expert on this topic.	1.000	.336
a) The video is rich in sound effects (e.g., music, water sound).	1.000	.840
b) The video is rich in visual effects.	1.000	.626
c) The video is rich in multimedia effect (e.g., images, video footages, texts).	1.000	.706
d) The overall media used in the video produced sufficient effects.	1.000	.611
a) This video is original and unexpected.	1.000	.373
b) The video is really out of ordinary.	1.000	.807
c) This video is artistic.	1.000	.695
d) The video is intriguing.	1.000	.671
a) I am confident that I could save water around the house and in my home landscape if I wanted to	1.000	.617
b) The decision to save water around the house and in my home landscape is in my control	1.000	.648
c) Whether or not I save water around the house and in my home landscape is entirely up to me	1.000	.547
d) I am certain that I could save water around the house and in my home landscape if I wanted to	1.000	.703
f) I believe it is important to conserve water; it is important to always conserve water to avert water shortages	1.000	.457
g) If each household reduces the amount of water it uses by just a little, it will make a big difference for the community	1.000	.775
h) People should use no more water in the home than is necessary	1.000	.730
i) I feel a moral obligation to use water carefully	1.000	.702
k) I feel like there is a social pressure to save water around the house and in my home landscape	1.000	.549
l) The people who are important to me want me to save water.	1.000	.567
m) Most people in my life whose opinions I value would approve of me saving water.	1.000	.740
n) The people that I am close to would approve if I explored ways to reduce my water use.	1.000	.686
a) I feel good about clicking "Like" for this water conservation video.	1.000	.826
b) I feel positive about clicking "Like" for this water conservation video.	1.000	.832
c) I feel favourable about clicking "Like" for this water conservation video.	1.000	.808
d) I will recommend this video to others on social media.	1.000	.572
e) I think this video is worth sharing with others on social media.	1.000	.528
f) I will NOT share this video to my friends through social media.	1.000	.527
a) I plan to save or conserve water in the next six months.	1.000	.790
b) I expect I will engage in everyday actions to save water in the next six months.	1.000	.845
c) I intend to engage in everyday actions to save water in the next six months.	1.000	.835
d) I DO NOT want to engage in everyday actions to save water in the next six months.	1.000	.526

Extraction Method: Principal Component Analysis.

Appendix H. ROTATED COMPONENT MATRIX

	Component									
	1	2	3	4	5	6	7	8	9	10
a) Information obtained from the water conservation video would be useful.					.632					
b) The video provides relevant information.					.765					
c) The video is a good source of updated information.					.725					
d) I think the information obtained from the video would be helpful.					.765					
a) After seeing this water conservation video, I had intense feelings.		.773								
b) I found the key message about water-saving emotionally engaging.		.737								
c) The emotional aspect of this ad leads me to appreciate the video.		.631								
d) There is strong emotional tie between me and the video.		.729								
a) The person providing the video (content creator) was knowledgeable on the topic.										.635
b) The overall video was trustworthy.										.773
c) The person providing the video (content creator) was credible.										.775
a) The video is rich in sound effects (e.g., music, water sound).			.887							
b) The video is rich in visual effects.			.759							
c) The video is rich in multimedia effect (e.g., images, video footages, texts).			.814							
d) The overall media used in the video produced sufficient effects.			.727							
a) This video is original and unexpected.							.438			
b) The video is really out of ordinary.							.847			
c) This video is artistic.							.773			
d) The video is intriguing.							.743			
a) I am confident that I could save water around the house and in my home landscape if I wanted to								.730		
b) The decision to save water around the house and in my home landscape is in my control								.799		
c) Whether or not I save water around the house and in my home landscape is entirely up to me								.698		
d) I am certain that I could save water around the house and in my home landscape if I wanted to								.802		
f) I believe it is important to conserve water; it is important to always conserve water to avert water shortages									.594	
g) If each household reduces the amount of water it uses by just a little, it will make a big difference for the community									.827	
h) People should use no more water in the home than is necessary									.805	
i) I feel a moral obligation to use water carefully									.729	
k) I feel like there is a social pressure to save water around the house and in my home landscape										.525
l) The people who are important to me want me to save water.										.632
m) Most people in my life whose opinions I value would approve of me saving water.										.796
n) The people that I am close to would approve if I explored ways to reduce my water use.										.730
a) I feel good about clicking "Like" for this water conservation video.	.789									
b) I feel positive about clicking "Like" for this water conservation video.	.796									
c) I feel favourable about clicking "Like" for this water conservation video.	.776									
d) I will recommend this video to others on social media.	.584									
e) I think this video is worth sharing with others on social media.	.579									
f) I will NOT share this video to my friends through social media.	.563									
a) I plan to save or conserve water in the next six months.				.784						
b) I expect I will engage in everyday actions to save water in the next six months.				.836						
c) I intend to engage in everyday actions to save water in the next six months.				.807						
d) I DO NOT want to engage in everyday actions to save water in the next six months.				.607						

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]

a. Rotation converged in 8 iterations.

Appendix I. GoF

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	107	1587.982	596	.000	2.664
Saturated model	703	.000	0		
Independence model	37	14918.038	666	.000	22.399

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.117	.832	.802	.706
Saturated model	.000	1.000		
Independence model	.511	.157	.110	.149

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.894	.881	.931	.922	.930
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.895	.800	.833
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	991.982	877.611	1113.990
Saturated model	.000	.000	.000
Independence model	14252.038	13857.940	14652.512

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	3.593	2.244	1.986	2.520
Saturated model	.000	.000	.000	.000
Independence model	33.751	32.244	31.353	33.150

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.061	.058	.065	.000
Independence model	.220	.217	.223	.000

AIC

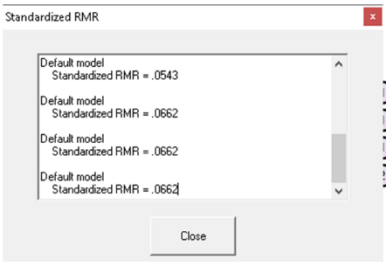
Model	AIC	BCC	BIC	CAIC
Default model	1801.982	1822.111	2239.994	2346.994
Saturated model	1406.000	1538.248	4283.780	4986.780
Independence model	14992.038	14998.999	15143.500	15180.500

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	4.077	3.818	4.353	4.122
Saturated model	3.181	3.181	3.181	3.480
Independence model	33.919	33.027	34.825	33.934

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	183	190
Independence model	22	23



Appendix J. STANDARDISED ESTIMATES

			Estimate	S.E.	C.R.	P	Label
EA	<---	INF	.434	.066	8.274	***	par_37
EA	<---	CRE	.515	.077	7.748	***	par_38
EA	<---	MME	-.104	.085	-1.918	.055	par_39
AWC	<---	INF	.231	.072	3.103	.002	par_40
AEE	<---	INF	.221	.060	3.784	***	par_41
PBC	<---	INF	.295	.072	3.853	***	par_42
SN	<---	INF	.172	.085	2.358	.018	par_43
AWC	<---	CRD	-.207	.069	-2.850	.004	par_44
AEE	<---	CRD	-.008	.056	-.152	.879	par_45
PBC	<---	CRD	-.002	.063	-.033	.974	par_46
SN	<---	CRD	-.158	.074	-2.452	.014	par_47
AWC	<---	CRE	.121	.086	1.241	.215	par_48
AEE	<---	CRE	.263	.073	3.362	***	par_49
AWC	<---	MME	.214	.082	3.155	.002	par_55
AEE	<---	MME	-.003	.067	-.055	.957	par_56
SN	<---	EA	.380	.068	5.179	***	par_57
PBC	<---	EA	.160	.056	2.135	.033	par_58
AEE	<---	EA	.352	.057	5.046	***	par_59
AWC	<---	EA	.284	.067	3.288	.001	par_60
INT	<---	EA	.182	.052	3.445	***	par_50
INT	<---	SN	.231	.046	5.348	***	par_51
INT	<---	PBC	.117	.059	2.601	.009	par_52
INT	<---	AEE	.165	.062	3.207	.001	par_53
INT	<---	AWC	.341	.067	6.492	***	par_54

Note that for the first three columns (EA – INF; EA – CRE; EA – MME), INF has the lowest S.E value (.066) which means it has the strongest ability to predict emotional appeal. MME has the highest S.E value (.085) which indicates the weakest ability to predict emotional appeal. The value for INF and CRE are out of the ±1.96 range indicating a significant variable to emotional appeal. INF and CRE have a positive correlation to EA, while MME has a negative correlation to EA. CRE however has the highest correlation (.515).

Appendix K. Standardised Total Effect, Indirect Effect and Direct Effect

Standardized Total Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	MME	CRE	CRD	INF	EA	SN	PBC	AEE	AWC	INT
EA	.115	.001	...	.001	...	...	...	...	...	...
SN	.086	.001	.036	.001	.001	...	...	...	...	...
PBC	.112	.142	.987	.001	.155	...	...	...	...	...
AEE	.590	.001	.939	.001	.008	...	...	...	...	...
AWC	.018	.027	.039	.001	.028	...	...	...	...	...
INT	.518	.001	.067	.000	.001	.001	.011	.013	.001	...

Standardized Indirect Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	MME	CRE	CRD	INF	EA	SN	PBC	AEE	AWC	INT
EA	...	...	...	...	...	...	...	...	...	...
SN	.086	.001	...	.001	...	...	...	...	...	...
PBC	.112	.142	...	.117	...	...	...	...	...	...
AEE	.063	.006	...	.007	...	...	...	...	...	...
AWC	.063	.021	...	.019	...	...	...	...	...	...
INT	.518	.001	.067	.000	.005	...	...	...	...	...

Standardized Direct Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	MME	CRE	CRD	INF	EA	SN	PBC	AEE	AWC	INT
EA	.115	.001	...	.001	...	...	...	...	...	...
SN	...	...	.036	.096	.001	...	...	...	...	...
PBC	...	...	.987	.014	.155	...	...	...	...	...
AEE	.971	.010	.939	.014	.008	...	...	...	...	...
AWC	.009	.356	.039	.069	.028	...	...	...	...	...
INT	...	...	...	...	.011	.001	.011	.013	.001	...